AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

IMPROVING HEALTH
THROUGH MEDICAL PHYSICS

AAPM NEWSLETTER

September/October 2020 | Volume 45, No. 5

Special Interest Feature:

Womens Professional Subcommittee

IN THIS ISSUE:

COVID-19 UPDATE

Notice as of Saturday, August 29, 2020.

- COVID-19 Information for Medical Physicists
- All AAPM in-person meetings, plans for AAPM funded travel and meetings of other groups at HQ are to be canceled through December 31, 2020.

AAPM NEWSLETTER is published by the American Association of Physicists in Medicine on a bi-monthly schedule. AAPM is located at 1631 Prince Street, Alexandria, VA 22314

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SUBMISSION INFORMATION

Please e-mail submissions
(with pictures when possible) to:
newsletter@aapm.org
AAPM Headquarters
Attn: Nancy Vazquez

Submission Information

PUBLISHING SCHEDULE

The AAPM Newsletter is produced bi-monthly.
Next issue: November/December
Submission Deadline: October 9, 2020
Posted Online: Week of November 2, 2020

CONNECT WITH US!

Editor's Note

I welcome all readers to send me any suggestions or comments on any of the articles or features to assist me in making the AAPM Newsletter a more effective and engaging publication and to enhance the overall readership experience. Thank you.

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A LETTER TO THE MEMBERSHIP

PRESIDENT ELECT'S REPORT James T. Dobbins III, PhD | Duke University

Dear AAPM colleagues,

As fall approaches, it is always good to do a "mid-year check-in" on how we are progressing towards our goals, both personally and professionally. This has certainly been an unusual year, to say the least. We have seen two large themes that have dominated our awareness this year: (1) a global COVID-19 pandemic with millions of cases and sadly hundreds of thousands of deaths worldwide, and (2) a renewed awareness of the prevalence of racial injustice, as seen so clearly in the deaths of George Floyd, Breonna Taylor, and others. While these two things have certainly influenced us personally this year, they have also had an impact on our work at AAPM.

The global pandemic has caused us to shift from in-person to all-virtual meetings for both the Spring Clinical and the Annual Meeting. This required a herculean effort on the part of the Annual Meeting Subcommittee (AMSC), the Meeting Coordination Committee (MCC), headquarters staff, and many others. It was almost unimaginable that the Spring Clinical Meeting could be converted so quickly to an all-virtual format. Still, the event went smoothly and built confidence for the conversion of the Annual Meeting to a virtual format. The Annual Meeting, of course, was a much larger event, and the ability of the Annual Meeting Subcommittee to streamline the content and the headquarters staff to arrange all of the IT/AV needs, financial and logistical details, and coordinate with our vendor partners on a short timeframe was simply phenomenal. By many measures, the meeting was a great success. President **Saiful Huq** put on a very thoughtful and compelling President's Symposium on the issue of global engagement, and I congratulate all of our members and staff who worked so hard to make this a very successful meeting.

AAPM also began the process of looking at the issue of equity, diversity, and inclusion (EDI) in new and expanded ways as a result of the focus nationally on racial equity starting this spring. While EDI has been a value of AAPM for many years, we have felt an increasing need to move effectively and promptly with renewed vigor in these critical areas. Saiful Huq has appointed an ad hoc committee, chaired by **Julianne Pollard-Larkin**, to put together specific recommendations for ways in which AAPM can be part of the solution by improving diversity and enhancing opportunities for all of our members to participate and contribute their talents entirely in our organization. I understand that the ad hoc committee plans to bring recommendations in a matter of months, and we look forward to receiving their report very soon.

I mention both the pandemic and the work on EDI because these will be efforts that continue into next year. The exact format for next year's meetings

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"The theme I plan for next year is 'Advancing Medicine,' building on the fact that physicists have played a key role in inventing a lot of what we see in modern high-tech medicine...I believe that we will see a gradual change over the next 20–30 years in the roles that physicists play in medicine as it becomes more molecular and data-driven. And we will again be called upon for our creativity to find our most impactful role in advancing medicine."

PRESIDENT ELECT'S REPORT, Cont.

has not yet been determined, but it seems likely that some increased virtual content is expected to continue based on the large attendance (virtually) at this summer's meeting. And the work with EDI will undoubtedly take root in concrete steps next year as well. I will work with our various councils, committees, and subcommittees to put into place initiatives on these matters next year, under the guidance of the board.

I should also mention a few brief thoughts about themes for next year as I begin my term as your President in January. Many things at AAPM are working quite well, and we don't need to reinvent the wheel in those areas. There are some things that I would like to emphasize next year, however, and I have briefly mentioned them in a previous newsletter article. The theme I plan for next year is "Advancing Medicine," building on the fact that physicists have played a key role in inventing a lot of what we see in modern high-tech medicine. It's hard to imagine modern medicine without CT, MRI, PET imaging, IMRT, brachytherapy, or molecular medicine — all things developed wholly or in part by physicists. We have brought the scientific expertise and creativity that has made all of this possible. I believe that we will see a gradual change over the next 20–30 years in the roles that physicists play in medicine as it becomes more molecular and data-driven. And we will again be called upon for our creativity to find our most impactful role in advancing medicine.

I would like to emphasize two things in regard to advancing medicine. First, I want to emphasize the role of creativity in science as we imagine new arenas for our contribution to medicine in the future. This involves a very blue-sky, future-oriented approach, and builds on work currently underway by the Working Group on Future Research and Academic Medical Physics (WGFRMP) and others. But I also want us to emphasize initiatives that highlight the ways in which we advance medicine today. In that regard, I would like to see us continue work that is already underway to build a strong case for the tremendous value that medical physicists bring to the clinical enterprise. We understand the importance that we bring, but I would like to see us highlight for hospital administrators and others the value in safety, quality, efficiency, and innovation that comes from medical physicists in clinical medicine. In this way, my two points of emphasis for the year highlight both future-oriented work and things of importance to our members and profession today.

Certainly, these things are only possible through our collaborative effort, and I look forward with enthusiasm to working with you next year on these initiatives. And I pledge to continue the momentum that we have developed this year through Saiful Huq's leadership on the issue of global engagement.

Thank you for the opportunity and privilege to serve you and our profession. Please feel free to reach out with any thoughts or suggestions you have for how we can maximize our collective work through AAPM.

I wish you a fruitful second half of the year. Stay safe and healthy.

All the best,

Jim

AAPM 2019 FINANCIAL REPORT

TREASURER'S REPORT Mahadevappa Mahesh, PhD | Johns Hopkins University

Generally, at this time of year, I talk about returning from a successful Annual Meeting held in a beautiful venue. As a result of COVID-19, the 2020 Annual Meeting was held virtually, so I never left the comforts of home. Since the meeting was virtual, and all committee meetings were scheduled before and after the Annual Meeting, I was able to attend many wonderful sessions. The availability of the entire meeting materials for six more weeks allowed me to access even many more sessions. Concerning AAPM finances, in spite of the challenges bestowed upon us by the COVID-19 pandemic, they are strong. The virtual annual meeting far exceeded our expectations, including garnering 1000 more registrants than what we expected for the meeting.

Regarding FY 2019, however, the year 2019 ended less favorably for the Association as AAPM experienced a deficit from operations of approximately ($796,000). (Figure 1). For the year 2019, AAPM had budgeted for a deficit of about ($977,000); therefore this led to a favorable variance of $181k for 2019. The most significant driving factor contributing to this favorable variance came as the result of net under-spending, and favorable revenue performance versus budget in Councils and Committees contributed $787,000 to the favorable difference. Offsetting this positive variance were negative variances of $606K. The most significant negative differences for 2019 included Overhead of $195K, Membership Dues Revenue of $132K, Governance and Administrative Services costs of $123K, Meetings (annual, spring, summer school) of $97K and Publications of $58K. As a result of the deficit from operations, AAPM was not in compliance with the Debt Service Coverage (DSC) ratio of 1.2 to 1 covenant requirement as a part of AAPM's building financing with TD Bank. For the year ended December 31, 2019, AAPM's DSC ratio was -0.24 to 1. TD Bank waived the covenant violation.

AAPM's balance sheet remains strong as of the end of the year 2019 with total assets exceeding $26.2M (Figure 2). This represents an increase of approximately $1.5M over the prior year 2018. This increase was the result of a solid market performance during the year. For the year, the investment reserves achieved unrealized gains of about $2.25M. At year's end, reserve balances stood at nearly $13.9M.

The FY 2020 budget has an approved deficit of approximately $1M. This budget was prepared utilizing a statistical model, using historical budgets and operating results as a guide. In early March, as the Coronavirus (COVID-19) continued to spread across the United States, the Ad Hoc Committee to Respond to the Impact of the Coronavirus (COVID-19) on AAPM Meetings (AHRICM) was formed. After careful consideration, the recommendations

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I would like to thank Robert McKoy, **AAPM Director of Finance, for his work on this report. Please feel free to reach out to me if you have any questions concerning this report.**

TREASURER'S REPORT, Cont.

were approved by EXCOM to convert the Spring Clinical Meeting and the Annual Meeting to virtual meetings and postpone the Summer School until 2021. Additionally, the return to the association from Wiley was reduced to reflect an anticipated lower final settlement from Wiley for 2020. To mitigate the financial impact of these actions, the association obtained a $607K loan from the Small Business Administration (SBA) through the Paycheck Protection Program (PPP). If all requirements are fulfilled under this program, the loan will be forgiven in the form of a grant to the association.

Currently, the Association is working on the budget for 2021. All councils and committees are invited to prepare their respective budgets and will submit them by the end of August. FINCOM will meet virtually on October 21, 2020, to review and approve the 2021 budget to be sent to the Board.

I have included a chart (Figure 3), which compares the Historical Reserves of the Association against the annual operating expenses (blue line in the graph). As shown, the unrestricted net assets of the Association exceed the yearly operating expenses indicating the financial strength of AAPM.

I have also included for informational purposes a five-year trend of Operating Revenues and Expenses (Figure 4). This chart shows the operating income, Investment Income, Unrealized Gains (Losses) and Education and Research Fund net activity for the past five years. Over the past five years, the Association has generated an Operating Deficit of approximately ($573,000) and total income (all sources) of roughly $43.8M. AAPM remains fiscally healthy, and the operating results continue to bear this out.

Even though our finances are stable, we cannot rest on our past fiscal strengths but, instead, need to keep a constant vigilance regarding the expenses of the organization. The annual fixed expenses for the organization have been trending higher these past five years. We want to make sure that the fixed expenses do not dominate the overall expenses or impact what the organization provides to its membership. ■

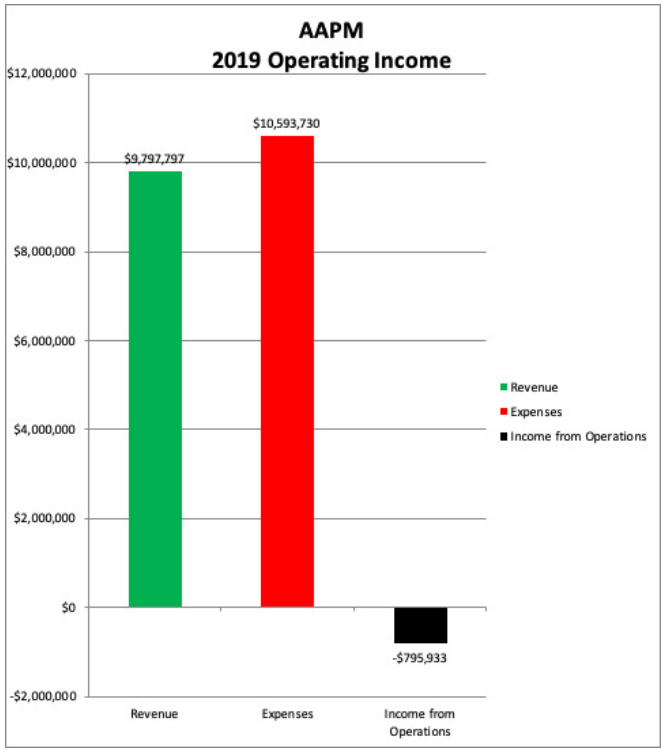


Figure 1: AAPM Income and Expenses for the year 2019.

AAPM Year-End Balance Sheet

For 2018 & 2019

	12/31/18	12/31/19	$ Change	% Change
Assets				
Cash	882,409	1,932,905	1,050,496	119.0%
Other Current Assets	1,067,316	826,612	(240,704)	-22.6%
Investment - Reserves	13,410,997	13,970,567	559,570	4.2%
Investments E&R Fund	1,713,871	2,123,346	409,475	23.9%
Building & Other Fixed Assets	7,633,978	7,381,148	(252,830)	-3.3%
Total Assets	**$ 24,708,571**	**$ 26,234,578**	**$ 1,526,007**	**6.2%**
Liabilities				
Current Liabilities	3,499,579	3,027,446	(472,133)	-13.5%
Bonds Payable	3,773,984	3,604,425	(169,559)	-4.5%
Total Liabilities	7,273,563	6,631,871	(641,692)	-18.0%
Net Assets				
Net Assets without restrictions	15,295,125	17,072,945	1,777,820	11.6%
Net Assets with restrictions	2,139,883	2,529,762	389,879	18.2%
Total Net Assets	17,435,008	19,602,707	2,167,699	12.4%
Total Liabilities and Net Assets	**$ 24,708,571**	**$ 26,234,578**	**$ 1,526,007**	**6.2%**

Figure 2: AAPM Balance Sheet

TREASURER'S REPORT, Cont.

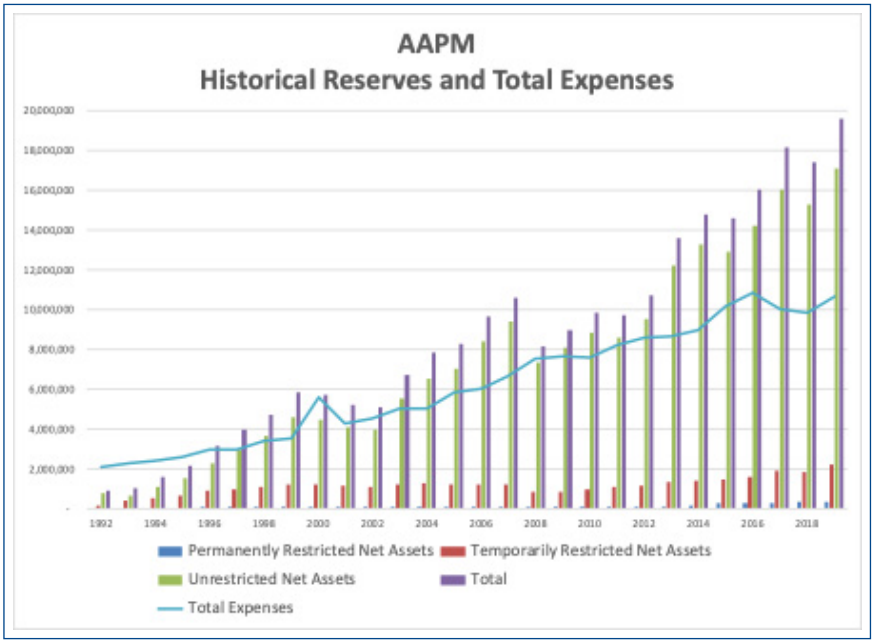


Figure 3: AAPM Historical Reserves (Restricted & Unrestricted funds)

5 Year Trend Statement of Activities

	2015	2016	2017	2018	2019
Operating Revenue	9,657,220	11,002,721	9,686,258	9,800,256	9,797,797
Operating Expenses	9,917,356	10,580,445	9,735,695	9,689,598	10,593,730
Net Income (Loss) from Operations	(260,136)	422,276	(49,437)	110,658	(795,933)
Investment Income	229,227	225,067	219,347	267,952	301,314
Unrealized Gains (Losses)	(335,871)	703,017	1,603,959	(1,016,205)	2,258,255
Education and Research Fund, Net	179,082	111,602	317,107	(79,255)	404,060
Net Income (Loss)	(187,698)	1,461,962	2,090,976	(716,850)	2,167,696

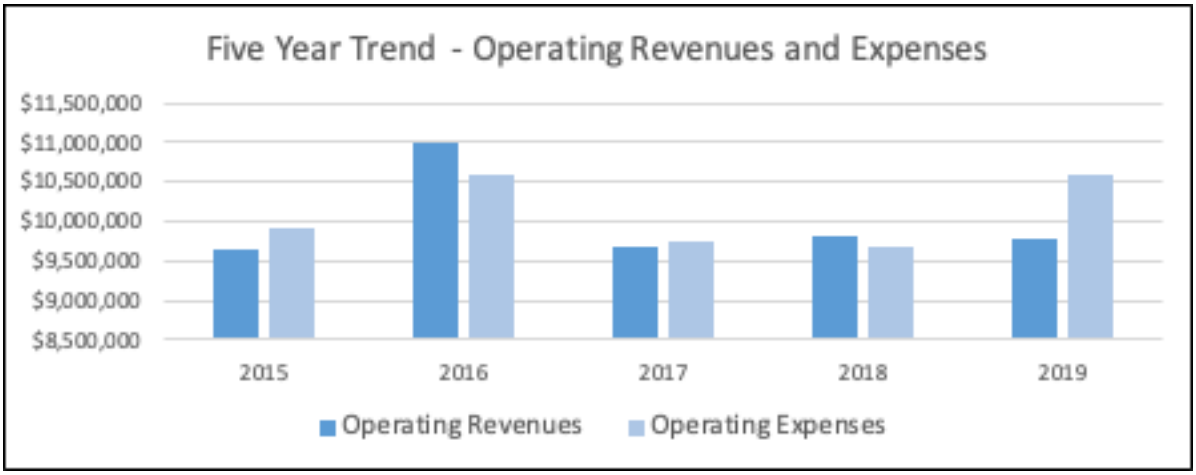


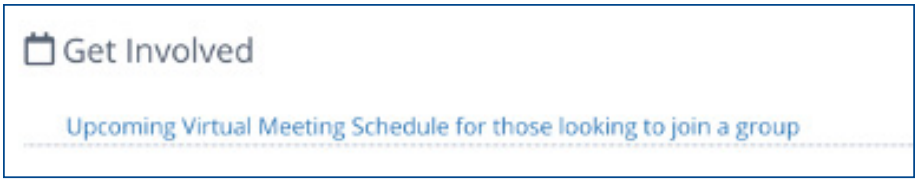
Figure 4: Five Year Trend Operating Revenues and Expenses

INFORMATION FROM HQ

EXECUTIVE DIRECTOR'S REPORT Angela R. Keyser | AAPM

AAPM Groups Continuing to Do Good Work…. Virtually

AAPM groups are meeting remotely, many of them on a regular basis. Historically, finding out when the virtual meetings were scheduled was not easy to do. HQ has created an Upcoming Virtual Meeting Schedule that is posted on the main webpage.



