AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

IMPROVING HEALTH
THROUGH MEDICAL PHYSICS

# AAPM NEWSLETTER

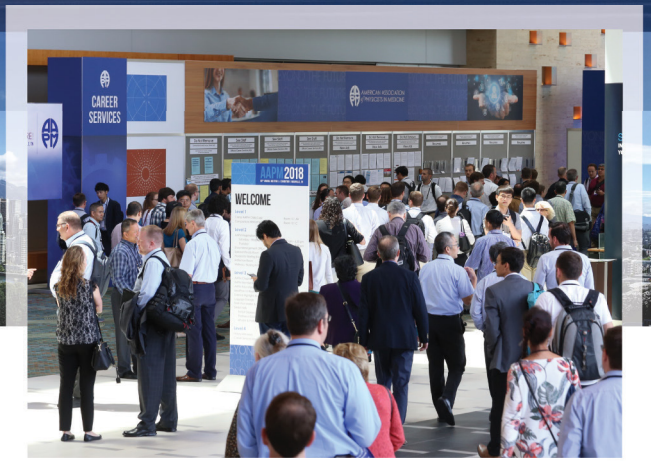
**January/February 2020** | Volume 45, No. 1


**IN THIS ISSUE:**

Improving Health QUALITY. Increasing Global IMPACT.

# 2020 JULY 12–16 VANCOUVER, BC

# JOINT AAPM | COMP MEETING




# SAVE THE DATE!

**Join the Medial Physics Community**

Plan now to attend the 2020 Joint AAPM | COMP Meeting, offering outstanding scientific, educational and professional symposia, courses, and workshops spanning the range of medical physics topics as well as technical exhibit providing the perfect opportunity to connect with vendors, learn about new products and services, and seek technical support.

#AAPM2020 | www.aapm.org

AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE

**IMPORTANT DATES:**

**January 15, 2020**

- Website activated to receive electronic abstract submissions

**March 4, 2020**

- Meeting Housing and Registration will be available online

**March 5, 2020**

- ***8:00 PM Eastern (5:00 PM Pacific)***
  Deadline for receipt of abstracts and supporting data
  *[This deadline recognizes other conference schedules. There will be NO EXTENSION OF THIS DEADLINE. Authors must submit their abstracts by this time to be considered for review.]*

COMP Canadian Organization of Medical Physicists

OCPM Organisation canadienne des physiciens médicaux

**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

## TABLE OF CONTENTS

**January/February 2020** | Volume 45, No. 1

## ARTICLES IN THIS ISSUE



## EVENTS/ANNOUNCEMENTS





### 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: March/April
Submission Deadline:
February 7, 2020
Posted Online:
Week of March 3, 2020

## CONNECT WITH US!

### Editor's Note

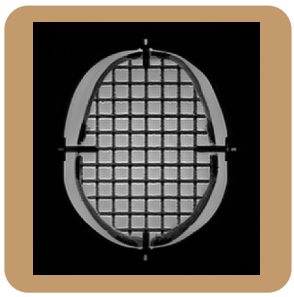
I welcome all readers to send me any suggestions or comments on any of the articles or features to assist me in making the AAPM Newsletter a more effective and engaging publication and to enhance the overall readership experience. Thank you.

# **Measure** and Evaluate MRgRT **3D Distortion**

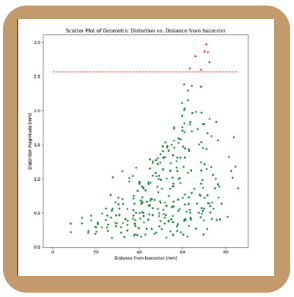
## distortion check

CLOUD SOFTWARE FOR EVALUATION OF IMAGE DISTORTION

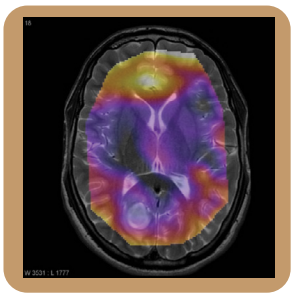
**SCAN**



**UPLOAD IMAGES**

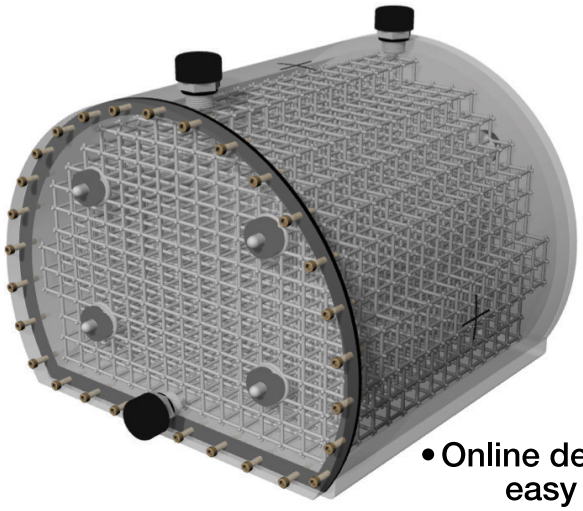


**REVIEW REPORTS & TREND ANALYSIS**



**EXPORT DICOM OVERLAYS TO TPS**

- CIRS proprietary materials simulate distortion due to susceptibility & chemical shifts typical to clinical patient scans



- Density of physical control points optimized to bring interpolation close to linearity
- Cloud based solution frees user of operating system and hardware constraints
- Quickly & automatically analyze complete MR data sets
- Online deployment facilitates collaboration, easy review and portability of results

**Large Field Grid Phantom**
**2623 Physical Control Points**

**Inter-cranial Grid Phantom**
**335 Physical Control Points**

CIRS

900 Asbury Ave. • Norfolk, Virginia 23513 • USA • Tel: 757-855-2765 • **WWW.CIRSINC.COM**

# 2020 GLOBAL INITIATIVES FOR AAPM

**PRESIDENT'S REPORT** M. Saiful Huq, PhD | Pittsburgh, PA

It is a great privilege to begin my tenure as your President. I would like to use my first newsletter article in this role to discuss several upcoming global initiatives for AAPM. Before I do that, I would first like to start with a few important acknowledgments, as our leadership recently transitioned.

December 31, 2019 marked the end of three years of outstanding service by **Bruce R. Thomadsen, PhD, FAAPM** in the Presidential chain of AAPM. His leadership style during the last three years can be characterized by innovative ideas and strategic thinking. His Presidential symposium, themed "Beyond the Future," was devoted to generating ideas for the future of medical physics. He worked tirelessly to determine where we would like AAPM and medical physics to be in the future, and he has made AAPM a better organization with an excellent strategic vision. Thank you, Bruce, for your dedicated service to the AAPM.

I would also like to thank **Cynthia H. McCollough, PhD, FAAPM, FACR, FAIMBE**, who just finished an incredible two years of service to the AAPM, including serving as AAPM President for the last year. She championed many initiatives during her Presidential year. These include, but are not limited to, organizing a Data Science Round Table, building bridges across various disciplines, specialties and practices, and focusing on the topics of diversity, inclusion, equality and equity. The keynote speaker at her Presidential symposium spoke on the differences that each of the three generations active in today's workplace brings to the table. Thank you, Cynthia, for remarkable service to AAPM in the Presidential chain. I am looking forward to working with you in your new role as the Chair of the Board of Directors.

In my 30 years of professional service I have come across many organizations, big and small, for-profit and non-profit. But I have never come across an organization like AAPM which has such a highly talented and motivated team of staff members and who are so dedicated to the service of the society. There is also an amazing bond that exists among all staff members. Most of these members have spent all their professional lives with AAPM. This is a rarity. They always respond to the needs of AAPM members with a positive attitude and get every job done in a very effective and efficient manner. This is all because of who they are and because of the incredible leadership provided by **Angela R. Keyser**, the Executive Director of AAPM. A member of AAPM essentially summarized Angela's value to the organization as follows: If the volunteers are the "Heart" of the AAPM organization, and if the President and EXCOM officers are the right side of the "Brain" (vision and creativity),

**"I would like to thank the members of the** Ad Hoc Committee for Defining the Structure, Charges and Budget for 2020 of the International Committee (IC) and its Subcommittees (SCs) (AHIC)**, an Ad Hoc Committee that was formed to address the mission and vision of AAPM's international activities. Much of my message has been taken from the report of this Ad Hoc Committee that I chaired."**

and the Board of Directors is the left side (analytical and methodical), Angela, for sure, is the "Neck" and Spirit that guides this "Head" in a safe and organized forward direction. Angela's leadership is unquestionable, and we are so fortunate for her guidance. Thank you, Angela, for your incredible service to our society, and thank you to the staff of AAPM for your dedicated service to our society and its members. I am looking forward to working with you very closely during my presidential year, 2020.

In 2013, confirming AAPM's commitment to international activities, the Board of Directors of the AAPM made a strategic decision to help the global community of medical physics by allocating a fraction of its operational expenses to projects related to international activities. The Board approved the following motion:

> *"The AAPM Board endorses the Strategic Planning Committee recommendation that AAPM continue to support International Education activities, such as the International Scientific Exchange Program and IAEA regional courses, at the current level of approximately 0.78% of the operating budget ($70,000), with clear deliverables and metrics defined for evaluation whenever possible. Motion was seconded and approved unanimously."*

These allocated funds spawned multiple initiatives that were primarily focused on educational courses, scientist exchanges, equipment donations, and book/journal donations. These initiatives involved significant personnel and fiscal resources and developed very quickly. Additionally, these activities have demonstrated AAPM's global leadership in the field of medical physics. AAPM has played a significant role in forming regional, country-specific, and international medical physics organizations, including the Latin American Medical Physics Association (ALFIM) and the International Organization of Medical Physics (IOMP).