Interested in joining an AAPM Group? Review the schedule, find something that you are interested in, and then plan to attend the group's meeting. It's also helpful to send an email to the Chair of the group noting your interest and background. After the meeting, if you would like to know more, ask the Chair if you can be added as a guest. This will allow you to participate in online discussions and remote meetings.

Did you know?

- 2020 AAPM /RSNA Imaging Physics Residency Grant — *deadline extended to October 1, 2020*.
- **Have a suggestion?** Use the "Suggestion Box" in the upper right corner of the website to reach the Executive Committee, Chairs of AAPM Councils, or the Executive Director.

- **AAPM Reports Authored Included in Membership Directory Listing**
  Ever want to find an AAPM Report, don't remember all the details, but remember the name of one of the authors? AAPM includes "AAPM Reports Authored" in the AAPM Membership Directory listing of each AAPM Member. Log in and check it out!
- AAPM Members are eligible for joint membership in ESTRO for € 55.00, with access to most services ESTRO has on offer. Details available online.

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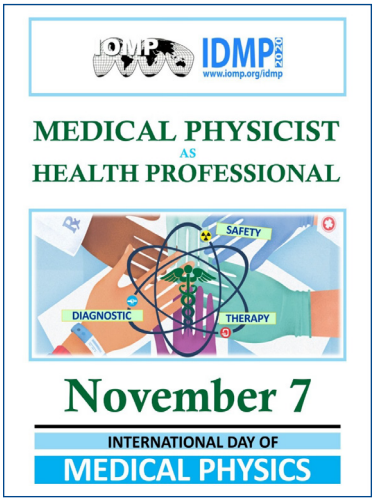
New Publications

- **New Online NCRP Publication Available : Report No. 186 - Approaches for Integrating Information from Radiation Biology and Epidemiology to Enhance Low-Dose Health Risk Assessment**
- **Strategies for effective physics plan and chart review in radiation therapy: Report of AAPM Task Group 275**
- **Principles and applications of multienergy CT: Report of AAPM Task Group 291**
- **MPPG 7.a: Supervision of Medical Physicist Assistants**

- If you find a page or section of the website that is not working as it should, please send an email to the Help Desk, which will put the request into the Information Services Team queue. Someone will then respond to let you know when it has been resolved.

RSNA 2020 — *Human Insight/Visionary Medicine*

Register now for the *virtual* RSNA 106th Scientific Assembly and Annual Meeting, to be "live" on November 29 – December 5, 2020. AAPM Members must register by November 1 to receive complimentary registration.



International Day of Medical Physics on November 7

IOMP is once again promoting activities to raise awareness about the role of medical physicists through the International Day of Medical Physics (IDMP). The 2020 IDMP is scheduled for November 7, the birthdate in 1867 of Marie Sklodowska-Curie. The theme of IDMP 2020 is "**Medical Physicist as a Health Professional**." This is an excellent opportunity to promote the role of medical physicists. Visit the IOMP website for more information and promotional resources.

InternationalDayOfMedicalPhysics

@IntDayofMedPhys

AAPM's HQ Team…At Your Service!

Who does what on the AAPM HQ Team? See a list with contact information and brief descriptions of responsibilities online. An Organization Chart is also provided.

The team has been working remotely since mid-March, and for a group of people who really enjoy working and being together, this has been difficult. In an effort to bring some "fun" to the distancing situation, AAPM team member **Justin Stewart** has been conducting daily team polls on varying topics. I wanted to share with you some of the things that I've learned about my colleagues. I do know how medical physicists love pie charts! I hope you enjoy it as much as I have. ■

EXECUTIVE DIRECTOR'S REPORT, Cont.

Of the titles listed below, my favorite pre-1960 animated Disney film is:

- Snow White and the Seven Dwarfs (1937)
- Pinocchio (1940)
- Fantasia (1940)
- Dumbo (1941)
- Bambi (1942)
- Cinderella (1950)
- Lady and the Tramp (1955)
- They all take me to a wonderful place with happy memories!
- These are OK, but I'm looking forward to the Disney 2.0 poll with newer titles!

IT'S TIME TO GET ARTY!!

Of the famous paintings listed below, my favorite is:

- "Mona Lisa" (da Vinci, 1517)
- "The Scream" (Munch, 1893)
- "Girl with a Pearl Earring" (Vermeer, 1665)
- "The Birth of Venus" (Botticelli, 1486)
- "The Starry Night" (Van Gogh, 1889)
- I think they're all pretty awesome - each one different but interesting in its own ways!
- Not sure why THESE paintings are so well-known and beloved; none are that special!

The team even helped me name my new puppy — ***Snickers!***

Our fearless leader's new baby needs a name! While ARK isn't committed to the name the team picks, she definitely wants our feedback! Please take a look at this adorable little guy, and vote who you think he looks like of the names listed below.

- Barney
- Bear
- Beau
- Bentley
- Henry
- Jasper
- Snickers
- Wilbur
- HMMMM...maybe something else....

2020 JULY 12–16 VIRTUAL EASTERN TIME (GMT-4)
JOINT AAPM | COMP MEETING

CONGRATULATIONS TO THE

2020 Award Winners

AAPM/RSNA Fellowship for the Training of a Doctoral Candidate in the Field of Medical Physics
Daniela Olivera Velarde — University of Chicago

ASTRO-AAPM Physics Resident/Post-Doctoral Fellow Seed Grant
Lydia Wilson — St. Jude Children's Research Hospital

2020 Virtual DREAM — Diversity Recruitment through Education and Mentoring Program
Gary Henderson Jr.
Cindy Marie McCabe
Tarik Rashada
Genesis Suarez
Hui Ju Wang

Research Seed Funding Grant
Bruno Barufaldi , William T. Hrinivich, Yi Lao

AAPM/RSNA Imaging Physics Residency Program Grant
Recipients TBD at a later date

2020 Virtual Summer Undergraduate Fellowships
Mena N. Bushra
William D. Engelhardt
Roberto Fedrigo
Helena M. Frisbie-Firsching
Jessica Paige Gillcrist
Kevin Y. Guo
Duncan Xavier Haddock
Mimi (Xinyi) Li
Luke David Lussier
Claudia R. Miller
Andrew Niecikowski
Joseph Galen Piccolo
Zion Shih
Hunter Jacob Spivey
Jacob Pierce Sunnerberg
Spencer Harrison Welland
Cindy P. Zhang

The AAPM Expanding Horizons Travel Grant
Clara Fallone, Jiahan Zhang

IROC Houston Service Recognition
David S. Followill, PhD — Director, IROC-Houston

Jack Fowler Junior Investigator Award
Jue Jiang, PhD

Jack Krohmer Junior Investigator Award
Kayla Blunt, PhD

The John R. Cameron — John R. Cunningham Young Investigators Competition
1st Place: *Irwin Tendler*
2nd Place: *Nathan Orlando*
3rd Place: *Lindsay Bodart*

***Journal of Applied Clinical Medical Physics* Paper Awards**
George Starkschall Award of Excellence for an Outstanding Radiation Oncology Physics Article
Laure Vieillevigne, Catherine Khamphan, Jordi Saez, and Victor Hernandez

Edwin C. McCullough Award of Excellence for and Oustanding Medical Imaging Physics Article
Elisabetta Sassaroli, Calum Crake, Andrea Scorza, Don-Soo Kim, and Mi-Ae Park

Peter R. Almond Award of Excellence for an Outstanding Radiation Measurements Article
Jessie Y. Huang, David Dunkerley, and Jennifer B. Smilowitz

Michael D. Mills Editor In Chief Award of Excellence for an Outstanding General Medical Physics Article
Jennifer Johnson, Eric Ford, James Yu, Courtney Buckey, Shannon Fogh, and Suzanne Evans

***Medical Physics Journal* Paper Awards**
Moses & Sylvia Greenfield Paper Award
Patricia. A. K. Oliver and R. M. Thomson

Farrington Daniels Paper Award
Ryan T. Flynn, Q. E. Adams, K. M. Hopfensperger, X. Wu, W. Xu, and Y. Kim

Honorary Membership
John Buatti, MD
Donald Frush, MD

Fellows
Hania Al-Hallaq, PhD
Parham Alaei, PhD
Frank Ascoli, MS
Laura Cervino, PhD
Karen Drukker, PhD
Jonas Fontenot, PhD
David Gladstone, ScD
Kristi Hendrickson, PhD
Loretta Johnson, PhD
David Jordan, PhD
Siyong Kim, PhD
Harold Li, PhD
Joseph Och, MS
Mark Pankuch, PhD
Jose Perez-Calatayud, PhD
Lei Ren, PhD
Yi Rong, PhD
Mihaela Rosu-Bubulac, PhD
David Schlesinger, PhD
Varun Sehgal, PhD
Chengyu Shi, PhD
William Song, PhD
Sotirios Stathakis, PhD
Rowan Thomson, PhD
Yoichi Watanabe, PhD
John Weiser, PhD
Habib Zaidi, PhD
Jie Zhang, PhD

John S. Laughlin Young Scientist Award
Xiaofeng Yang, PhD

Marvin M.D. Williams Proffesional Achievement Award
Priscilla Butler, MS
Christopher Serago, PhD

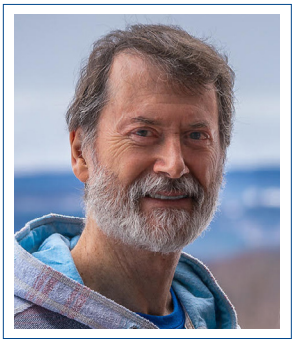
Edith H. Quimby Lifetime Achievement Award
Frederic Fahey, DSc
X. George Xu, PhD

William D. Coolidge Gold Medal
Randall Ten Haken, PhD

You may view the entire AAPM 2020 Awards & Honors Ceremony Program here.

AAPM AWARDS AND GENDER DIVERSITY: REVIEW AND RESPONSE

AWARDS AND HONORS COMMITTEE CHAIR REPORT Geoffrey S. Ibbott, PhD | ABR



In recent weeks, AAPM has been alerted to members' concerns about the relative numbers of female and male physicists receiving awards, such as the Coolidge Gold Medal and Fellowship. This heightened awareness appears to have been prompted by an article published in *Medical Physics* on "The state of gender diversity in medical physics"[1]. The Awards & Honors Committee (A&H) in particular has been identified by some members, who have questioned whether AAPM's rules and policies might have contributed to an imbalance in the awarding of these honors.

It is certainly true that AAPM has awarded the Coolidge Gold Medal to a woman only twice since 1972, when it was awarded to William D. Coolidge himself. According to the data available, this appears to be, at least in part, because only two women have ever been nominated for the award.

This raised three other questions among members who wanted to dig deeper into the disparity: First, why doesn't A&H nominate more females for awards? Second, what are the barriers to nominating women for the Association's major awards? And third, are the A&H procedures skewed in favor of men?

The answer to the first question is that it is not the role of A&H to nominate people for AAPM's awards; instead, we evaluate the nominations made by other members, and forward our recommendations to the AAPM Board of Directors for approval. In fact, as chair, I discourage A&H members from nominating candidates themselves. This is because nominators must then recuse themselves from the discussion of that candidate. The nominator is likely the staunchest supporter of the candidate, and recusal could adversely affect the committee's decision from the candidate's perspective. At the same time, having A&H members nominate people for awards creates the perception that A&H is a "club" that perpetuates its legacy by nominating and honoring its friends. Instead, A&H members may reach out to colleagues and encourage those colleagues to nominate deserving members for awards.

In regard to the second question; one barrier to nomination for a major award is that the nominee must be a Fellow of the Association. The chart and tables below are intended to help explain why this might be a barrier. The first indicates that while the number of women in AAPM has been increasing steadily, as of 2019, women still only constitute 23.2% of the global membership. Women are a slightly smaller percentage (23.0%) of the Full Member cohort, because women represent a slightly greater proportion of trainees. Currently 31% of residents are women, as are 36% of student members. As these trainees progress and become full members, we would

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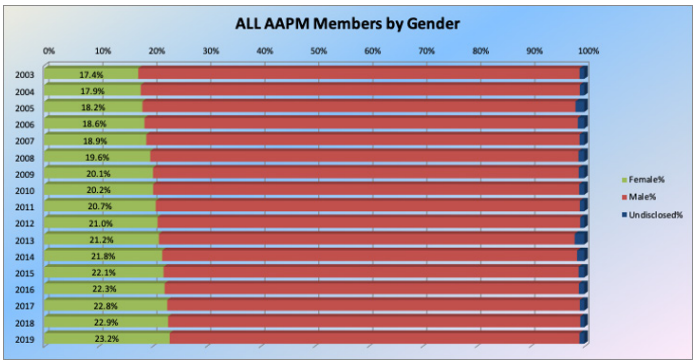
"We encourage AAPM as a whole to continue to pursue analyses of the composition of the Association and urge training program directors and all members to consider women and other under-represented minorities when recruiting scientists into medical physics. Our organization should try to maintain consistency with other STEM fields in this regard."

AWARDS AND HONORS COMMITTEE CHAIR REPORT, Cont.

expect to see the female component of Full Members increase. Not surprisingly, given this history, fewer than 10% of Emeritus members are female.



There is some disparity with regard to specialty: Women represent a somewhat smaller proportion of imaging physicists (18%) and nuclear medicine physicists (14%). And women make up a greater proportion of physicists with MS degrees (27%) than PhD degrees (18%). This last is consistent with the paper by Covington et al. who noted that women are rarely awarded the *Medical Physics* journal's Farrington Daniels Award[1], and with previous studies that note women are less often employed in academic positions[2, 3]. These reports also are consistent with observations that women are less likely than men to be nominated for AAPM's major awards, such as the Coolidge Gold Medal.

A couple of years ago, A&H decided to investigate the reasons behind the smaller numbers of female Fellows. We first wondered if fewer women than men met the basic qualification for Fellowship — having been a Full or Emeritus member for at least 10 years, with no more than one lapse in membership. We looked only at US members, thinking that international members were less likely to meet this requirement. As shown in the following table, of US female members, 40% have been Full or Emeritus members for 10+ years and therefore meet the basic criterion to be considered for Fellow, compared to 47% for males. But only 8% of potentially eligible females are Fellows, while 13% of males are Fellows.

The Association's Rules require that a candidate for Fellowship be nominated either by two Fellows, or by a Chapter, with endorsement by a Fellow. Some female members have indicated they are disadvantaged by this requirement, because the majority of Fellows are males, who might tend to nominate other males. While there are no data to support this, it is clearly perceived as an issue and one we are addressing. By the time you read this, we will have contacted every Chapter president and all Board members to alert them to this disparity and to encourage them to consider nominating female members for Fellowship. We will remind them (and we remind all members) to review the criteria for Fellowship which can be found on the AAPM website.

	US Membership	10 yr + Full or Emeritus Member, not Fellow	10 yr + F/E members as % of US membership, by gender	Fellows, by gender	Fellows as % of US 10 yr + F/E members, by gender
Female	1689	678	40%	58	8%
Male	5604	2656	47%	399	13%

Regarding A&H procedures, we are confident that our evaluations of nominees are not influenced by gender. Below are some data describing nominations for several awards in 2019 and 2020, combined. They indicate that fewer women are nominated — in fact, in roughly the same proportion as membership for Fellow, although in smaller proportions for the other awards. But a somewhat larger proportion of female nominees were approved for Fellowship. While the numbers are small, we do not believe the data support the suggestion that A&H procedures and deliberations inject bias against women into the process.

We don't have sufficient statistics to address these questions in regard to other under-represented minorities in AAPM but will continue to be vigilant to this issue. We also pledge to keep the makeup of the A&H Committee

AWARDS AND HONORS COMMITTEE CHAIR REPORT, Cont.