Global health needs are changing dramatically. The World Health Organization (WHO) data show that 71% of global deaths in 2016 are attributed to noncommunicable diseases (NCDs). The United Nations unanimously approved a resolution in support of the "prevention and control of noncommunicable diseases (NCDs), among which cancer is a leading cause of death". While NCDs such as diabetes and chronic lung diseases are largely public health issues, cardiac diseases, with their need for imaging, and cancer diagnosis and treatment fall squarely in the realm of the medical physics profession. Unfortunately, the burden of cardiac disease and cancer amongst NCDs is rising disproportionately among low and middle income countries (LMICs) with little or no access to quality imaging and radiotherapy. This has created enormous disparities in the need for medical physicists, imaging technologies, and cancer therapies globally. The existence of these disparities and needs of these for underserved populations provides an impetus for our specialty to develop strategies in support of closing this gap in standard imaging and cancer therapy procedures.

As we look ahead in 2020, I am cognizant of the fact that AAPM is the largest and leading medical physics organization in the world and in one of the richest countries in the world. Therefore, by default, it has an ethical, moral and humanitarian responsibility to lead in dealing with global health challenges that require medical physics expertise. According to IAEA data, there are large disparities across the globe for both diagnostic and radiotherapy devices, with some countries having no access at all. Medical physicists can help close the gap by taking on the challenge of developing technologies that are cost effective and designed for challenging environments.

AAPM is in a unique position to meet its societal obligation for the following reasons:

1. AAPM is a leader in developing technical standards, guidelines, and clinical recommendations for devices that are used in disease diagnoses and treatments. The AAPM is in a unique position to develop resource-stratified minimum standard recommendations for the global community based on its best practice guidelines.
2. AAPM has a cadre of volunteers who are motivated and willing to help clinics in LMICs (as well as in many high-income countries) safely implement new diagnostic and therapeutic technologies.
3. AAPM has the structure (Councils, Committees, Subcommittees, and WGs) to provide needs assessment and subsequent educational, professional, and scientific guidance to the medical physics community across the globe.

4. AAPM has the framework through Memoranda of Understanding to work with sister organizations and non-governmental organizations (NGOs) to collaborate on global health activities.
5. AAPM has established a robust collaborative relationship with diagnostic and therapy vendors who expect AAPM to take the lead in global health. Vendors feel strongly that AAPM is in a unique position to help them with the safe and efficient deployment of their products around the world.
6. From a strategic perspective, the growth of medical physics over the next ten years is likely to be greater in LMICs; estimates indicate that 40,000+ medical physicists are needed in these settings. Therefore, if the AAPM wants to grow its base and influence, a key method of doing so will be through engagement of international members.
7. AAPM has the opportunity to market its intellectual/educational resources to the global community in addition to providing guest lecturers at international meetings and training courses.

AAPM is in a leadership position to create an infrastructure that can facilitate the participation of medical physicists in global health collaborations, reaching beyond its traditional and historic role to impact the world with mutual benefits and new advances in the field. Specifically, such global engagement benefits medical physics by:

- Engaging more individuals to participate in advancing the field of medical physics.
- Creating visibility for medical physicists and the important work they do.
- Taking advantage of new opportunities including funding to support the work of medical physicists.
- Developing international collaborations which enhance the creativity and productivity of medical physics advancements.
- Broadening global experience by learning new cultures and healthcare systems.
- Creating new opportunities for research and education collaborations.
- Improving clinical proficiency with exposure to different and complex cases.
- Supporting medical physics activities in both well-resourced and underserved regions of the world.

As many other disciplines have realized, for AAPM to stay increasingly relevant in today's world, we must make a more concerted effort to participate in global health activities. With recent advances in information and communication technologies, and artificial intelligence, many specialties are leveraging these technologies to overcome these barriers and engage with the rest of the world. Today, local health is global health and vice versa; discoveries or newly developed technologies in other countries can help advance clinical care in the USA, and vice versa.

It is important to recognize that the scope of international activities has grown much broader than what was envisioned by AAPM leadership a decade ago. It has outgrown the present Committee structure within the AAPM. A holistic approach to international activities is crucial to ensuring that our efforts are coordinated and efficient, and that lessons learned and resources created from activities working in one region of the world are shared with groups working in other regions of the world or with other non-profit organizations involved in international activities involving medical physics. AAPM's international programs should be thoughtfully evaluated so as to have the greatest impact within finite budget allotments. All international programs and activities should have measurable metrics associated with them for continuous assessment of their impact.

As the leading medical physics organization in the world, AAPM is in a unique position to influence the practice of medical physics globally from the perspective of training, education, scientific development, and professional growth. The AAPM should develop an infrastructure with operational parameters for global activities that have the following attributes:

**Vision:** To have a sustainable, measurable, and meaningful impact on global health as it relates to the practice of medical physics, the international medical physics communities, and medical disciplines associated with medical physics (e.g., radiology, nuclear medicine, and radiation oncology).

**Goal:** To identify and develop strategies for advancing the practice of medical physics globally and to address global disparities in healthcare and develop mitigation strategies in collaboration with other stakeholders that include:

international medical physics organizations, international radiology and radiation oncology societies, and NGOs that deal with cancer and other diseases within the scope of medical physics.

**Scope of activities:**

1. *Training and Education:*
   There is an urgent need to train medical physicists who are confronted with new technologies, including imaging and therapy technologies, and to safely adapt those technologies to local circumstances. Even though didactic lectures and small workshops are useful, extended-period hands-on training with the equipment and technologies with boots on the ground will be extremely important. AAPM efforts internationally would have considerably higher impact if we extend our efforts beyond educational courses currently offered as a part of International Scientific Exchange Program, to use a spectrum of knowledge dissemination methods, including lectures, practical hands-on workshops, facilitating hosting of visiting physicists, among others. We must perform a comprehensive assessment of local needs and resources and design education and training programs and their relevant contents to address these needs; this should include both didactic and hands-on components and should be synergistic with the applications training offered by vendors when they sell new equipment/technologies. These programs should have a measurable and meaningful impact. Continuous assessment of the programs should be performed and improvements, as appropriate, should be made on a regular basis. Where possible, advanced information technologies including artificial intelligence as well as the use of social media should be made for online education and training, and dissemination of relevant materials. Other stakeholders, such as the IAEA, have developed a framework for eLearning. This teaching/learning approach can be amplified by the expertise of AAPM members to develop optimal scientific and educational content.
2. Growing the next generation of medical physicists interested in global health:
   In a recent survey of Radiation Oncology residents, 90% expressed interest in participating in a global health experience during their residency training. However, 64 of 115 (56%) respondents reported not having adequate faculty guidance in their residency programs to enable them to acquire this global health experience. Many in medical physics also want to participate in global health activities but do not know how to, due to barriers related to space-time, cost, and organizations. It will be important to incorporate an option of global health training in CAMPEP- accredited medical physics residency programs to grow the next generation of medical physicists interested in global health activities.
3. Scientific Innovation and Exchange:
   Through its committee structure, especially those under the auspices of the Science Council, AAPM can collaborate with research laboratories and vendors to develop technologies and software solutions that are more suitable and cost-effective for both high-income and challenging environments. There is a large cadre of AAPM volunteers who have an interest in collaborating with colleagues in other parts of the world. A comprehensive database that matches the interests of AAPM members with those around the globe would be extremely useful for scientific exchange. Furthermore, AAPM can continue to support the equipment donation program for facilities in LMICs in collaboration with vendors and willing donors.
4. Communication and Collaboration with Stakeholders:
   It is essential that all interested stakeholders in global health collaborate and harmonize activities to avoid duplication of resources and effort. Stakeholders can collaborate on joint policies, guidelines, and publications. Effective communication platforms such as online portals and social media should be utilized for dissemination of appropriate information among stakeholders globally.
5. Professional Activities:
   AAPM is leading the effort in developing guidelines for the practice of medical physics. AAPM is in a unique position to help establish and promote the accreditation of Medical Physics Educational Programs globally. Working in concert with existing regional medical physics organizations, it can promote the certification, registration and licensing of medical physicists globally. It can collaborate with the International Medical Physics Certification Board to promote the awareness of medical physics and qualified medical physicists globally.

6. Regional Collaboration:
   It is essential that all global collaboration is based on good understanding of global health disparities so that appropriate mitigation strategies are developed. Therefore, it is imperative that the AAPM works in concert with regional medical physics organizations and other stakeholders such as the IAEA, vendors, NGOs, local governmental healthcare agencies, etc., in different regions of the world to perform comprehensive needs assessments for global collaboration on an ongoing basis. It is expected that projects that impact global health will be identified through these collaborations.

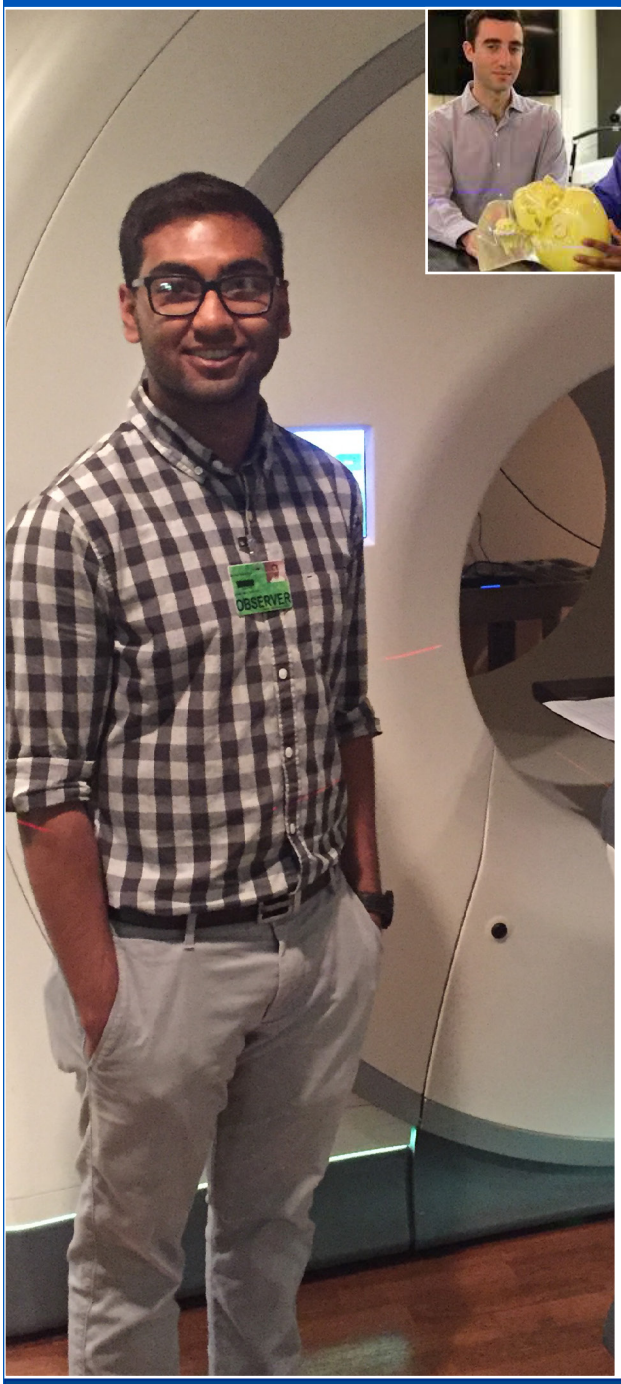
A new council, an International Council, should be formed within the AAPM structure; this council's focus will be to develop need-assessed strategies for effectively advancing the practice of medical physics globally in healthcare research, teaching, and clinical service. The council should also help in bridging the enormous disparity in medical physics associated with the lack of access to safe and quality radiotherapy and imaging in lower income contexts, and to improve and expand the understanding of the practice in the United States. Newer strategies should be developed within this infrastructure for effective implementation of new programs that will ensure sustained, measurable, and meaningful impact on global health as it relates to the practice of medical physics.