		Number Nominated in 2019, 2020, by gender	Number approved, by gender	Percent of nominees approved, by gender
Fellowship	Female	28	18	64%
	Male	76	40	53%
Quimby	Female	1	1	100%
	Male	10	3	30%
Williams	Female	1	1	100%
	Male	4	3	75%
Laughlin	Female	0	0	--
	Male	6	2	33%

balanced with regard to gender and will strive for a balance with regard to race and ethnicity, consistent with membership in the Association.

Finally, we encourage AAPM as a whole to continue to pursue analyses of the composition of the Association and urge training program directors and all members to consider women and other under-represented minorities when recruiting scientists into medical physics. Our organization should try to maintain consistency with other STEM fields in this regard. ■

References:

[1] Covington, E. L., Moran, J. M. & Paradis, K. C. The state of gender diversity in medical physics. Med Phys ***47****, 2038–2043 (2020).*

[2] Whelan, B. et al. *Development and testing of a database of NIH research funding of AAPM members: A report from the AAPM Working Group for the Development of a Research Database (WGDRD).* Med Phys ***44****, 1590–1601 (2017).*

[3] Platoni, K. et al. *Participation of women medical physicists in European scientific events: The European experience.* Phys Medica Pm Int J Devoted Appl Phys Medicine Biology Official J Italian Assoc Biomed Phys Aifb ***46****, 104–108 (2018).*

Coming Up: Fully Virtual IAEA Radiation Safety Conference

Radiation safety experts worldwide are invited to take part in sharing practical experience of implementing the IAEA safety standards to protect workers, patients, the public and the environment from natural and artificial radiation sources, at a fully virtual IAEA conference from 9 to 20 November. The virtual conference has been extended from a one week period to two weeks.

More than 600 participants have been designated through their national authority to participate, many of which will be delivering oral presentations and displaying posters based on their research online at the event.

Although the deadline to apply to present has passed, anyone interested in joining the discussions and listening to the presentations can fill in the participation form on the conference webpage without the need to have national designation. For those who would like to just listen to the conference, view-only livestream access will be available on the conference website.

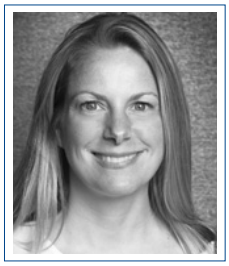
A special programme for students and professionals aged 35 years and younger is being organized as part of the conference. The IAEA is organizing professional development events for young people, including virtual networking opportunities and a speaker series in which experts from the various fields in radiation safety will offer career insight. If you wish to participate, please complete this form.

More information on the recently announced virtual format can be found here. For more information about the International Conference on Radiation Safety, contact the Conference Secretariat or follow #RaSa2020 on social media.

THE TIME IS NOW: AAPM'S FIRST EQUITY, DIVERSITY, AND INCLUSION CLIMATE SURVEY

EDUCATION COUNCIL REPORT
Julianne Pollard-Larkin, PhD | MD Anderson Cancer Center
Kristi Hendrickson, PhD | University of Washington

J. Pollard-Larkin



K. Hendrickson

AAPM is Embarking on a Climate Survey of its Membership

AAPM will launch a climate survey of its membership by the end of 2020 to measure the experiences of medical physicists in their workplaces and within the AAPM organization. Coupled with this climate survey is a more extensive demographic data collection to more accurately characterize the AAPM membership.

Why now?

Interest in and acknowledgment of the need for this information has existed among members of AAPM and has been discussed within several committees of AAPM. Several factors have changed in order to make this request a current priority, namely, the on-camera killing of George Floyd by a police officer, the worldwide call to action for the support of #BlackLivesMatter following the start of the #MeToo movement, and the unsettling changes that we are experiencing during this global pandemic including the shutdown of many normal activities. The time is now to assess our field and to determine what levels of diversity and inclusion are already present within Medical Physics and to identify opportunities for improvement.

Why is it important?

Racism, sexism, ableism, ageism, and many other sources of bias are toxic. They cause inequalities in every aspect of life, from health outcomes to educational achievement, and from how we experience our working environment to who leads AAPM. AAPM seeks to be the premier Medical Physics organization, but we can only achieve this by fostering an inclusive and equitable environment within the organization and within the field for all current and potential medical physicists so that we can fully engage and collaborate to advance cancer treatment technologies and innovations.

Much work must be done to achieve this goal. By every estimation, physics is not a diverse or inclusive field (American Institute of Physics [AIP] statistics), and medical physics is no better. Current demographic data shows that 80% of AAPM members identify as male, 66% identify as White, 14% Chinese, 7% Asian Indian, and 3% African American/Black; however, these data are incomplete. For example, fewer than 40% of all AAPM members complete the

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HOW CAN YOU PARTICIPATE AND CONTRIBUTE?

Please follow the link and complete the climate survey when you receive your emailed invitation from AAPM. Your voice counts, and we need to hear from everyone. Look to your organization to initiate changes as a result of the survey. Be a driver for positive change in your workplace, and support an inclusive environment on any AAPM committee or volunteer activity in which you engage.

demographic data entries on race/ethnicity in our profiles. Understanding the diversity of the AAPM membership and the experiences of the diverse groups is the aim of this equity, diversity, and inclusion climate survey study.

What information are we collecting?

The climate survey will ask each participating AAPM member to anonymously rate their experiences of inclusion, discrimination, harassment, and access to resources that facilitate advancement in their place of work (including the clinic, office, classroom, and research lab) and within AAPM at the local chapter and national levels. We want to assess where areas of success lie in our field for diversity and inclusion and where there is room to grow. The main areas of focus will include sexual harassment and discrimination based on characteristics including but not limited to gender, age, country of origin, race, sexual orientation, political views, and level of education (MS vs PhD). The format of the climate survey will follow examples used in other science and medical fields.

How are we collecting the data?

As a member of AAPM, you will receive an invitation and link to voluntarily participate in the anonymous and confidential online survey. AAPM is partnering with AIP, a federation of physical science societies, including AAPM. The AIP has conducted diversity studies for other member societies through its Statistical Research Center. They also conducts the AAPM Annual Professional Survey and will directly collect the data and perform the analysis as requested by AAPM.

How will the information be used?

The survey results are anticipated in Spring 2021 and will be published as well as used to inform the AAPM leadership and organization regarding the experiences of members in medical physics workplaces and within AAPM. Action items and recommendations for AAPM to improve the equity, diversity, and inclusion climate within the field of medical physics will follow. It is expected that the survey will be repeated every two years to measure improvement following the strategic plans and actions of AAPM. It is our hope that when we look back on 2020 in five years that we will see real changes and improvements that leave the medical physics workforce and AAPM stronger, better, more innovative, and more inclusive. ■

Calling all academics, industry and regulatory physicists, and anyone interested in working outside of the clinic!

The Working Group for Non-Clinical Professionals would like to invite all AAPM members to attend a

VIRTUAL NETWORKING HAPPY HOUR

to meet your fellow non-clinical professionals. Join us Thursday, September 10, 2020 at 7:00 pm ET on Zoom. Have any questions or want to learn more about what we're doing, please e-mail us.

For Meeting ID and Passcode, please e-mail Alison Roth

AAPM ADVOCATES AGAINST ADMINISTRATION IMMIGRATION POLICY ADVERSELY IMPACTING SCIENTIFIC COMMUNITY

LEGISLATIVE AND REGULATORY AFFAIRS REPORT Richard J. Martin, JD | AAPM

AAPM is actively advocating against Trump Administration immigration policies that negatively impact American scientific advancement and advantage by impeding study and work by foreign nationals in the U.S.

On July 6th, the U.S. Immigration and Customs Enforcement (ICE) announced temporary modifications to the Student Exchange Visitor Program (SEVP) that would force international students to leave the country if they were enrolled in a fully remote academic program in the fall semester. We believed this action would result in many students permanently leaving American institutions of higher education. Accordingly, AAPM expressed its solidarity with the many colleges, universities, states, societies, and others advocating against the Administration's draft policy by joining with the American Physical Society in signing on to an amicus brief in the lawsuit initiated by Harvard in the U.S. District Court in Massachusetts. In the face of the extraordinary opposition to the draft policy, the Administration withdrew the policy.

Later in the month on July 29, the House Judiciary Committee Subcommittee on Immigration and Citizenship held a hearing on Oversight of the U.S. Citizenship and Immigration Services (USCIS); view hearing record here. COVID-19 has forced USCIS to delay or limit some of its vital operations like naturalization ceremonies, interviews, and more. The fee-funded agency claims that, although they faced financial burdens before the pandemic, they now face an insurmountable budget deficit due to these operational delays. In response to their deficit, USCIS is seeking financial assistance from the federal government to stave off furloughs of between 70-75% of their workforce (about 13,000 employees).

Hearing witnesses included Joseph Edlow, Deputy Director of Policy for USCIS; Jessica Vaughan, Director of Policy Studies for the Center for Immigration Studies; and Doug Rand, Senior Fellow for the Federation of American Scientists. Witnesses called on Congress to condition funding provided to USCIS to ensure heightened transparency, reduce customer burden, require cost efficient measures for adjudicating applications and petitions, impose stringent reporting requirements, and verify if funds are, in fact, necessary. In addition, these witnesses agreed that furloughs within USCIS could have dire consequences for individuals and families going through the immigration process, especially if furloughs result in the interruption of the immigration process.

LEGISLATIVE AND REGULATORY AFFAIRS REPORT, Cont.

Testimony from Mr. Rand, a member of the scientific community, focused on how immigration policies and interruptions to immigration processes can be harmful to the advancement of science in the U.S. Mr. Rand indicated that multiple recent immigration policies have excessively restricted immigration and thus restricted the presence of "international talent" in the U.S.

Continuing advocacy on behalf of AAPM members who are being adversely impacted by these policies, AAPM submitted a statement to the Subcommittee that has been included in the hearing record. See AAPM statement here.

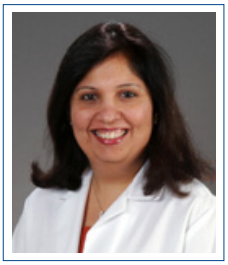
AAPM's statement:

- Cited a number of Administration actions including recent Executive Orders and Presidential Proclamations, which collectively restrict the ability of members of the scientific community to enter the U.S. to attend professional meetings, collaborate on research, advance scientific innovation or study:
- Cautioned that these restrictions gnaw away at the U.S.'s competitive advantage in scientific advancements and the country's ability to remain a leader in the global scientific enterprise; and
- Urged the Subcommittee to take an in-depth look into the concerns of the scientific community.

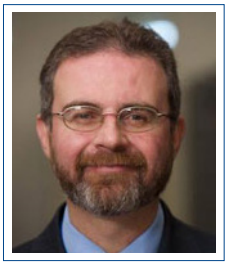
We will keep you updated on this issue as developments arise. If you have questions or require additional information, please contact **Richard J. Martin, JD, AAPM Government Relations Program Manager**, at richard@aapm.org. ■

ON-LINE LONGITUDINAL ASSESSMENT AND THE GRANULARITY OF THE MEDICAL PHYSICIST'S PROFILE

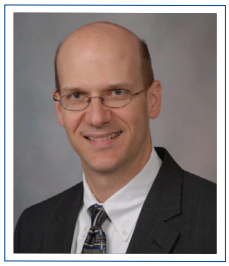
ABR NEWS Kalpana M. Kanal | University of Washington
Matthew B. Podgorsak | Roswell Park Cancer Institute
Robert A. Pooley, PhD, ABR Trustee | Mayo Clinic



K. Kanal, ABR Trustee



M. Podgorsak, ABR Trustee



R. Pooley, ABR Trustee

The ABR has heard from medical physicists who wonder if they can be more selective about the modalities they practice in their ABR OLA practice profiles to customize the OLA questions they receive to topics that address only their current work activities. The following is a statement prepared by the ABR recently:

Achieving a balance in validity of the longitudinal assessment when dealing with small populations is a challenge in several areas of radiology. For example, modifications to specific practice areas of diagnostic radiology with sufficiently large numbers of OLA participants, although imperfect, have been implemented with reasonable success by limiting the degree to which individuals may define their practice profile. Similar but more substantial issues impacting medical physicists have been discussed on numerous occasions over the past two years among the ABR's Board of Governors; the board seeks an assessment that attempts to parallel individual practice patterns, but is accepting of the reality that the desired level of granularity from the point of view of the diplomate would not allow for a valid scoring decision. The current program represents a compromise that is adequate (although not optimal) from a statistical standpoint.

For the medical physics OLA program, the ABR has decided NOT to offer more selective practice profiles beyond the current limits, which align with a diplomate's certificate (i.e., diagnostic, nuclear, or therapeutic medical physics.) There are multiple reasons for this, but two important ones are:

1. Narrowing the scope of OLA items seen by a diplomate would reduce the validity of the assessment. The ABR relies on OLA participants to rate and evaluate each item, which generates a valid test. The more granular the profile, the smaller the number of physicists answering the OLA questions, thereby reducing the validity of the assessment.

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General questions about OLA can be submitted to the ABR.

2. Unlike radiologists and radiation oncologists, medical physicists rarely completely exclude specific areas from their practice profiles. An example that is often raised for therapy physicists is that of proton therapy. While a medical physicist might work in a practice setting without a proton facility, that physicist should be able to address straightforward (walking-around knowledge) questions from a patient or physician about the benefits or disadvantages of proton versus photon treatment. In addition, physicists are somewhat more mobile than physicians, and an employment opportunity could arise for a physicist at a center that also offers proton therapy. Once again, this physicist would likely be expected to have some basic knowledge about proton therapy. The same issue exists in diagnostic medical physics (MRI, Ultrasound, DEXA) and nuclear medical physics (PET/MRI, newer PET and SPECT agents)

The ABR medical physics Trustees, Governor, and Associate Executive Director welcome comments and questions about OLA. All comments are reviewed to determine if the item was ambiguous or failed to meet requirements for "walking around knowledge". While we cannot provide responses in real time to diplomates, the feedback is being provided to the item writing committees to determine if questions need editing or should be withdrawn. We thank all participants for these comments. ■

ACR ACCREDITATION & MORE: UPDATES FOR MEDICAL PHYSICISTS

ACR UPDATES Dustin A. Gress, MS, Senior Advisor for Medical Physics | ACR Quality and Safety

Dose Index Registry

The following correspondence was recently sent to all DIR participants:

Dear DIR Participant,

In an effort to ensure that dose indices are accurately reported for multi-series exams, NRDR has started running quarterly updates to combine individual exams into one exam where all data is exactly the same. Specifically, if the study date, study time, station name, patient age, patient sex and dose indices (CTDIvol Total, DLP Total) match then the exams will be combined into one. The combined exam name will be prefixed with "cmbX:" with the individual exam names combined and separated by " | ". All other information from the exam will remain the same (dose information will not be summed/combined).

Example: A "Head CT with contrast" and "Neck CT with contrast" which matches all specified fields will become "cmbX: Head CT with contrast | Neck CT with contrast".

Sites should map these combined exams to an appropriate RPID for a combination exam so they will be reported as such.

Exams from 2019 have been combined and are available now to be mapped.

This can be done via these steps:

1. Open the Not Tagged exams in the DIR Mapping tool and searching for "cmbX"
   Note: If your search does not return any exams prefaced with "cmbX:" then there are no new complete matches of data – the criteria for combining exams was not met. You may skip the remaining steps, there is no further action needed.
2. Select the exam to map
3. Search and select the appropriate combination RPID
4. Assign the RPID

If you have any questions on this process, or require further assistance, please contact the support team.

MR Accreditation Program (MRAP) staffing concerns

The MRAP personnel requirements were updated in July in order to clarify staffing expectations, as follows: The supervising physician is responsible for the development, implementation and enforcement of policies and procedures regarding compliance with the ACR Manual on MR Safety. Staffing is not directly evaluated during the ACR MR Accreditation review. However, if there

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In each issue of this Newsletter, I'll present frequently asked questions (FAQs) or other information of particular importance for medical physicists. You may also check out the ACR's accreditation web site portal for more FAQs, accreditation application information, and QC forms.

Just a few days after I submitted my column for the July-August AAPM Newsletter, our Accreditation staff completed an important project that was long in the making. A concern I have heard from several colleagues is that they have limited ability to assist clients with uploading images because ACRedit.acr.org only allows a single login per facility. You can now view step-by-step walkthrough videos for uploading images via TRIAD Windows Client or ACRedit Web Client. I hope these videos provide value; thanks especially to Sherry Schmidt and ACR's IT team for making them happen.

is a question of inadequate staffing or safe practices of an ACR-accredited facility, the ACR reserves the right to request a response from the facility to ensure appropriate safety procedures are being followed and performed for that facility.

DICOE program rolls out virtual site surveys

A significant part of the ACR Diagnostic Imaging Center of Excellence (DICOE) designation process is conducting an onsite survey. As recent months passed, the DICOE team reached out to facilities nearing renewal in order to gauge comfort with conducting their DICOE surveys virtually. A virtual survey requires a site to work with their IT and network security group(s) to ensure adequate bandwidth and get approval for communication devices to be used during the survey.

The virtual DICOE survey mimics the onsite survey: We begin with introductions using video conference, followed by a department tour which includes combination of sharing screens, video clips, and/or PowerPoint presentations. After the tour, we meet through a video conference session, and conclude with an exit interview to summarize findings.

After few months of planning, we conducted our first virtual DICOE survey, and it went well, thanks to a big team effort from ACR staff and volunteers, and the site's team. Of course, as we conduct more surveys we will continue to learn and make the process better.