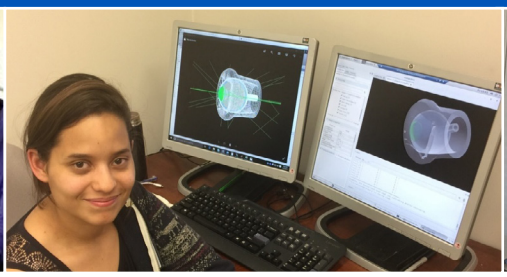
Because of the strategic importance of the role of medical physicists in bridging the large disparities that exist across the globe, I have decided to have the theme of the 2020 Annual Meeting to be held in Vancouver to be "Improving Health QUALTY, Increasing Global IMPACT". By working together, we can further AAPM's position as an agent of change with the potential to significantly impact global health challenges that require medical physics expertise. Let us join hands and make a difference in the world and help make AAPM one of the premiere organizations in improving human health, and having major impact in reducing the burden of non-communicable diseases globally. ■

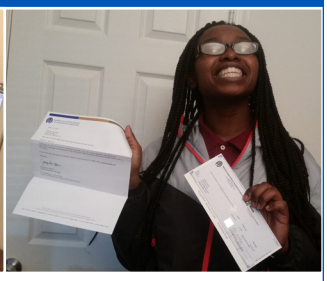
AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

# DIVERSITY RECRUITMENT through EDUCATION AND MENTORING

# DREAM





**THE DREAM PROGRAM** is a competitive 10-week summer program designed to train the next generation of diverse medical physicists and increase the number of underrepresented groups in medical physics by creating new hands-on research and clinical opportunities, outreach, and mentoring both during and after the program has completed. In addition, this is a paid fellowship offering recipients at least $5,500 each.

## ELIGIBILITY

- Undergraduate sophomores, juniors, and seniors majoring in physics, engineering, or other science
- US Citizens, Canadian Citizens, or Permanent Citizens of the US.

## HOW TO APPLY

- Complete and upload the application
- Upload an official transcript
- Provide two letters of recommendation
- Provide a self statement

## APPLICATION DEADLINE: **February 3, 2020**

**FOR MORE DETAILS, VISIT:**
http://gaf.aapm.org/index.php#DREAM

**PROGRAM CONTACT:** Jacqueline Ogburn, jackie@aapm.org or (571) 298-1228

Sponsored by the AAPM Education Council through the AAPM Education and Research Fund

# HAPPY NEW YEAR AND NEW DECADE TO ALL OF YOU!

**TREASURER'S REPORT** Mahadevappa Mahesh, PhD | Baltimore, MD

## Financial Position and Estimates for 2019

I would like to start the New Year with pleasant news about AAPM's finances. AAPM's finances continue to be on solid grounds; still, it is essential to watch about our revenues (trending down) and expenses (trending higher) along with the overall trends in the fixed expenses of our association. Last year upon board approval, we allocated a portion of our reserve funds (about $2 million) in funds aimed at higher returns. That process commenced in late fall 2019, and we will have to wait and watch how the funds perform in years to come.

## Financial Position and Estimates for 2019

As of October, we anticipate that AAPM will finish the year with a modest deficit from operations. This estimate is based upon historical modeling of spending patterns over the final two months of the year. We know that historically Council and Committee spending traditionally finishes the year below budget, and this knowledge helps drive the modeling assumptions. Please note that this is only an estimate and the final year-end numbers will not be available until towards the end of the first quarter of 2020.