ROPA program also rolls out virtual site visits

For several months now the ACR Radiation Oncology Practice Accreditation (ROPA) Program has been conducting its site visits virtually. Unlike the diagnostic counterpart accreditation programs, ROPA always includes a site visit for initial accreditation and renewal. These virtual site visits are as robust and comprehensive as our existing onsite process, without any compromise in ROPA's high standards. The new process includes teleconferenced interviews of personnel, a virtual inspection of each facility, and detailed reviews of all quality metrics and other key elements of the practice.

The ACR accreditation team is also evaluating a process to conduct virtual Validation Site Surveys for the Diagnostic Modality Accreditation Programs (DMAP).

FDA Issues Draft Guidance on MQSA Appeals Process

The Food and Drug Administration (FDA) has published draft guidance detailing the processes for mammography facilities to request additional review of an adverse appeal decision under the Mammography Quality Standards Act (MQSA). As proposed, the draft guidance would apply to adverse accreditation decisions, suspension/revocation of certificates and patient/physician notification orders. When finalized, the guidance will replace section 4.5 of the Center for Devices and Radiological Health Appeals Processes guidance document dated July 2, 2019.

The draft guidance is under review by interested ACR Commissions, Committees, and staff. The deadline for submitting comments on the draft guidance is September 21, 2020. ■

CMS' IMPLEMENTATION OF OFFICE VISIT CODE SET & CONTINUED CHANGES TO MEDICAL EQUIPMENT PRICES YIELDS PAYMENT DECREASES TO RADIATION ONCOLOGY

HEALTH POLICY AND ECONOMIC ISSUES REPORT

Wendy Smith Fuss, AAPM Consultant | MPH-Health Policy Solutions

The Centers for Medicare and Medicaid Services (CMS) recently released the 2021 Medicare Physician Fee Schedule (MPFS) proposed rule. This rule provides for a 60-day comment period ending on October 5, 2020. The finalized changes will appear in the final rule and are effective January 1, 2021. The MPFS specifies payment rates to physicians and other providers, including freestanding cancer centers. It does not apply to hospital-based facilities. Payments to hospital outpatient departments are described in a separate article below.

For 2021, CMS is moving forward with its proposal finalized in the 2020 MPFS final rule to adopt the new coding structure for the office/outpatient evaluation and management (E/M) codes. There will be separate payments for each of the five levels of office/outpatient E/M, along with a new add-on code for prolonged visits and code for complex patients.

In order to maintain budget neutrality with the E/M valuation increases, the proposed 2021 conversion factor is $32.2605, a 10.61 percent decrease from the current conversion factor. These changes will result in significant payment reductions to all radiation oncology services in 2021 unless Congress acts to suspend the budget neutrality requirement.

As part of CMS' authority under the Protecting Access to Medicare Act of 2014, CMS initiated a market research contract with StrategyGen to conduct an in-depth and robust market research study to update the MPFS direct practice expense (PE) inputs for medical supply and equipment pricing beginning in 2019. CMS phased in the use of the new pricing over a 4-year period from 2019–2022. An analysis indicates that for radiation oncology, the fluctuations in PE relative value units (RVUs) are significant, especially for SBRT and HDR brachytherapy services. The table below details radiation oncology equipment items that will experience the greatest impacts resulting from the new pricing.

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"AAPM will work with stakeholders to actively oppose significant payment reductions slated for 2021 and will submit comments to CMS before the October 5 deadline."

Equipment Item	2018 Price	2021 Price (Year-3 of 4 Transition)	2022 Price	Percent Change 2018-2022
HDR Afterload System, Nucletron - Oldelft	$375,000	$193,181	$132,575	-64.6%
IMRT Treatment Planning System (Corvus w-Peregrine 3D Monte Carlo)	$350,545	$235,571	$197,247	-43.7%
SRS System, SBRT, Six Systems	$4,000,000	$3,230,291	$2,973,722	-25.7%
Brachytherapy Treatment Vault	$175,000	$188,586	$193,114	10.4%

The AMA approved a new CPT code 7615X *Medical physics dose evaluation for radiation exposure that exceeds institutional review threshold, including report* effective January 1, 2021. This diagnostic medical physics service is a practice expense-only code with a high amount of clinical staff time. This is a stand-alone service, meaning that the medical physicist works independently from a physician and there are no elements of the practice expense that are informed by time from physician work. CMS has assigned 24.89 RVUs with a proposed 2021 payment of $802.96.

For radiation oncology, the 2021 proposed rule impact is minus 6.0 percent. Proposed payment changes for 2021 are attributed to redistributive effects of finalized changes to the office/outpatient evaluation and management visits taking effect in 2021 and revaluation of procedures due to updates to medical equipment pricing.

AAPM will work with stakeholders to actively oppose significant payment reductions slated for 2021 and will submit comments to CMS before the October 5 deadline.

A complete summary of the proposed rule and impact tables is on the AAPM website.

2021 Proposed Rule Has Payment Increases for Radiation Oncology Procedures in the Hospital Outpatient Setting

The Centers for Medicare and Medicaid Services (CMS) recently released the 2021 Medicare Hospital Outpatient Prospective Payment System (HOPPS) proposed rule, which provides facility payments to hospital outpatient departments. AAPM will submit comments to CMS by the October 5th deadline. The finalized changes will appear in the final rule and are effective January 1, 2021. This rule does not impact payments to physicians or freestanding cancer centers.

CMS estimates an overall 2.5 percent increase in hospital outpatient facility payments in 2021. The majority of radiation oncology related Ambulatory Payment Classifications (APCs) have proposed payment increases from 1.8 to 4.9 percent but Level 4, 6, and 7 Radiation Therapy APCs have minor decreases from 0.1 to 0.8 percent slated for 2021 (see table below). Payment for medical physics consultation codes 77336 and 77370 have a 2.6 percent payment increase.

CPT 7615x is a new diagnostic medical physics service that will be implemented on January 1, 2021. CMS has proposed assignment of this diagnostic code to APC 5611 *Level 1 Therapeutic Radiation Treatment Preparation* for 2021.

- 7615X Medical physics dose evaluation for radiation exposure that exceeds institutional review threshold, including report (medical physicist/dosimetrist)

AAPM has concerns regarding CMS's assignment of this code to a therapeutic radiation oncology APC. Given the proposed payment of over $800 under the Medicare Physician Fee Schedule, we think that CMS should reassign the new code to a New Technology APC (temporarily for 2-3 years while CMS collects claims data) or a more relevant clinical APC with appropriate payment.

CMS maintains the Comprehensive APC (C-APC) policy for stereotactic radiosurgery (SRS), intraoperative radiation therapy and several brachytherapy needle/catheter insertion procedures in 2021. CMS defines a C–APC as a classification for the provision of a primary service and all adjunctive services and supplies provided to support

HEALTH POLICY AND ECONOMIC ISSUES REPORT, Cont.

Summary of Proposed 2021 Radiation Oncology HOPPS Payments

APC	Description	CPT Codes	2020 Payment	2021 Proposed Payment	Payment Change 2020-2021	Percentage Change 2020-2021
5611	Level 1 Therapeutic Radiation Treatment Preparation	**7615X**, 77280, 77299, 77300, 77331, 77332, 77333, 77336, 77370, 77399	$126.59	$129.86	$3.27	2.6%
5612	Level 2 Therapeutic Radiation Treatment Preparation	77285, 77290, 77306, 77307, 77316, 77317, 77318, 77321, 77334, 77338	$335.16	$346.33	$11.17	3.3%
5613	Level 3 Therapeutic Radiation Treatment Preparation	32553, 49411, 55876, 77295, 77301, C9728	$1,245.34	$1,290.83	$45.49	3.7%
5621	Level 1 Radiation Therapy	77401, 77402, 77789, 77799	$122.71	$124.88	$2.17	1.8%
5622	Level 2 Radiation Therapy	77407,77412, 77600, 77750, 77767, 77768, 0394T	$236.36	$247.58	$11.22	4.7%
5623	Level 3 Radiation Therapy	77385, 77386, 77423, 77470, 77520, 77610, 77615, 77620, 77761, 77762,	$538.83	$554.43	$15.60	2.9%
5624	Level 4 Radiation Therapy	77605, 77763, 77770, 77771, 77772, 77778, 0395T	$740.52	$734.80	-$5.72	-0.8%
5625	Level 5 Radiation Therapy	77522, 77523, 77525	$1,246.76	$1,308.19	$61.43	4.9%
5626	Level 6 Radiation Therapy	77373	$1,768.45	$1,760.32	-$8.13	-0.5%
5627*	Level 7 Radiation Therapy	77371, 77372, 77424, 77425	$7,942.41	$7,938.28	-$4.13	-0.1%

BOLD-A new CPT code effective 1/1/2021
*Comprehensive APC

the delivery of the primary service. Under this policy, CMS calculates a single payment for the entire hospital stay, defined by a single claim, regardless of the date of service span.

AAPM remains concerned regarding the accuracy of claims data for radiation oncology related C-APCs, as there is a great deal of discrepancy around how hospitals submit these claims. AAPM is also uncertain as to whether the rates associated with C-APCs adequately or accurately reflect all of the procedures and costs associated with those APCs.

Beginning in 2020 and subsequent years, CMS changed the minimum required level of supervision from direct supervision to general supervision for all hospital outpatient therapeutic services provided by all hospitals and critical access hospitals (CAHs), including radiation oncology and chemotherapy. General supervision means that the procedure is furnished under the physician's overall direction and control, but that the physician's presence is not required during the performance of the procedure. This policy ensures a standard minimum level of supervision for each hospital outpatient service furnished incident to a physician's service in accordance with the statute.

A complete summary of the proposed rule and impact tables is on the AAPM website. ■

#AAPMCOMP2020

ANNUAL MEETING SUBCOMMITTEE REPORT Robin Stern, PhD | Chair AMSC

Thanks to all of you who attended our first Virtual Joint AAPM | COMP Meeting. You made it a success beyond all expectations. I hope you had a chance to look at the map on the home page to see just how international this meeting was, with attendees on every continent (except Antarctica, and we'll work on that for next year). Attendance during the sessions was high, with a lot of you taking advantage of Chat to ask questions and share ideas. For those of you who weren't able to attend a session during its scheduled time, On-Demand gave access to not just the presentations but also the live Q&A and the Chat. Many of you also participated in one or more of the Special Interest Meetings after the regular sessions.

For all its success, the meeting wasn't without its technical glitches. We're painfully aware of those, and HQ worked hard with our platform and AV providers to make timely fixes and provide workarounds. Some of the issues were on the user end, and we realize that we need to give better instructions to the attendees regarding specs and application requirements. Rest assured, we're working our way up that learning curve.

In the spirit of Continuous Quality Improvement, we very much want your feedback. What did you love about the meeting? What could or should be improved? Hopefully, you already expressed those opinions when you filled out the meeting survey. But if you didn't, or if you've thought of something else you want to add, please drop me an email and let me know.

We don't know where the US and the world will be next summer in combating COVID, or whether we will be able to meet in-person in Columbus or not. The Annual Meeting Subcommittee and its Working Groups have already started planning for both contingencies. Either way, we intend to bring you the best meeting possible, and we hope you will attend. ■

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SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

WOMENS PROFESSIONAL SUBCOMMITTEE MEETING

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The Women's Professional Subcommittee (WPSC) held their annual open meeting on Tuesday, July 7, 2020, before the start of the virtual AAPM annual meeting. For the first time, the Annual Subcommittee meeting was also virtual. The seventeen attendees included most of the committee members and several guest members of AAPM, who are always welcome to join the meeting. **Kristi Hendrickson**, committee Chair, led the discussion, which started with a round of introductions and an explanation of the committee's charge and ongoing efforts. The first topic was plans for the annual meeting. The WPSC luncheon was converted to a Special Interest evening panel discussion, which is summarized in another article in this issue. While the panel discussion had a capacity of 500 attendees, the Zoom breakout session after was unfortunately limited to 100 attendees. The WPSC also assisted with several other Special Interest events, including the Whiz Kidz video experiments organized by **Julianne Pollard-Larkin** and the Children's Storytime organized by **Courtney Buckey**. **Jennifer Pursley** gave an update on the WPSC newsletter, which is usually published twice per year as a Special Interest Group feature in the AAPM newsletter. This year due to COVID-19 coverage taking over the spring AAPM newsletters, there will only be one WPSC newsletter, coming out in Sept/Oct. Article suggestions and guest writers for the newsletter are always welcome! Next, the Chair presented an update on the AAPM climate survey that is being worked on by several members of the WPSC and members of the Diversity & Inclusion subcommittee. At the time of writing this, the survey was expected to be released in early August with a response period of two weeks. The committee Chair also solicited budget proposals for 2021 and discussed a draft proposal to form a WPSC working group on women's honors and awards. Finally, **Ashley Cetnar** discussed the proposal for a professional meeting focused on women's leadership to be held prior to next year's annual AAPM meeting in Columbus, OH. The title would be "Accelerating Mid-Career Physicists in Leadership for 2021," and the proposal now is to hold a hybrid in-person and virtual event to expand the number of participants. This year's meeting was only an hour long instead of the usual two hours, so fewer topics than usual were able to be discussed. But there's a lot going on, and AAPM members interested in helping with any of these topics are encouraged to reach out to the committee. Please make plans to join us for the meeting next year, virtually or in person! ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

BOOK REVIEW: *The Checklist Manifesto: How to Get Things Right* by Atul Gawande (2009)

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"The philosophy is that you push the power of decision-making out to the periphery and away from the center. You give people the room to adapt, based on their experience and expertise."

Atul Gawande's thought-provoking work is not what you might expect from a book on the topic of checklists. Gawande begins with the intricacies of his experience as a surgeon, and the application of thoughtfully created checklists in the field of construction and aviation. He then emphasizes how technological advancement in our world has led to the increasing complexity of tasks in our daily lives. Post-graduate training for select professions, such as those in the medical field, requires years if not a full decade to finally reach the level of expert.

The Checklist Manifesto takes us through the journey of checklist implementation and its implications in the surgical context through the author's perspective and argues how checklists are necessary for success and consistent quality of care. Gawande highlights the difference between errors due to ignorance and lack of expertise to ineptitude, or not properly applying information we know. The checklist is not about discounting expertise, but confirming essential steps are completed so experts don't have to focus on these seemingly mundane, but critical, steps of a process. There is also a sub-theme of how a strictly hierarchical work culture, common in hospitals and operating rooms, can prevent individuals from reporting errors to their superiors. In intensive care units, patient stay was reduced by half when health care professionals created checklists for their daily tasks, which resulted in a higher baseline performance.

The author's work creates vivid imagery of complex work environment pressures and argues that well-crafted, simple checklists can promote teamwork and prevent gross errors. In our field of medical physics, there has been some implementation of checklists as well. Taking a deeper dive into the thought process of creating an accurate list of essential checks could possibly broaden our perspectives on simple methods of standardizing baseline care to our patients. ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

BOOK REVIEW: *The Coach's Guide for Women Professors Who Want to have a Successful Career and a Well-Balanced Life* by Rena Seltzer (2015)

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"*The Coach's Guide for Women Professors* is a great resource for more than just female faculty; it's a well-sourced advice book for all professionals."

The Coach's Guide for Women Professors is actually a well-sourced advice book for all professionals. Though the title designates a target audience, there is advice here for all genders, those who are not professors, and specific advice for people of color. Seltzer is a life coach for women in academia, so many specific examples and advice are related to helping her clients. However, much of the information in this book also comes from peer-reviewed literature, as she cites research from groups who study the academic profession.

The book's topics cover the entire professional career (from landing the first job to life after tenure) and a range of subjects (from work-life balance and social support, to negotiation, teaching, and productive writing). The book is structured with each chapter on a different topic, and the subtopics to be covered are clearly laid out in the opening of each chapter. Seltzer acknowledges rightly that depending on the reader's situation and point in her career, some topics are more relevant than others, and encourages readers to jump around in the book and only read the chapters as they are relevant.

I really appreciated Seltzer's approach to these topics with a mix of advice related to specific scenarios of her clients and research literature. Giving advice based on specific client scenarios makes it seem more genuine; the reader understands that person's situation and sees how the advice played out. This makes me as the reader feel more understood by the author and confident that the advice could work for me too.

Though personally I am early in my career, I found this to be a helpful book and definitely a resource to keep on hand as my career progresses. I would recommend this book for medical physicists, even if not a professor or a woman — it offers great career advice to all. ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

INSPIRING THE NEXT GENERATION OF WOMEN IN PHYSICS

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"Some ideas that all panelists agreed upon were that students should seek opportunities outside of the classroom and to not be afraid of failure or setbacks."

The annual Conferences for Undergraduate Women in Physics (CUWiP) was hosted by the American Physical Society (APS) on January 17–19, 2020 at thirteen university campuses across the US. This event gives women in undergraduate physics programs the opportunity to present their research within a professional conference setting, explore different career opportunities, and hear from professionals in those fields. In addition, conference sessions covered several other important topics such as physics research, mentorship, and graduate school.

I was invited to be a member of the career panel session at the University of Minnesota CUWiP. The other panelists were Dr. Lindsey Hillesheim (Business Development Manager – AI Strategy and Solutions at Cray Inc.), Dr. Mary Hibbs-Brenner (Co-founder/ CEO of Vixar), Sarah Komperud (Planetarium Programs Coordinator at the Bell Museum), and Jenny Goetz (physics teacher at Harding High School). During the session each panelist described their career path, shared the challenges they faced along the way, and acknowledged the people who made the most impact on their careers. We also discussed what we would tell our younger selves given what we know now. Some ideas that all panelists agreed upon were that students should seek opportunities outside of the classroom and to not be afraid of failure or setbacks. The session ended with a Q&A and there were a number of students interested in hearing more about medical physics. I was excited to share with them a brief overview of the various opportunities in medical physics and what my job as a diagnostic medical physicist at Gundersen Health System entails.