Compared to the approved budgeted revenue of $10.13 million and expenses of $11.11 million, the estimated revenue and expenses are $9.83 million and $10.89 million, respectively. For the year, the net return from the annual meeting came in nearly $140,000 below budget as a result of a decrease in registrations. Additionally, membership dues for the year, while up 2.4% over the prior year, are expected to finish the year below budget by approximately $127,000. At the same time, it is anticipated that Council and Committee revenue will end the year over budget as Placement Services revenue is expected to exceed the budget by approximately $144,000. It should be noted that the entire process is coming in below-budgeted costs.

As a result of solid market performance during 2019, the reserve fund balance exceeds $15.4M as of October 31, 2019.

## 2020 Budget

I would once again like to thank the Council and Committee Chairs with their liaisons who worked extremely hard together in developing their budgets. The Finance Committee reviewed the 2020 budget with the Council Chairs and eventually approved the initial draft of the budget. This year, there weren't any appeals to the budget modifications made during the Fall Meetings, and the approved budget was submitted to the Board. I would like to thank FINCOM committee members and everyone involved with the budget

**I would like to thank Robert McKoy and all of the AAPM finance staff for all their help during this past year in making the budgeting process and the job of Treasurer manageable. I would also like to take this opportunity to thank the members of the Finance Committee, especially those members who have completed their terms and are rotating off the Committee. At the same time, I would like to welcome new members to the Finance Committee. Please feel free to reach out to me (email me at** mmahesh@jhmi.edu **or call me at 410-955-5115 or tweet me at @** mmahesh1**) if you have any questions concerning this report.**

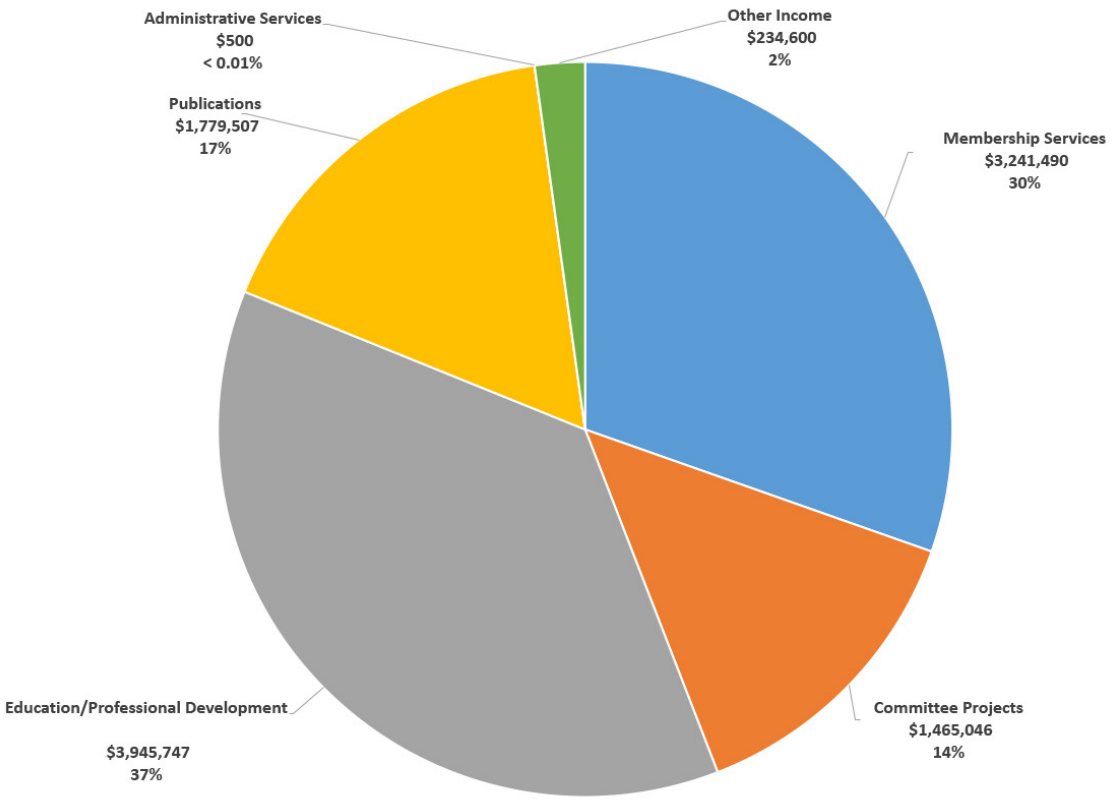
## TREASURER'S REPORT, Cont.

process for a very constructive and productive budget meeting. The Board approved the 2020 budget during its meeting in Chicago at RSNA.

The 2020 budget summary is included in this report. Revenue projections total $10.67 million, and expenses total $11.68 million, with a budgeted deficit of $1,009,771. The statistical model predicted a deficit of $964,390, which is based upon AAPM complying with the financial covenants established by TD Bank, the mortgage holder for the HQ building. Given our standard under-spending patterns, the Finance Committee felt that the approved deficit would allow for AAPM to operate and still meet the bank covenants and operate at or near break-even from Operations.