Dr. Hillesheim said it best when she ended the session by stating "It is often difficult to repay those who have helped us in our careers and so we do it by paying it forward. By doing so, we improve our collective career karma." I feel honored that I was invited to participate in this event, to share my experiences and provide these young women with insight into having a career in the wonderful world of physics. There are plenty of opportunities to pay it forward, so if you're asked to participate in a career panel, or if a student is looking for a mentor, you should say YES! The future is bright for these young women interested in pursuing a career in physics.

Editor's note: Due to the ongoing COVID-19 pandemic, the next CUWiP will be a virtual event held from January 15–17, 2021. The APS topical group on medical physics (GMED) has reached out to the CUWiP organizers to have medical physics represented in the virtual event as well! ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

FEATURED PHYSICIST: DR. OANA CRACIUNESCU

Andreea Dohatcu, PhD | UTMB–Radioloy

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I first met Dr. Oana Craciunescu during the 2007 AAPM Summer School at St. John's University in Collegeville, MN. Since then she has been a great inspiration for me both as a MP professional as well as a woman in STEM. She is a full Professor, ABR-certified in Radiation Oncology Physics and the new Director of RT Track in Duke University's Medical Physics Graduate Program. At WPSC's invitation we had a virtual cup of coffee and an interesting walk down her memory lane. I invite you to share it with us, and I thank all for this unique opportunity!

You switched from an engineering field to medical physics early in your career. What interested you about this field? Do you have any regrets after 20+ years?

The transition was not that straightforward, nor was it deliberately planned. As a PhD student in Mechanical Engineering at Duke I switched my research focus after the first year to applying computational heat transfer in medical applications, specifically in hyperthermia (heating of cancerous tumors to sensitize them to radiation and chemotherapy). This was my introduction to the medical world in general, and to Radiation Oncology in particular. Upon graduation I continued with the Hyperthermia Physics Group at Duke as a post-doc, started interacting more with the clinical side of Radiation Oncology, and learned more about the field of medical physics outside of the small niche occupied by hyperthermia. At the end of my post-doc, if not for a mentor, colleague, and friend,

Professor **Shiva Das**, I would have probably taken a research assistant professor position at one of the few US centers that had clinically active hyperthermia programs. But at his advice, I spent a whole summer relearning radiation physics, learning anatomy and radiobiology, and applied to the Duke Residency Program in Therapy Medical Physics. This decision did not come easy; I had been in graduate and post graduate positions for over six years at that point and the thought of being in training for two more years, while still being key personnel on the Hyperthermia project grant, and with two young kids, was a bit overwhelming. I have, however, no regrets. It was the best professional decision I could have ever made.

What has been the biggest professional challenge of your career so far and how did you overcome it?

How much time do you have? Jokes aside, I had plenty of challenges, some bigger than others. However, my biggest challenge had to have been the need to reinvent myself professionally when the Clinical Hyperthermia Program at Duke was suddenly closed. At that point in my career I had been publishing in hyperthermia physics for over 17 years, been part of the program project grant for equally as long, many years as co-PI, I had held leadership roles in the Society for Thermal Medicine, and I was on track to potentially become the first female physicist president of this Society. When the Department closed the program, I could not continue hyperthermia research, losing in this way my connection with the professional society as well. I had for some years expressed clinical interest in brachytherapy, so clinically it made sense to concentrate more in this specialty, but research-wise this was very hard, as you cannot decide today that tomorrow you will become an expert in a completely different field. I had to take it very slowly, moving my MR response expertise to areas of the clinic outside hyperthermia, and then slowly building my clinical and clinical research expertise in brachytherapy. Am I considered past this challenge? Not

yet. Although I had seven invited talks over that many years at national and world congresses in brachytherapy, it is going to be some time before I will establish myself as a top leader in the field. But it is good to have something to aspire to; self-improvement and change are ultimately good.

Tell us about the most rewarding experience in your daily work.

The bulk of my responsibilities are clinical. Everything we do as therapy medical physicists is rewarding, maybe not in a direct way, but indirectly, knowing that without our expertise modern radiotherapy departments cannot function. However, my most rewarding experiences do not come from implementing a new technique or working on a research idea that might change our practice, it comes from getting a "Thank you" letter from a patient I helped cure. Almost all my clinical areas of expertise have direct patient contact (hyperthermia, brachytherapy, large field special procedures), and hearing directly from patients, or through their treating physician about something that I did to help with their healing, gives more tangible meaning to everything that I do. Also, because I am involved daily in teaching and mentoring the next generation of medical physicists, I feel uniquely rewarded when a student I advise ends up being recognized institutionally or nationally for their accomplishments.

For several years you have been very involved with the Duke Medical Physics Graduate Program (MPGP), and recently you were elected Director of the Radiation Therapy Track, the first female physicist to occupy such a senior leadership position. Give us some insights about your involvement with the program, and how you can contribute as the new RT Track Director?

I have been involved with the MPGP since its inception 15 years ago, initially at the teaching and mentoring level (I mentored 11 MS students and served on over 20 PhD and MS thesis committees), and later at the executive level. I served over four years on the executive Admission Committee, and for the last two years as an elected at-large Medical Physics Administrative Council (MPAC) member. In this capacity I got to understand in depth all the aspects of our program. For my role and contributions over the years I was awarded the "Director's Award for Exemplary Service" in 2017 and 2019, and the "Excellence in Mentorship" award in 2008 and 2018. I also received the "Excellence in Teaching" Award in 2017 from the Radiation Oncology Residency Program. As you mentioned, just recently I was elected RT Track Director. I applied for this position because I think I can help in taking an already successful RT track and further optimize its structure and curriculum to help our graduates be leaders in research and in the clinics of the future, while also supporting faculty to grow their careers within the MP program. As the first woman in a senior leadership position on MPAC, I look forward to also supporting female students and faculty in their careers and to continue working with local chapters of WAM (Woman and Math) and WiSE (Woman in Science and Engineering) to promote STEM fields to middle and high school female students.

What is your personal five minute trick to not buckle under pressure at work (e.g., time limitations, stress from team members interactions, fast pace of technology developments)?

It took me quite a while to start this, but several years ago I welcomed meditation in my life, to unwind and leave stressors behind. I did it initially to try and unplug at home, to stop work-related worries intruding with my personal time, but I soon found out that a minute of deep-breathing centers and calms me in any situation, and I have been using breathing to deal with work related pressures ever since. I also realized, as I grew more senior in my everyday practice, that it is OK to say "no." I realized I do not have to do everything, that was OK to let some of the load go. Learning to say "no" involved both saying "no" to myself, but also to others.

Would you like to share with us what your ideal sabbatical would look like?

I cannot remember the details, but I recall this quote from a Duke University magazine: "Do things you are not good at." I like this line, find it very true, and I definitely try to apply it as much as I can, in my professional life as well as in my personal life. Carbon Ion Therapy is used with so much success abroad, seen by some as the "new horizon in cancer care," but oddly, although developed first in the US in the '70s, there is not one single carbon ion treatment center in the US (well, not yet, looks like University of Texas Southwestern Medical Center in Dallas might be gearing up to build one). To get back to the question, because I know close to nothing about carbon ion therapy, I would like to spend some time at one of the working facilities abroad. I would probably pick the National Institute of Radiological Sciences in Chiba, Japan for their pioneering work with clinical carbon ion treatments, but also for its location. Visiting and learning more about Japanese culture has been on my to do list for far too long. Anybody offering to sponsor such a sabbatical? ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

GENDER DIVERSITY IN MEDICAL PHYSICS: WHERE ARE WE AND WHERE DO WE GO FROM HERE?

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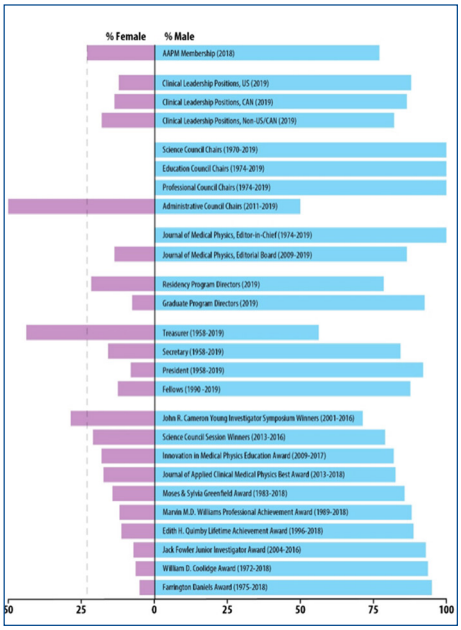
Women currently make up 23.3% of AAPM membership, but female representation in clinical leadership positions in medical physics is even lower.

A recent article by Covington et al.[1] highlights gender disparity within the field of medical physics and within the AAPM. Women currently make up 23.3% of AAPM membership. This number has increased slowly over the past 40 years at a rate of about 0.4% per year, which parallels the increase in female membership in traditional physics fields in the United States. Unfortunately, though this number is already considerably below parity, female representation in clinical leadership positions in medical physics is even lower. A similar trend continues when examining leadership positions within AAPM as well as AAPM award recipients (see figure).

The importance of diversity in the workforce has been extensively demonstrated in the literature. We safeguard the success of the field of medical physics by ensuring that we can attract and retain all individuals with the talent and drive to succeed. The AAPM has committed to improvement via a strategic goal to "champion equity, diversity, and inclusion (EDI) in the field of medical physics." One of the first steps in making progress toward this goal is understanding the current state of EDI and the unique challenges faced by medical physicists working in the field.

Next steps suggested by Covington *et al.* include unconscious bias training (both institutionally and conducted by AAPM), gender blind review of all awards, proposals, and publications, further investigations of salary inequity shown in the annual AAPM Professional Survey, AAPM-sponsored mentorship programs, support for family-friendly parental leave policies, and educational programs targeted at addressing inequities for both men and women. A field-wide quantitative survey further investigating diversity, equity, and inclusion, and the psycho-social reasons behind disparities, would also be of benefit to improve the impact of targeted interventions.

Work in this space is vital to ensure the field has access to the full array of talented individuals interested in pursuing a career in medical physics, and to ensure an equitable and hospitable workplace. This not only stands to improve physicist well-being, but also the high quality and safe delivery of care to a diverse patient population. Together we can support and inspire current and future women in medical physics and bring out the best in our field. ■



Based on figures from Ref. 1, this figure shows the percentage of male (blue) and female (pink) AAPM members identified as clinical leaders, council chairs, Medical Physics editorial board, residency and program directors, members of the Executive Committee, and award winners. The dashed line on the left indicates the overall 2019 AAPM membership gender breakdown.

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SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

WOMEN ARE DISPROPORTIONATELY IMPACTED BY COVID-19. WHAT CAN WE DO?

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"Even before the pandemic, research showed that female physician-researchers spent significantly more time on nonprofessional activities (childcare, chores, etc.) than men, slowing their career trajectory. This gap is exacerbated by the pandemic."

Ever since late February when the first cases of COVID-19 started appearing in the US, there have been predictions and research on how it will impact various aspects of our lives: health, careers, economy, education, and politics. As time goes on, one thing is certain: women are being impacted by this pandemic more than men. And this is not just based on new research: pandemics before COVID-19 such as the Zika outbreak in 2016 or Ebola in 2014 had similar disproportionate effects which are well documented.[1-3] It typically falls on women to take on responsibilities such as schooling or caretaking for family members. Women are also at a greater risk of domestic violence and are disproportionately disadvantaged by reduced access to sexual and reproductive health services.

While some of these issues may seem distant or not relevant to an average medical physicist, a growing body of research shows that the careers of clinicians, researchers, or academics are not immune to the effects of the pandemic. Even before the pandemic, research showed that female physician-researchers spent significantly more time on nonprofessional activities (childcare, chores, etc.) than men,[4] slowing their career trajectory. This gap is exacerbated by the pandemic. Andersen et al looked at the representation of women as first authors in a subset of journals before and during COVID-19 and found the number of women as first authors dropped by 19% once the pandemic started.[5] Domestic responsibilities are not the only barriers to female academics. Female faculty, on average, shoulder more teaching responsibilities and the shift to online teaching has only increased that burden. In addition, administrative responsibilities have increased for many female faculty, eating up their time and resulting in little payoff in terms of promotions and career advancement.[6,7]

So what are some things that can be done to even out the playing field? One of the first steps is to encourage women to share what obstacles they are facing with leadership, which can facilitate meaningful changes rather symbolic ones. Some examples of potential accommodations are grant extensions, addressing loss of funds due to lab closures, or making changes to parental leave. Women in academia tend to be less senior than men and their jobs may be less secure in times of economic hardship. Therefore, priority should be placed on preserving diversity, and careful consideration needs to be given on how diversity may be affected by cost-saving measures. Finally, steps need to be taken towards increasing the number of women in leadership positions. While women comprise a significant portion of the workforce, they rarely reach the level of senior leadership[8]. Increasing diversity in leadership will result in leadership that is better equipped to adapt more equitable policies. Research shows that teams with more women are more effective, albeit only when gender diversity is considered genuinely valuable and not only deemed necessary to fulfill quotas.[9,10]

What can AAPM do to promote equity, diversity, and inclusion in the

"Priority should be placed on preserving diversity, and careful consideration needs to be given on how diversity may be affected by cost-saving measures… Research shows that teams with more women are more effective, albeit only when gender diversity is considered genuinely valuable and not only deemed necessary to fulfill quotas."

WOMEN ARE DISPORPORTIONATELY IMPACTED BY COVID-19, Cont.

time of COVID-19? Some steps have already been taken, like bringing up for discussion the effects of the pandemic at the WPSC Special Interest Session during the annual meeting and the climate survey distributed to AAPM members in August. However, while ad hoc efforts like these are useful to raise awareness, they rarely result in any lasting changes. There needs to be an anonymous and consistent way of reporting not just the effects of pandemic, but any gender- or race-based discrimination that can result in actionable policies. Twitter has also been a place where many medical physicists have been very outspoken about issues that they would like fixed. A notable recent one is the criticism that a few select members serve on a large number of AAPM committees, while committee entry for new members can be a very difficult and frustrating process. Some proposed putting a cap on how many committees one individual can be on, and having quotas to ensure diverse membership, including representation from non-academics. While AAPM has tried to address this by advertising all open committee positions, the selection process is still rather obscure. Unless diversity is valued and actively sought out, it will be challenging to alleviate this issue. Another observation that recently came up on Twitter is the gender disparity between recipients of the Coolidge Award; only 2 women have received it out of 49 awards given, a ratio of about 4% when current AAPM membership is about 23% women. Clearly there is some bias in the system if so few women are considered to have made significant scientific achievements in medical physics.

Many of the outpourings on social media are not tied to the COVID-19 pandemic per se but are long-standing issues that have surfaced amid the general frustrations and hardships caused by it. While it is likely that more gender and racial disparity issues will surface in the coming months, we need to start taking steps now to ensure fairness and equal opportunity for everyone both during the pandemic and after it has ended. ■

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SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

"RADIOACTIVE" WAS HOT AND A MUST WATCH FOR ALL, ESPECIALLY SCIENTISTS

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In the midst of the Twitter-based #MedBikini debacle (Google it if you dare), I had the privilege of watching a film about an unmatched scientific dynamo, the incomparable Madame Marie Sklodowska Curie. With so much debate about a woman's place in medicine and biomedical science, it was refreshing to lose myself in a story about the most highly decorated scientist ever, with two Nobel prizes, and a Nobel-winning daughter too.

This movie, "Radioactive," brought me so much joy and insight into what it takes to be able to bring your passion to life. Honestly, I never sought the finer details of her life, so forgive my acceptance of the director and writer's use of artistic discretion in changing some of the events of her life. Also, please forgive my spoilers for those of you who have not had the pleasure of watching Rosamund Pike embody this phenomenal scientist. If that name sounds familiar, you may have previously enjoyed her roles in several films over the last 20 years from "Die Another Day" to "Jack Reacher," "Pride and Prejudice" and "Gone Girl." This actress is as phenomenal as the woman she portrayed.

The film opens with Marie walking through her laboratory and observing the hustle and bustle of scientists working on experiments. Like a proud supervisor, ensuring that all is being carried out the way it should, she goes from room to room and shows us series of primarily women researchers busily carrying out what she has set in motion. This was a foreshadowing of what was to come and an example to us all how to proudly make your mark and leave this world better off than it otherwise would have been.

Next, we encounter Marie as she chides her sister for having to tend to her motherly duties, before she runs off to chase her dreams of being a scientist. As she suffers indignities for simply existing as a woman in science at her university in Paris, Sorbonne, she bumps into her life-partner, Pierre, and the rest is truly history.

We all get swept away with the gentle ease, simple love of life, curiosity and desire that is key to Pierre's character. I have lived almost 40 years, and this was my first example of an unforced and impassioned display of affection from scientists. They could have ended the film with them frolicking in the lazy river, but we got so much more.

As Pierre provides the laboratory, equipment (nominally the precise electrometer Marie needed), and unabashed vocal and physical encouragement and support, we see true Team Science ensue. The discovery of polonium and radium is shown to take endless hours of back breaking labor, crushing pitchblende with tools meant more for a construction crew than precision scientists. Yet their dogged determination proved worthwhile and they are awarded a shared Nobel Prize in 1903.

The film takes some liberties with the 1903 Nobel prize ceremony and this is where several academics and scholars who reviewed the film took offense. The film may not get the literal events correct, but I understand why they chose to have Pierre speak up for his wife's scientific effort. Their intent was proper and actually fairly in alignment with most reports as to how supportive Pierre was of Marie.

In my opinion, this film helped inform us all how to be a better ally and sponsor in the hard sciences. Merely offering money and laboratory space is not enough to help a colleague or trainee achieve their goals. We must speak up for them, as Pierre did in the film, in spaces the colleague will never enter. We must put our own reputation on the line and call attention to bias, discrimination and other issues to provide fairness and a path for success for our colleague.

"RADIOACTIVE" WAS HOT, Cont.

I am deeply involved in recent efforts to make our field of medical physics more equitable for everyone from trainees to full AAPM members. I sincerely believe if more of us could be like Pierre and see beyond the exterior of others but be sensitive enough and present enough to titrate out the brilliance of others and share that with the world, we could revolutionize science.

What I loved about the film's portrayal of Marie is that it is a fair, unrelenting, albeit severe representation of an unusually focused and brilliant scientist. It follows most of what was written in her diary and accounts of her personality. She was unapologetically a genius with little concern for others' opinions, and it's time women physicists had such a great actress bring that to life.

And so even though there were times when I did not understand some of fanciful dancing scenes with Pierre's artist friend or the obsession with showing Marie sleeping with glowing vials of radium, the bulk of the movie was rich with substance and great acting, therefore I fully endorse it and suggest you see it to form your own opinion. ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

INSPIRED: A CLASSROOM EXPERIENCE

Miriam Lambert, MS | Kaiser Permanente

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"I was speaking to an assembly of about 50 students, ranging from third through eighth grade… a stack of PowerPoint slides just wasn't going to cut it."

In November 2019 I was honored to be asked to speak as part of a careers program for a small private school in my hometown of Portland, OR. I was excited to share medical physics as a career option for these kids, especially as I would be speaking as a woman in a STEM field. I wanted to inspire both boys and girls in my audience to think of math and physics as exciting, cool areas of study that could help them springboard into many different possible careers, particularly (since I was speaking from my own experience) in radiation oncology.

I faced two challenges in preparing my presentation. First, as we would be taking the kids out of class for my talk, I was limited to only 20 minutes. Second, because the school was so small, I was speaking to an assembly of about 50 students, ranging from third through eighth grade. How to engage them all, get them excited and thinking of medical physics as something they can do, while also interacting at the appropriate level for the wide variation in ages? A stack of PowerPoint slides just wasn't going to cut it.

Fortunately, I found a new resource exactly addressing my dilemma: "A hands-on introduction to medical physics and radiation therapy for middle school students," by **Jessica M. Fagerstrom** *et al*[1]. While the lesson plan they describe is far more extensive than I had time to replicate, they included a simple exercise perfect for my kids: the creation of a mock treatment plan using colored transparencies to show the accumulation of dose at a target.

Because I'm afraid to speak without a crutch of some kind, I did prepare a powerpoint presentation, but I tried to use it as a prompt for discussion, rather than a lecture. I started by asking the kids if anyone knew what a physicist was (thankfully one boy was brave enough to volunteer an answer that was pretty on target — "a physicist is a scientist who studies how the universe works") and then to name any famous physicists they'd heard of. Albert Einstein, Stephen Hawking, and Marie Curie all got shout-outs, as did Thomas Jefferson, which took me a bit by surprise.

I gave some highlights from Marie Curie's career (two Nobel prizes!) hoping the kids would think if a woman in 1895 could have a PhD in physics, they could too. And I told them she was the first medical physicist, since radium was used to treat cancer very shortly after she and Pierre Curie isolated it. That launched us into a discussion of radiation oncology ("What is cancer?" "How can we treat it?") and our hands-on project: designing the beam delivery for treatment of trigeminal neuralgia.

I had asked the teachers to divide the kids into groups of four or five, clustered with peers of the same age, prior to the start of my talk to save time. I gave each group a packet with an anonymized screenshot of the axial slice of a brain MRI, on which I had labeled the trigeminal nerve, target point, brainstem, optic chiasm, and eyes. Each packet also contained five yellow pipe cleaners, which represented the radiation beam paths (the crafts store I visited didn't have colored transparencies of the type I wanted, so pipe cleaners had to do.)

Each group created a "treatment plan" by overlaying the pipe cleaners to intersect at the target point while avoiding going through the eyes or overlapping elsewhere in the brain. This took about five minutes, while I walked around the room to give encouragement and feedback to each group. We discussed why we needed to avoid the eyes and overlap elsewhere in the brain, with a brief mention of the relative radiosensitivity of different structures in the body.

INSPIRED: A CLASSROOM EXPERIENCE, Cont.

We weren't done, though. I told the kids: you aren't just treatment planners, you're physicists. That means we have to not only make a good plan; we also have to make sure the treatment machine can deliver it correctly. I did a quick walk-through of the basic verification steps for an SRS program: an end-to-end test to verify target reproducibility, and dose output measurement in a water tank. Not wanting to set up our large tank for the sake of a photo, I cheated on this slide and used a picture of myself setting up our smaller TG-51 water tank with a Farmer chamber. Discussion of dose volume averaging could wait until they reached high school, I felt.

The students were engaged and enthusiastic throughout the exercise, from the eighth-graders all the way down to the third-graders. The most rewarding and educational part for me was in the questions they asked following my presentation. While I had focused on the problem-solving aspects of my work, with only a brief mention of the impact for the patient, the students were most interested in knowing about treatment from the patient's perspective.

Were there side effects? Did treatments ever go wrong? How long did they take? What is the rarest type of cancer? Some questions I could answer, and some I couldn't. I was glad to have the opportunity to raise the issue of things they could do to reduce their own risk of getting cancer (don't smoke, they knew. I also encouraged them to use sunscreen and to reduce the amount of red meat they ate.)

When I was asked to speak to the students about medical physics, I saw it as an opportunity to share my experience and hopefully encourage them to explore career options in STEM related fields. But it became much more than that. Seeing my work through their eyes, I was reminded again how fortunate I am to have a job that isn't just about solving problems to make sure a machine operates correctly. It's about saving lives and reducing patients' pain.

I hope I did inspire those students in the end. They certainly inspired me. ■

Photo credits: Aviel Brodkin

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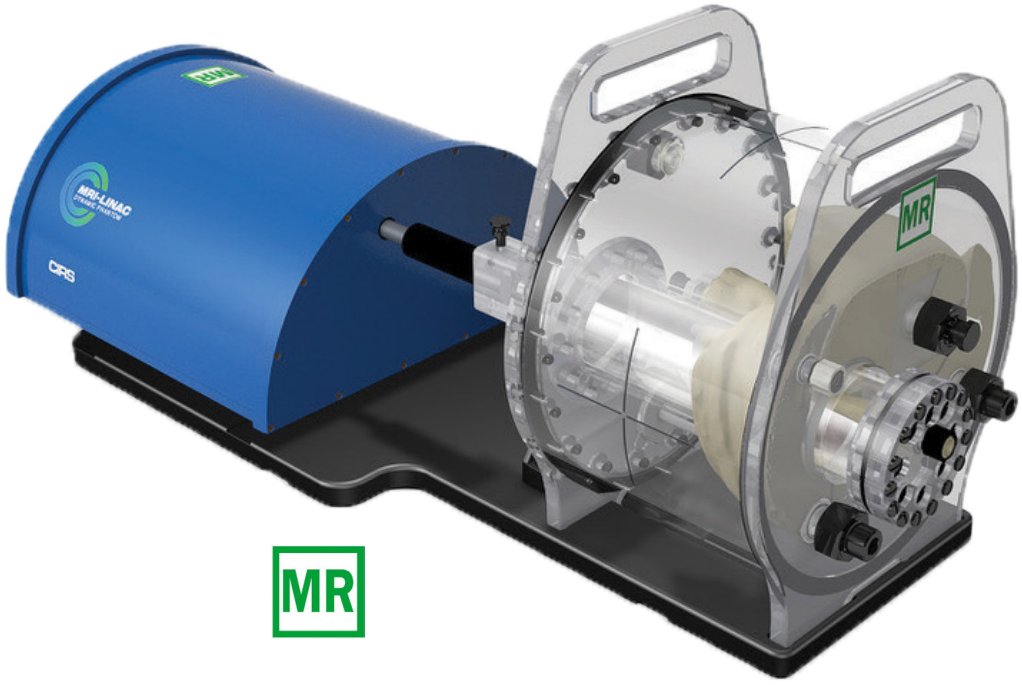
Programmable Motion for Image Acquisition, Treatment Planning and Dose Delivery



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SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

WPSC NEWS BITES

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Congratulations to all new AAPM fellows and awardees! The WPSC would particularly like to recognize the exceptional group of women who received the distinction of FAAPM: **Hania Al-Hallaq**, PhD; **Laura Cervino,** PhD; **Karen Drukker**, PhD; **Kristi R.G. Hendrickson**, PhD; **Loretta Johnson,** PhD; **Yi Rong**, PhD; **Mihaela Rosu-Bubulac**, PhD; and **Rowan Thomson,** PhD. Special congratulations also to **Priscilla Butler**, MS, for receiving the Marvin M.D. Williams Professional Achievement Award!

Gender balance among invited speakers at the ASTRO meeting: A publication in the *Red Journal* last year analyzed the gender balance among invited speakers and panelists at ASTRO annual meetings from 2012 to 2016. They found that 27% of invited speakers and 25% of panelists were female, although greater female representation correlated with higher metrics of audience satisfaction. The conclusion was that efforts to ensure greater diversity in annual meeting speaking invitations should be considered.

Congratulations to Cynthia (Thia) Keppel of Thomas Jefferson National Accelerator Facility! Dr. Keppel received the American Physical Society's Distinguished Lectureship Award on the Applications of Physics in 2019 for her work in proton therapy and promoting applications of physics. Dr. Keppel is also the new Secretary/Treasurer for the APS's Topical Group on Medical Physics (GMED), working with several joint APS-AAPM members to promote awareness of the medical physics field.

Increasing African American Representation in Physics: the American Institute of Physics (AIP) convened a task force to elevate African American representation in undergraduate physics & astronomy (TEAM-UP). After two years of investigation, their full report was made public and indeed found evidence of systemic issues in the physics and astronomy community that could contribute to the underrepresentation of African Americans in these fields. The report includes actionable recommendations, a culture self-assessment rubric for departments, and a rubric for students and parents to evaluate departments.

Overcoming feeling like an outsider: on a related note, a Harvard undergraduate physics major spoke up on feeling like an outsider in fields that have few women and even fewer African Americans. Mahlet Shiferaw found inspiration to continue at a Conference for Undergraduate Women in Physics (CUWiP), where she met a group of black women who were already presenting their research and making their way in their fields. Shiferaw graduated from Harvard this year and expected to spend a gap year at the Max Planck Institute in Germany as a Fulbright scholar before starting her PhD at Stanford. While the pandemic has delayed her plans, she's taking it in stride.

***Physics Today* Highlights:** The AIP also publishes *Physics Today*, the most closely followed magazine in the world for physics research updates and physics-related topics. Recently *Physics Today* has featured several interesting articles related to women and minorities in physics. One highlighted an ongoing mentorship program that has worked for retaining minorities in STEM fields. Another, from *Physics Today* editor **Johanna L. Miller**, reflected on her experience growing up in the United States as a female interested in math and science. And very recently, there was a fascinating feature on Sarah Frances Whiting and her team of women working in the undergraduate physics lab at Wellesley College that carried out some of the first successful x-ray experiments in the US!

Physics PhDs Ten Years Later: an American Institute of Physics study asked mid-career physicists what

WPSC NEWS BITES, Cont.

had helped them succeed and what barriers they had encountered in their career path. The study found that employment sector and gender both played influential roles in the experiences of physics PhD recipients. In particular, men more frequently attributed success to their skills and abilities while women more frequently attributed their success to social support. Men also frequently discussed organizational issues and lack of skills as barriers, while women more often discussed social issues and gender bias. A summary of the findings also appeared in *Physics Today*.

Gender differences in presenting research: many studies show that women are still underrepresented in many aspects of the workplace, particularly in STEM fields. Several recent studies in academia have examined how men and women present themselves and their work differently. This study published in *The BMJ* looked at gender differences in how scientists present the importance of their work; they found that men were much more likely than women to present their research using positive framing through the use of works like "novel" and "excellent." These more positive presentations of research findings were also associated with more downstream citations.

Seeking contributors! The WPSC Newsletter is published biannually in the spring and fall, except in 2020, and we are always on the lookout for news, stories, ideas, and features related to Women in Medical Physics to include in future editions. Contributions and suggestions can be sent directly to the WPSC. ■

SPECIAL INTEREST FEATURE: WPSC Women's Professional Subcommittee

2020 WOMEN'S LUNCHEON GOES VIRTUAL TO DISCUSS THE CHALLENGES FACED BY PHYSICISTS DURING COVID-19

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"All panelists agreed the pandemic has impacted their daily lives with an increased proportion of time spent on household chores and family responsibilities… Many participants were in favor of redefining what productivity means during the pandemic and the metrics used to assess it."

This year's annual Women's Professional Subcommittee (WPSC) luncheon went virtual with two back-to-back special interest meetings. Both sessions focused on the gender disparate effects of the COVID-19 pandemic on the work environment and work/life balance. The first session was a panel discussion, while the second session was a Zoom breakout meeting that filled to capacity.

Kristi Hendrickson, Chair of the WPSC, moderated the first session. She began the event by introducing the charge of the WPSC, the motivation for the session, and our current AAPM President **Dr. Saiful Huq**. The sessions were not recorded to encourage an open dialogue where attendees could freely exchange and discuss their experiences.

Dr. Huq provided his remarks live and welcomed the session attendees. He began by congratulating the five female members elected to the governing board: **Jennifer Lynn Johnson**, PhD (Secretary); **Erin Angel**, PhD (Board Member-at-Large); Kristi Hendrickson, PhD (Board Member-at-Large); **Hua Li**, PhD (Board Member-at-Large, second alternate); and **Robin A. Miller**, MS (Nominating Committee - Community Practice Therapy Physicist). He continued by congratulating the many women currently holding leadership roles within the AAPM at both the chapter and national levels and presented the current member involvement statistics. Only 20% of the AAPM membership participates in the society, while 27% of those involved are women. He referenced several recent peer-reviewed articles, including those by Covington *et al.*, Pollard-Larkin *et al.*, and Lincoln and Khan that addressed gender diversity and equality in medical physics as well as the potential implications of telecommuting for medical physicists.[1,2,3]

Dr. Hendrickson thanked Dr. Huq for his remarks and introduced three additional articles that were selected for the basis of the session discussion. These articles were available to attendees through the meeting platform. One from the *NY Times* reported on the different perceptions of men and women on the division of homeschooling and other household responsibilities during the pandemic.[4] The article reported that despite the additional challenges presented by COVID-19, the division of labor in the home has remained heavily weighted towards women. Articles in The *Guardian* and *Nature* reported research performed by women has decreased since the onset of the pandemic and women are publishing less during lockdown compared to their male colleagues.[5,6] Both articles provided data based on the number of preprints submitted during lockdown and during an equivalent length of time prior to lockdown. These articles highlight concerns for both the short and long-term consequences on women's academic productivity and advancement, as well as the potential negative impact on progress towards women's equality in the workplace.

2020 WOMEN'S LUNCHEON GOES VIRTUAL, Cont.

Top: Panelists discuss their personal experiences during the pandemic as well as strategies and solutions to address COVID-related challenges. Clockwise from top-left corner, they are Amirh M. Johnson, Jennifer Lynn Johnson, Ashley Cetnar, and Sonja Dieterich. Bottom: Audience members participate in a group discussion following the breakout sessions (photo posted to Twitter by Lindsay Jones, @LindsayPhys).

The first session included four panelists representing imaging and therapy physicists from both academic and clinical practice. The panelists were (clockwise from top-left corner in the figure): **Amirh M. Johnson**, MS from Kaiser Permanente (diagnostic); Jennifer L. Johnson, PhD, FAAPM, from Kelsey-Seybold Clinic (therapy); **Ashley Cetnar**, MS, from the Ohio State University – James Cancer Hospital (therapy); and **Sonja Dieterich**, PhD, FAAPM, from UC Davis Medical Center (therapy). The panelists were asked to discuss how the pandemic has changed their work-life balance, how these changes have affected their productivity at work, what consequences they predict may result from these changes, strategies they have found effective at addressing pandemic-related challenges, and steps taken by their institutions or departments to minimize the impact of the pandemic on career trajectories.