AAPM's Finance Committee, Strategic Planning Committee, and the Board feel that this conservative budget allows for AAPM to achieve its strategic initiatives and yet meet its fiscal responsibilities to the bank at the same time.

Included, you will find a graphical presentation of the 2020 budgeted revenues by category (including what programs are included in the various categories). ■



## TREASURER'S REPORT, Cont.

### 2020 Final Budget Approved By the Board

| | Revenue | Expenses | | | Net |
|---|---|---|---|---|---|
| *Final Budget Approved by the Board 12.4.19* | | Direct | Overhead | Total | |
| **Membership Dues** | | | | | |
| Dues | 3,221,040 | 7,500 | 75,209 | 82,709 | 3,138,331 |
| Reinstatement Fees | 6,450 | 0 | 0 | 0 | 6,450 |
| Applications Fees | 14,000 | | 0 | 0 | 14,000 |
| Subtotal | $3,241,490 | $7,500 | $75,209 | $82,709 | $3,158,781 |
| **Membership Services** | | | | | |
| Member Inquiries/Services | 0 | 0 | 98,408 | 98,408 | (98,408) |
| Membership Directory | 0 | 0 | 6,735 | 6,735 | (6,735) |
| AAPM Web Site | 0 | 0 | 379,384 | 379,384 | (379,384) |
| Subtotal | $0 | $0 | $484,527 | $484,527 | ($484,527) |
| **Organizational** | | | | | |
| Governance | 0 | 298,645 | 234,512 | 533,157 | (533,157) |
| Governance - Contingency | 0 | 15,000 | 0 | 15,000 | (15,000) |
| Subtotal | $0 | $313,645 | $234,512 | $548,157 | ($548,157) |
| **Councils and Committees** | | | | | |
| Administrative Council | 40,000 | 746,125 | 510,567 | 1,256,692 | (1,216,692) |
| Education Council | 401,040 | 502,720 | 165,688 | 668,408 | (267,368) |
| Professional Council | 552,006 | 378,681 | 154,086 | 532,767 | 19,239 |
| Science Council | 472,000 | 1,058,461 | 261,129 | 1,319,590 | (847,590) |
| Committees Reporting to the Board | 0 | 89,795 | 132,974 | 222,769 | (222,769) |
| Liaisons with other Organizations | 0 | 0 | 0 | 0 | 0 |
| Subtotal | $1,465,046 | $2,775,782 | $1,224,444 | $4,000,226 | ($2,535,180) |
| **Education & Professional Development** | | | | | |
| Annual Meeting | 3,307,704 | 1,958,129 | 665,000 | 2,623,129 | 684,575 |
| Summer School | 318,936 | 211,041 | 46,245 | 257,286 | 61,650 |
| Spring Clinical Meeting | 316,107 | 210,507 | 80,000 | 290,507 | 25,600 |
| RSNA | 3,000 | 118,600 | 64,802 | 183,402 | (180,402) |
| Specialty Meetings | 0 | 0 | 12,436 | 12,436 | (12,436) |
| Subtotal | $3,945,747 | $2,498,277 | $868,483 | $3,366,760 | $578,987 |
| **Publications** | | | | | |
| Journals | 1,779,507 | 635,258 | 45,314 | 680,572 | 1,098,935 |
| Subtotal | $1,779,507 | $635,258 | $45,314 | $680,572 | $1,098,935 |
| **Administrative Services** | | | | | |
| Administration/Prof Services/AIP | 500 | 254,000 | 114,737 | 368,737 | (368,237) |
| General Operations /Prince Street | 0 | 134,325 | 1,826,039 | 1,960,364 | (1,960,364) |
| Subtotal | $500 | $388,325 | $1,940,776 | $2,329,101 | ($2,328,601) |
| **Other Income & Expense** | | | | | |
| AAPM Mailing Lists | 8,400 | | 20,982 | 20,982 | (12,582) |
| Membership Certificates | 100 | 0 | 0 | 0 | 100 |
| Royalties - ARP | 100,000 | 0 | 0 | 0 | 100,000 |
| Investment Earnings & Fees | 5,000 | 0 | 0 | 0 | 5,000 |
| CAMPEP | 103,500 | 0 | 55,697 | 55,697 | 47,803 |
| RSEA | 7,600 | 7,600 | 0 | 7,600 | 0 |
| Services to other organizations (COMP, SDAMPP, etc.) | 10,000 | 0 | 16,779 | 16,779 | (6,779) |
| Contributions and Donations | 0 | 8,000 | 0 | 8,000 | (8,000) |
| Dues and other payments/AIP | | 75,551 | 0 | 75,551 | (75,551) |
| Miscellaneous | 0 | 0 | 0 | 0 | 0 |
| Subtotal | $234,600 | $91,151 | $93,458 | $184,609 | $49,991 |
| **TOTAL FROM OPERATIONS** | **$10,666,890** | **$6,709,938** | **$4,966,723** | **$11,676,661** | **($1,009,771)** |
| **AAPM Education & Research Fund** | 279,850 | 254,965 | 9,907 | 264,872 | 14,978 |
| **Investment Income** | 270,000 | 45,000 | 0 | 45,000 | 225,000 |
| **Grand Total** | **$11,216,740** | **$7,009,903** | **$4,976,630** | **$11,986,533** | **($769,793)** |
| | | | | 2020 Model to Break-Even | ($949,554) |
| | | | | 2020 Model Debt Service | ($964,390) |
| | | | | 2020 Debt Service Loss | ($31,498) |