All panelists agreed the pandemic has impacted their daily lives with an increased proportion of time spent on household chores and family responsibilities. The discussion supported the concerns raised in the articles, with panelists sharing they felt the majority of the organization and planning for homeschooling had become their responsibility. Several felt supported by their partners while others felt a disproportionate amount of the workload at home was falling to them. All panelists acknowledged some benefits of working from home, such as saving the time needed to commute, but admitted to the challenges introduced, such as unreliable internet and loss of face-to-face interaction with colleagues. Panelists mentioned that both their personal research productivity and in some instances the productivity of their graduate students had decreased. The audience became engaged in the chat window discussing strategies to minimize the impact of COVID. Specifically, some reported that managers were concerned with how to measure productivity for remote work; many participants were in favor of redefining what productivity means during the pandemic and the metrics used to assess it. Additionally, the idea of providing permission to each other and our colleagues to not have perfect outcomes could reduce the current mental burden. One panelist suggested accepting a new mantra of 'it's fine' and that not everything needs to be perfect or immediately addressed. For example, she has accepted that her children may not have the perfect homeschooling environment and the house may not be perfectly clean,

2020 WOMEN'S LUNCHEON GOES VIRTUAL, Cont.

but it will be fine. Another panelist suggested finding a few minutes each day to practice mindfulness and minimize overthinking. Much of the discussion was focused on the immediate impacts of COVID on the panelists' daily lives with the long-term effects remaining unknown.

Dr. Hendrickson thanked the panelists and the group transitioned to the next session. After a quick introduction, attendees were split into breakout groups of 5–10 individuals. The smaller groups provided participants the opportunity to engage with each other and share their own experiences. In some groups, participants shared what techniques they had found to manage their modified workloads and schedules. All participants returned to the larger group setting following the breakout session to share themes discussed in the smaller groups. Some of the more heavily discussed topics were those of childcare and maternity leave, the differences in what accommodations men and women are willing to ask for and how these differences have potentially impacted the genders differently during the pandemic, and the idea that although leadership may not know what support is needed right now it would be helpful if they asked for potential solutions.

The session concluded with Dr. Hendrickson thanking the attendees for sharing their experiences and for the engaging conversation. A special thank you to L**auren Long**, Chair of the WPSC Luncheon Working Group, for coordinating the event, Kristi Hendrickson for moderating, and the panelists for their insight and sincere responses. ■

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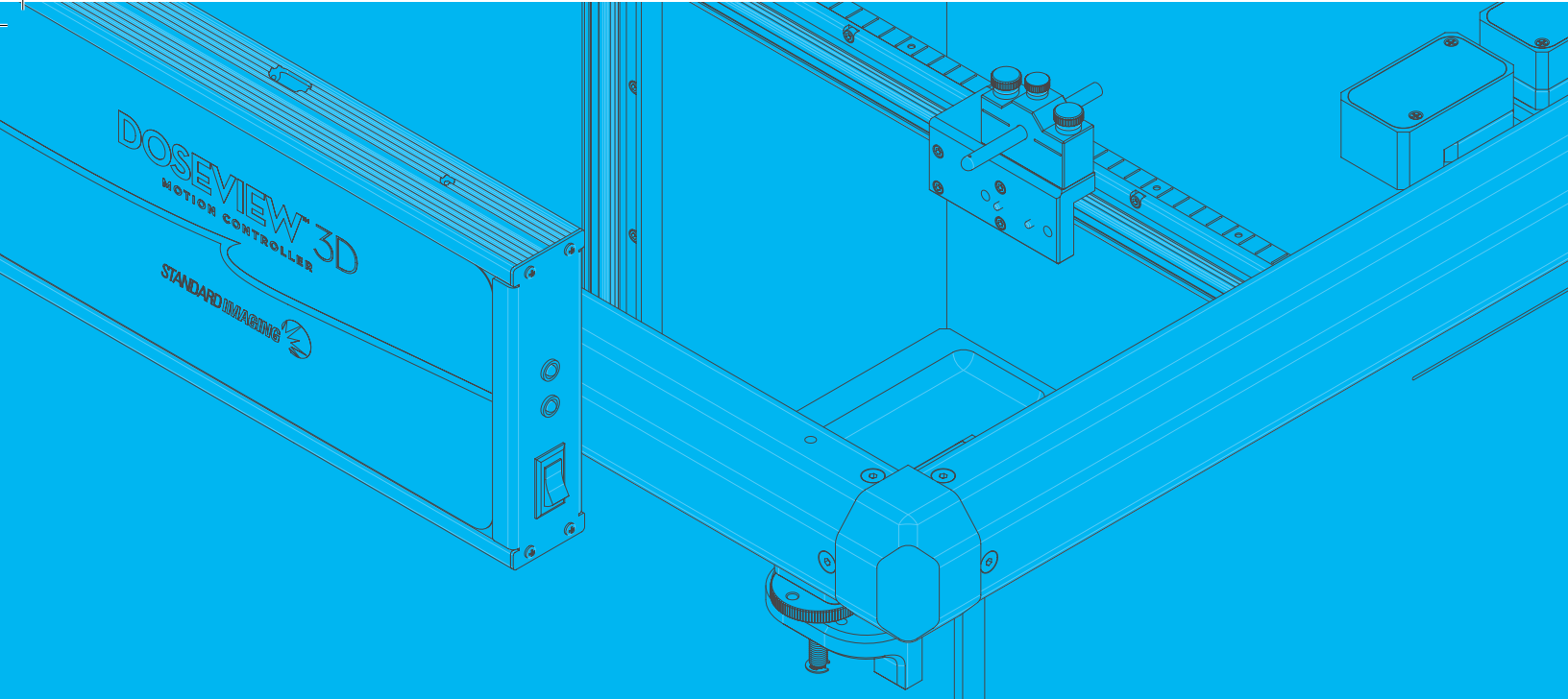

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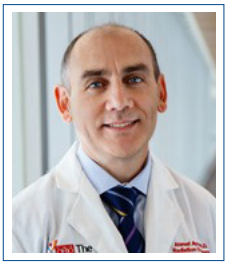
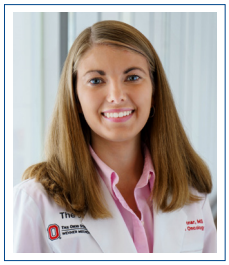

A. Ayan


A. Cetnar


D. Cheek

The Ohio River Valley Chapter hosted our Fall Symposium, November 1–2 in Indianapolis, IN. The meeting events started Friday night at the Indianapolis Zoo in the Oceans building. Physicists, residents, students, vendors, speakers, and their families enjoyed dinner, poster presentations, and socializing while taking in sights and sounds of the aquatic animals including the shark pet tank. There were 68 adults in attendance for the Night Out and many children as well.

The meeting was held in the historic Crowne Plaza Downtown Union Station which was originally used as a rail station, but was converted to a hotel with converted train cars as guest rooms. 120 members, students, and vendors were in attendance for the fall symposium. The event on Saturday started with a presentation by **Samuel Brady** on ways to effectively communicate with patients and parents. **Colin Huang** presented new research on planning and assessment of liver function after radiation therapy treatment using functional imaging. During the first break with vendor presentations, Associates in Medical Physics (AMP) provided a memorable presentation including a flash mob with choreographed dance to the song "Come Alive."

Late morning talks included presentations from **Peter Maxim** on new technology, Pluridirectional High-energy Agile Scanning Electron Radiotherapy (PHASER), **Jie Zhang** on ways of teaching physics to radiology residents, and **Christopher Njeh** on the implementation and review of six degree of freedom alignment. We had a new session before lunch entitled the "Local Physics Forum" where members were able to come to the mic to share new things going on in their clinic, research, or projects to communicate things going on in our backyard in our local physics community.

After lunch, **Julianne Pollard-Larkin** presented New Horizons in Thoracic SBRT followed by a panel discussion of clinical aspects of Thoracic SBRT including **Cristina Boswell, Michael Lamba, Damador Pokherel,** Pollard-Larkin, and **Nicholas Sperling**. The final session was a hands-on workshop presented by

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Ahmet.Ayan@osumc.edu

Dominic DiCostanzo on practical scripting with Eclipse Scripting API.

As a part of our meetings we have student volunteers to help with a multitude of items including registration. This allows the students to be integrated into the meeting and to have interaction with practicing physicists. Several students volunteer to be student reporter's that will interview a physicist. **Miranda Nichols**, graduate student at Purdue University interviewed Julie Pollard-Larkin during the meeting. An excerpt of her report is included:

> I wanted to speak with someone that was outside of the ORVC because I knew it would be valuable to hear a perspective from outside the region. Having been at IU Health for the summer and taught by the excellent physicists there, I was curious what another academic center was like. I couldn't have asked a better person to interview: Dr. Julianne Pollard-Larkin. Dr. Pollard-Larkin is the chief of thoracic radiation physics at MD Anderson. Admittedly, I was nervous when I approached her to ask if she had a couple minutes to speak with me….Dr. Pollard-Larkin's energy and enthusiasm for this field was inspiring. One of the many things she said that resonated with me was, "The reason why I'm here is bigger than the problems that I see." She said this when we were talking about disposition and how a full waiting room makes her feel. A waiting room full of patients ignites her fire which lasts all day. Dr. Pollard-Larkin shows up every day ready to battle. Instead of getting lost in the problems that are in front of her face, Dr. Pollard-Larkin keeps her motives close — a fire that was started when her mother was diagnosed with breast cancer. Her mission is to ensure that families stay together and that the same quality of care is given to everyone. As she calls it, Dr. Pollard-Larkin is the epitome of a "physicist with a heart."
>
> I am very glad to have met Dr. Pollard-Larkin. I was in a state of uncertainty of whether medical physics was the right path for me. I wasn't sure if my social personality and outward enthusiasm would fit in the world that I thought all medical physicists lived in. Dr. Pollard-Larkin showed me that there are no bounds to what can be done or brought to the field. Come as you are, have a purpose, and stop for nothing. After our conversation was over, I was left with my eyes physically wider and ready to step up into a position of change in the years to come.

Graduate student, **Patrick Bond** of Purdue University interviewed president-elect **Christopher Njeh**:

> I talked to Dr. Njeh for a few minutes during one of the coffee breaks about his experiences in physics and in different countries. He has lived in Africa, Europe and America throughout his lifetime. He has worked in research in therapy designed to treat osteoporosis. His advice to students entering the field was to get exposed to different options and cultures, since "every culture has something unique."

We would like to thank all of the vendors that made this event possible. We appreciate all of the guest speakers that shared their work for the symposium. Finally we would like to thank the volunteer students, residents, and chapter officers for all of the hard work to put on another successful meeting.

While we are still uncertain of the next time we will be able to meet in person, the officers are exploring potential options for the next meeting and look forward to seeing our members again soon! Please stay up-to-date with our events by visiting our chapter website. ■

OHIO RIVER VALLEY, Cont.

Night out event at the Indianapolis Zoo with most in attendance. (I apologize if anyone was cut-off.)

OHIO RIVER VALLEY, Cont.

Panelists for Thoracic SBRT Discussion

Some of the meeting attendees on Saturday at the Crown Plaza Union Station, Indianapolis, IN

1920s train car guest room at the Crowne Plaza Union Station, Indianapolis, IN

JAYDEV K. DAVE, PhD OF THOMAS JEFFERSON UNIVERSITY HAS BEEN AWARDED THE IUPAP YOUNG SCIENTIST AWARD IN MEDICAL PHYSICS 2020

PERSON IN THE NEWS

J. Dave

The IUPAP Young Scientist Award 2020 was established and funded by the International Union of Pure and Applied Physics (IUPAP) and awarded by the International Organization for Medical Physics (IOMP) as the IUPAP affiliated International Commission for Medical Physics. Some of the criteria for selection of this award are:

- must be under 40 years of age and have
- completed 5 years of research or development in medical physics
- should have performed original and/or applied work of outstanding scientific quality in medical physics.

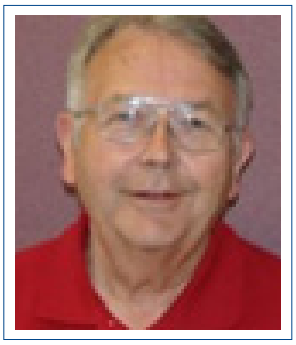
All national and regional organizations of the IOMP are invited to nominate candidates for the Young Scientist award. Dr. Dave is the first AAPM nominee to win the award out of ten recipients since 2006 (the award was not offered every year.)

The awardee receives an IOMP certificate, an IUPAP medal, and a prize of 1,000 euros. In addition, a short biography of Dr. Dave will be published in *Medical Physics World*.

IN MEMORIAM: HANS ROEHRIG, PhD

Elizabeth A. Krupinski, PhD | Emory University

The field of medical physics recently lost a key figure as well as a wonderful person: **Hans Roehrig**, PhD, Professor Emeritus Department of Medical Imaging and College of Optical Sciences, University of Arizona. He passed away on July 2, 2020, in Tucson at the age of 85. He was born on November 29, 1934, in Giessen, Germany, earned his MS in 1961 and his PhD in 1964, both from the University of Giessen. He came to the United States in 1967 to work as a physicist at the US Army Night Vision Lab and, in 1972, moved to the University of Arizona, where he remained for the rest of his illustrious career until 2012 when he retired as an Emeritus Professor.



H. Roehrig

As former graduate student and post-doc **Jiahua Fan**, PhD (Principal Scientist, GE Healthcare) notes:

"Dr. Hans Roehrig was a great medical physicist, researcher and mentor. I entered the field of medical imaging because of his kind support and guidance. He always treated his colleagues, students, and friends respectfully. He always generously offered what he could to others. His genuine personality, kindness, humor, modest and contagious laughing are deeply missed."

Hans had a depth of expertise, but was perhaps best known as a pioneer and perhaps the world-expert in the assessment of electronic computer displays for medical imaging – as radiology transitioned from film to digital he was the go-to person for industry and academic collaborators to give his "stamp-of-approval" on a given display.

According to **Art Gmitro**, PhD (Department Head, Department of Biomedical Engineering & Professor of Medical Imaging, University of Arizona), a long-time colleague of Hans:

"I spent close to 30 years in the Radiology Research Laboratory Building with Hans as a colleague. Nearly every day, I would hear his booming laughter, and it would remind me that both life and work were fun. They certainly were for Hans and the group of faculty, staff, and students who worked in the building. What always impressed me about Hans were the stacks of scientific papers from floor to ceiling in his office. I think he had a copy of every paper ever written on the topic of medical image display, and more importantly, could find the one he was looking for in amazingly short order. Hans was a wonderful person and a great colleague. He will be missed, but fond memories of him will endure."

In addition to his extensive body of work on image quality and digital displays, Dr. Roehrig was recognized widely for his pioneering work on digital detectors, especially in the early days of digital radiology and full-field digital mammography.

"I loved working with Hans, but that was so long ago I forget the details of what we were doing. I cherished his solid knowledge of detector systems and his smile, which was often accompanied by his frequent laugh." **John Boone**, PhD (Professor Biomedical Engineering & Radiology, University of California Davis).

Dr. Roehrig published extensively, contributed numerous book chapters, and was well funded from both the NIH and industry throughout his career. He was a key figure in the development and promotion of the DICOM GSDF (Digital Imaging and Communications in Medicine (DICOM) Grayscale Standard Display Function (GSDF). He was a regular attendee and presenter at the AAPM (American Association of Physicists in Medicine), the Radiological Society of North America (RSNA), and the SPIE Medical Imaging Conference where he was always highly involved with faculty and trainees. As **Jeffrey H. Siewerdsen**, PhD, FAAPM, FAIMBE (John C. Malone Professor and Vice-Chair, Department of Biomedical Engineering Co-Director, The Carnegie Center for Surgical Innovation, Johns Hopkins University) recalls:

"Hans asked me my first hard question at a conference, and it stayed with me forever. As a grad student, I had just given my first talk at SPIE, and Hans came to the microphone. He asked me a question that - at the time - seemed simple. (What is the effect of fill factor on noise?) I gave an answer that — at the time —was reasonable... but turned out to be

IN MEMORIUM, Cont.

utterly wrong. Hans' deep technical and analytical insight fueled an intuition that allowed him to see years ahead. The real answer to his question lay in aliasing effects that would not be solved for another five years and would ultimately be shown to be the key differentiating factor between two classes of digital x-ray detector that were emerging at the time. As a grad student, one never forgets those formative, incisive perspectives, and we are lucky to have them. Hans surely affected countless others with such insight and collegial reflection. His was a great life with tremendous scientific legacy."

Hans served as mentor to countless graduate students and post-docs during his long career, but his interest in helping others get into the field of medical physics went far beyond the walls of the University of Arizona. **Aldo Badano**, PhD (Deputy Director, Food & Drug Administration Division of Imaging, Diagnostics, and Software Reliability (DIDSR), Office of Science and Engineering Laboratories (OSEL), Center for Devices and Radiological Health (CDRH)) notes:

"I did not have significant interactions with Hans but we did cross paths a number of times as I was working on my doctoral research on topics of common interest. I remember Hans was always immensely cordial and instantly ready to share with me all the details of the new stuff he was trying with his students to measure the quality of medical displays. He was also quite attentive to what I was doing and always thinking of ways to work together and advance the field. Meeting and discussing research with him at conferences was always one of the highlights for me."

When I first moved to the University of Arizona in 1992, I never dreamed that it would be Hans that I would end up working most closely with for the next 20 years. However, we both quickly realized that image quality was a passion we both shared, and our areas of expertise very nicely complemented each other. He was the ultimate medical physicist — he could characterize an individual display pixel in terms of any and every physical property you might imagine. As an experimental psychologist, however, I would ask him: "But does it really matter? Will that aspect of image quality impact the efficacy and efficiency of the decision made by a radiologist?" Then off we were writing a grant or approaching a display manufacturer to find out the answer. I like to think that the work we did together for so many years did have an impact on the ability of radiologists to make better decisions as a result of the work we did on display optimization. I wish we could have continued to work together for many more years as it was always a great pleasure and incredible learning experience to work with Hans. There was always "one more fine detail," as he would say that was still left to be investigated. Hans was a warm, generous, funny, and giving person, as well as a highly respected member of the medical physics community. He will be missed by a great many of us. ■

OUR CONDOLENCES

Carl J. Collica, MS

Gilbert H. Nussbaum, PhD

Hans Roehrig, PhD

Our deepest sympathies go out to the family. We will all feel the loss in the Medical Physics community.

If you have information on the passing of members, please inform HQ ASAP so that these members can be remembered appropriately. We respectfully request the notification via e-mail to: 2020.aapm@aapm.org
(Please include supporting information so that we can take appropriate steps.)

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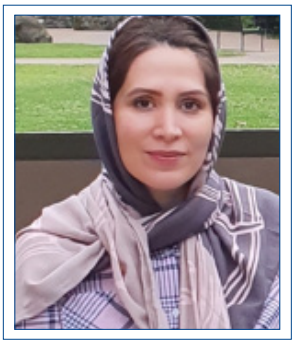
AAPM INTERNATIONAL TRAINING AND RESEARCH COORDINATION SUBCOMMITTEE REPORT

Somayeh Gholami, PhD | Tehran University of Medical Sciences (TUMS)



My name is **Somayeh Gholami**, PhD, assistant professor at Tehran University of Medical Sciences (TUMS), Tehran, Iran. I have ten years of work experience as a medical physicist at a radiotherapy center in my country. In recent years, my country has been transitioning from conventional radiotherapy to more technologically advanced radiotherapy techniques. During this transition, education and training of medical physicists is the most critical aspect in advancing the field of medical physics. AAPM has always been a pioneer in medical physics education worldwide by publishing excellent reports and providing different scholarships and grants.

From February through June of 2020, AAPM provided an opportunity for me to take advantage of work experience at the University of Arkansas for Medical Sciences (UAMS) under the supervision of **Dr. Steven Morill**. AAPM provided this grant through the International Training and Research Coordination Subcommittee (ITRCS). I had the honor of being one of the five recipients of this scholarship in 2019. I appreciate the support of all the committee members, especially **Dr. Joanna Cygler** and **Dr. E. Ishmael Parsai**, for direct communications and assistance in facilitating this work experience.

Dr. Steven Morrill, chief medical physicist at Radiation Oncology Department of UAMS, kindly took care of my application. He agreed to support my visa application and provided the opportunity for me to get involved in routine medical physics duties at UAMS.

The radiation oncology department at UAMS is outfitted with innovative technology that includes Varian TrueBeam linear accelerators, an ACCURAY Tomotherapy unit, a 4D CT simulator, Brainlab ExacTrac, HDR Brachytherapy, and Perfexion Gamma knife. High precision Linac-based radiosurgery of cranial and spinal lesions along with intra-fraction motion management is very popular at UAMS.

A good combination of clinical and research interests among the physicists and physicians at UAMS encouraged me to conduct a collaborative research project with the medical physicist experts. We performed a study on "**Localization errors in stereotactic radiosurgery treatment using 3D Lucy phantom**." In this study, different imaging techniques such as kV/MV, CBCT, and ExacTrac™ were used to evaluate the IGRT errors during Linac-based SRS treatments.

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"I had a great experience at UAMS. I think that the opportunity to visit and exchange knowledge between medical physicists from different countries with different backgrounds is one of the best educational programs in AAPM, and it can lead to a worldwide improvement in treatment quality for patients."

In addition, since I have worked on GRID therapy and UAMS has a long history in treating patients with GRID therapy techniques, I presented a lecture on this topic during my stay there. We had good discussions with other experts at the center and arrived at useful conclusions that I can implement in my workplace.

To conclude, I had a great experience at UAMS. I think that the opportunity to visit and exchange knowledge between medical physicists from different countries with different backgrounds is one of the best educational programs in AAPM, and it can lead to a worldwide improvement in treatment quality for patients.

Finally, I would like to thank all the staff at UAMS who accepted me into their center and made me feel very welcomed. Most of all, I should acknowledge **Dr. Steven Morrill, Dr. Edvaldo Galhardo, Dr. Ganesh Narayanasamy, Dr. Garron Deshazer**, and **Dr. Robert J. Griffin** for their cooperation and helpful discussions. Special thanks to **Dr. Faraz Kalantari and his lovely family** for their support and hospitality during my stay in Arkansas.

Sincerely,

Somayeh Gholami, PhD

AIP accepting nominations for its Tate Medal for International Leadership in Physics

The American Institute of Physics is accepting nominations for the 2020 John Torrence Tate Medal for International Leadership in Physics. The deadline to apply is October 1, 2020.

The Tate medal was established in 1959 and is awarded every two years to non-U.S. citizens for their leadership, research contributions and service to the international physics community. The award consists of a certificate of recognition, a bronze medal and a $10,000 prize.

The previous award, given in 2018, went to Italian physicist **Fabiola Gianotti** "in recognition of her leadership as Spokesperson of the ATLAS international collaboration and as Director-General of CERN in promoting science as a vehicle for broad international cooperation."

Other previous winners include **Edoardo Amaldi, Yu Lu, Jean Trân Thanh Vân** and **Neil Turok**.

Self-nominations are permitted, and nominations of women, members of underrepresented minority groups and scientists from outside the United States are encouraged.

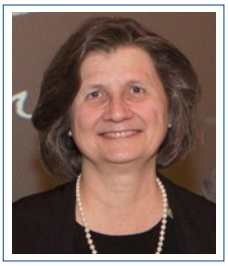
The award is for service to the profession of physics rather than for research accomplishment. Efforts that further international understanding and exchange are of primary importance. Examples might be the establishment or improvement of publications, the promotion or administration of joint research projects, or the operation of unusually successful international conferences. A citation on the accompanying certificate will state the particular service for which the award is made.

The recipient is chosen by the Institute's Board of Directors on the recommendation of an appointed committee.

For more details and to submit nominations, please visit https://www.aip.org/aip/awards/tate-medal.

AAPM WITH ACR AND RSNA FORM THE NIBIB-SPONSORED MEDICAL IMAGING AND DATA RESOURCE CENTER (MIDRC) TO EXPEDITE AI RESEARCH BY SHARING COVID-19 IMAGES AND DATA

Maryellen L. Giger, PhD | University of Chicago
Paul E. Kinahan, PhD | University of Washington



M. Giger
Chair, AAPM Data Science Committee

P. Kinahan
Chair, AAPM Research Committee

In March 2019, the AAPM hosted the Data Science Roundtable in Alexandria, VA at AAPM headquarters. The meeting, convened by the 2019 President Cynthia McCollough, brought together AAPM leadership with representatives from NIH, NIST, FDA and major medical imaging groups, including the RSNA and ACR. Also attending were representatives from the Academy for Radiology & Biomedical Imaging Research, ASTRO, QIBA, the Society for Imaging Informatics in Medicine (SIIM), SPIE (The International Society for Optics and Photonics), and the AAPM Corporate Advisory Board. This unprecedented meeting received exceptional support from the AAPM staff team, and was one of three cornerstone meetings with NIH and Imaging leadership in 2018-2019.

A central point arising from discussions at the AAPM meeting was that medical physicists are critical to the success of AI and data sciences to positively impact medical imaging research by virtue of their unique training and skills, which integrate domain expertise in the physical and technical principles of these fields with knowledge of clinical applications and their impact on patient outcomes. Two primary roles for medical physicists and AAPM in the evolving role of AI in medical imaging are as researchers, and in the application to clinical practice.

Now, as announced in early August, AAPM, ACR, and RSNA will work together to develop the new Medical Imaging and Data Resource Center (MIDRC), an open-source database with medical images from tens of thousands of coronavirus (COVID-19) patients that will fuel research in artificial intelligence and ultimately help doctors better understand, diagnose, monitor and treat the disease. The National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH) is funding the effort through a major contract to Maryellen L. Giger, PhD of the University of Chicago, which will host the MIDRC. The initial $20 million, two-year federal contract could be renewable to $50 million over five years.

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FOR MORE INFORMATION:

Joint Press Release from AAPM, ACR and RSNA

https://w3.aapm.org/media/releases/MIDRC-ACR-RSNA-AAPM_Release_Final.pdf

NIBIB Press Release

https://www.nibib.nih.gov/news-events/newsroom/nih-harnesses-ai-covid-19-diagnosis-treatment-and-monitoring

The University of Chicago Press Release

https://www.uchicagomedicine.org/forefront/coronavirus-disease-covid-19/the-university-of-chicago-is-awarded-a-major-federal-contract-to-host-a-new-covid-19-medical-imaging-resource-center

MIDRC, Cont.

In addition to Giger and Kinahan representing AAPM, the MIDRC effort is co-led with Etta Pisano, MD and Michael Tilkin, MS from ACR and Curtis Langlotz, MD, PhD and Adam Flanders, MD representing RSNA. The committee will also oversee twelve research projects in support of solutions to the COVID-19 pandemic, overall providing funding and other resources to investigators at the ACR, RSNA, and AAPM as well as across 20 universities and the FDA.

The MIDRC is responding to the recognized but unmet need for access to medical image data to develop, test, and validate machine intelligence-based algorithms. By collecting and integrating images and data via a dynamic and secure networked system, the MIDRC will provide an open and large-scale common framework to enable technological advancements, guide stakeholders' validation and use of AI (artificial intelligence), and translate clinical systems for the best patient management decisions. It will provide a critical resource for the medical imaging community during a time of great need, as doctors and scientists are still looking to better understand SARS-CoV-2, the virus that causes coronavirus disease 2019, or COVID-19, and its effects on the human body

Funded under the Federal goverment's special emergency COVID-19 process, the MIDRC will create an open access platform to collect, annotate, store and share COVID-related medical images. The MIDRC will soon leverage existing data collection efforts to upload more than 10,000 COVID-19 thoracic radiographs and CT images, including many from the ACR COVID-19 Imaging Research Registry and the RSNA International COVID-19 Open Radiology Database (RICORD). This will allow researchers worldwide to access a wealth of images and clinical data to answer COVID-19 clinical and logistical questions.

The project will include five infrastructure development projects, conducted under the oversight of the MIDRC executive advisory committee. These projects include:

1. Creation of a platform for access to COVID-19 imaging and associated data.
2. Development of a real-world testing and implementation platform with direct, real-time connections to healthcare delivery organizations.
3. Implementation of quality assurance and evaluation procedures across the MIDRC.
4. Launch of a data commons portal for data intake, access and distribution.
5. Linking of the MIDRC to other clinical and research data registries.

The AAPM will lead Technology Development Project 3, which is to develop and implement quality assurance and evaluation procedures for usage across the MIDRC. The MIDRC activities span from intake of imaging data through data access and dissemination, including data quality metrics, data provenance, data processing audits paths, and then task-directed data distribution. AAPM will bring its expertise to two major components of the MIDRC: (a) physical image quality/harmonization and (b) tailored distribution/metrology standards/evaluation metrics.

For the first component, development of methodology and harmonization methods across imaging vendor acquisition systems, hospital/practice specific imaging protocols, and quality assurance/quality control procedures will be conducted. Towards these aims, AAPM investigators will develop COVID phantoms (digital and physical) and conduct measurements of CT & CXR image quality & harmonization techniques for image data ingestion.

In the second component, while data will be distributed in an open and public way, some data will be sequestered for task-based distribution to enable ultimate independent validation of developments to ensure rapid clinical implementation and safety in patient care. Towards these goals, AAPM investigators will develop benchmarking methods for the various technology assessment & clinical tasks in COVID-19 research and translation and also develop task-based distribution methods.

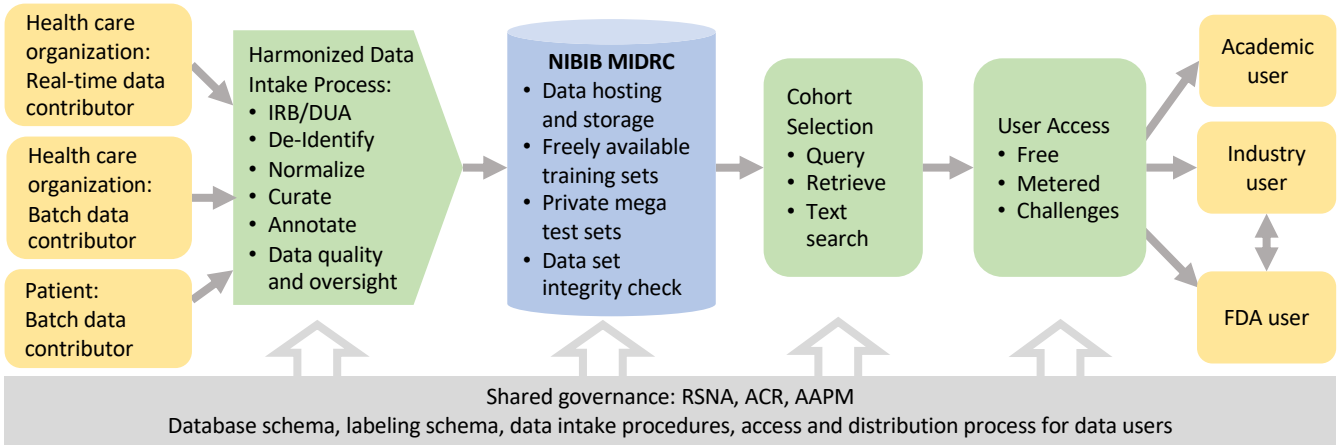
Also, within the MIDRC, twelve research projects in support of solutions to the COVID-19 pandemic will be conducted. Four of them are being led by AAPM members of the AAPM Data Science and Research Committees, including

- Radiomics and machine intelligence of COVID-19 for detection and diagnosis on chest radiographs and thoracic CTs
- Visualization and explainability of MI of COVID-19for prognosis and monitoring therapy
- Investigation of image-based biomarkers for radiogenomics of COVID-19

- Determining COVID-19 image data quality, provenance, and harmonization

Overall, the RSNA, ACR, AAPM, as well as investigators from 20 universities and the FDA are participating in the five MIDRC technology infrastructure projects and twelve research projects. Within three months, the MIDRC plans to upload more than 10,000 COVID-19 thoracic radiographs and CT scan images via the existing input portals of the RSNA repository and the ACR registry, allowing researchers worldwide to access the images and accompanying clinical data to answer new questions about the disease.

While the MIDRC will initially focus on COVID-19, its applications will be expanded to provide imaging data and AI pipelines to aid the fight against other diseases. ■



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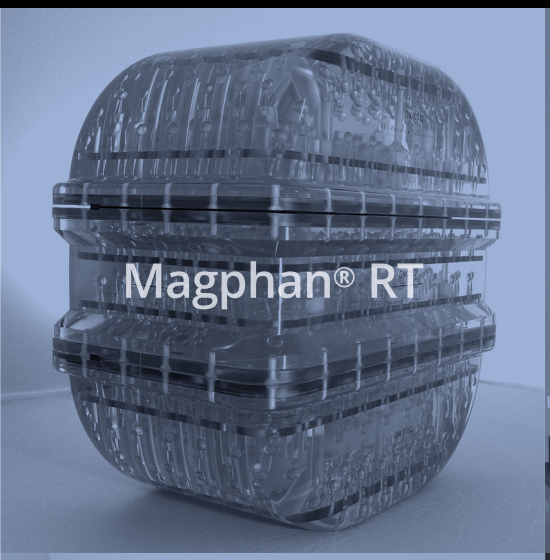

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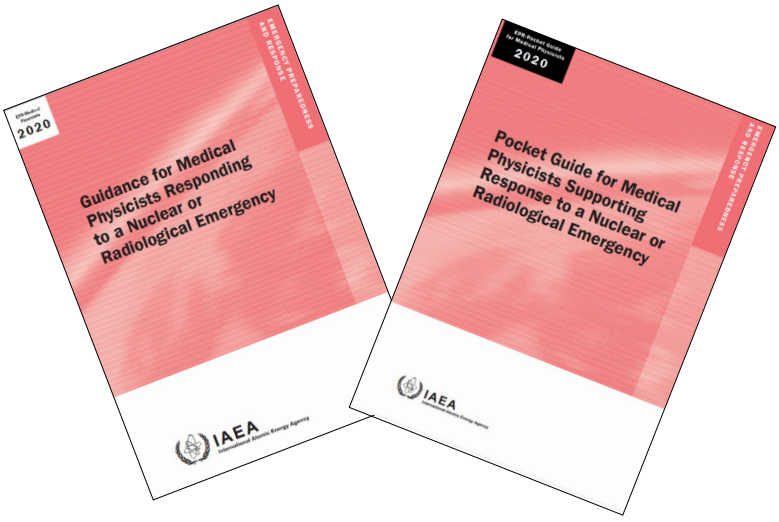
Two documents dedicated to the participation of medical physicists from hospitals in the response to nuclear and radiological emergencies, have finally been published by the IAEA after several years of work.:

- ***EPR-Medical Physicists 2020. Guidance for Medical Physicists Responding to a Nuclear or Radiological Emergency***
- ***EPR-Pocket Guide for Medical Physicists Supporting Response to a Nuclear or Radiological Emergency***

Both publications are available in the IAEA publication area or in the IAEA Incident and Emergency Centre (IEC) website.



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