# WHAT'S NEW AT AAPM HEADQUARTERS?

## EXECUTIVE DIRECTOR'S REPORT Angela R. Keyser | Alexandria, VA

### Did You Know?

- **New AAPM publication:** Report No. 174 - Task Group 174 Report: Utilization of [18F] Fluorodeoxyglucose Positron Emission Tomography ([18F] FDG-PET) in Radiation Therapy (2019)
- **Do you receive *Medical Physics* in print and would prefer to get it online only?** If so, go here.

Look for "My Journal" - Medical Physics in Print.
If your current preference is "You will receive Medical Physics in Print and Online," click the "Change to Online Only" button.

That's it! In 4-6 weeks, you will no longer receive a print copy!

Change your mind? Click the change button to revert to print at any time!

- **Please visit online ads:** AAPM sponsors are partners in the publication of AAPM's journals, and the links they provide in their online advertisements might provide information useful to your practice. Please consider clicking through if you see something that interests you.
- **Interested in Emeritus Membership?** If you have fully retired from the field after being a Full or Associate member of AAPM for 10+ total years (the last two consecutive) and are over the age of 55, you are eligible for Emeritus Membership. To request a change to Emeritus, email Jennifer Hudson your request and our HQ team will do the rest!

### APSIT: Insurance for Science Professionals

Each year, AAPM members are offered a range of insurance products through the American Physical Society Insurance Trust (APSIT) because of AAPM's affiliation with the American Institute of Physics (AIP). APSIT was established in 1969 by the American Physical Society (APS) to provide members with a convenient source of quality and affordable insurance. The trust began by offering Group Term Life Insurance in February of 1970, and has since greatly expanded their product selection.

Most APSIT plans are underwritten by market-leader New York Life Insurance Company, established in 1845. New York Life regularly earns the highest ratings for its financial strength from leading rating services.

Plan premiums are regularly more affordable than what's available through competitors, thanks to the power of group purchasing. Since AIP society members usually have higher education levels and tend to live more conservative lives, APSIT group rates are very competitive in the market.

APSIT's governing board, charged with making decisions about which plans to provide, is comprises of representatives from participating member societies. This means every decision is made based on an understanding of what AIP society members find important. I've been fortunate enough to serve on the APSIT board since 2009.

In 2014, APSIT selected Pearl Insurance as its exclusive program administrator for life and health insurance offerings. With over 60 years of industry experience, Pearl Insurance is a nationally recognized third-party organization, and is responsible for the brokerage, administration, and marketing of APSIT's group insurance program. This strategic partnership will lead to additional coverage options and enhanced services as we continue to work toward expanding our benefit offerings. Pearl Insurance's team can be reached Monday through Friday, from 7:00 am – 7:00 pm CST, at **800.272.1637**.

Currently, members of any AIP society are eligible to purchase the following plans through APSIT:

- Group Term Life
  - Benefit amounts of up to $1,500,000 of member coverage and $750,000 of spouse coverage.
  - Spouse/domestic partner/child coverage available
  - Quick Decision available for coverage amounts up to $400,000 (under age 50). Automated underwriting allows for no medical exam (just a few health questions) and a faster decision on your application.
- Group 10-Year Level Term Life
  - Rates locked in for a decade
  - Benefit amounts of up to $1,000,000 of member coverage and up to $750,000 of spouse coverage
  - Spouse/domestic partner/child coverage available

- Group Disability Income
  - Benefit amounts of up to $5,000 per month
  - Your choice of waiting period (60 or 90 days)
  - Benefits paid up to age 70
- Group Accidental Death and Dismemberment
  - Benefit amounts of up to $300,000
  - Spouse/domestic partner and dependent child coverage available
- Long-Term Care
  - LTCRplus core benefits
    - Long Term Care funding
    - Long Term Care Navigation
    - Long Term Care Audit
    - Long Term Care Legal

While it remains your decision as to whether any of these insurance products fit your own needs, I encourage everyone to take advantage of the plans that are right for you. Visit APSIT for more information on each plan.

## 2020 Funding Opportunities

**Summer Undergraduate Fellowship Program**

*(Application Deadline: February 3, 2020)*

The Summer Undergraduate Fellowship Program is designed to provide opportunities for undergraduate university students to gain experience in medical physics by performing research in a medical physics laboratory or assisting with clinical service at a clinical facility.

In this program, AAPM serves as a clearinghouse to match exceptional students with exceptional medical physicists, many who are faculty at leading research centers. Students participating in the program are placed into summer positions that are consistent with their interest.

Students are selected for the program on a competitive basis to be an AAPM summer fellow. Each summer fellow receives a $5,500 stipend from AAPM.

**DREAM — Diversity Recruitment through Education and Mentoring Program**

*(Application Deadline: February 3, 2020)*

The AAPM Diversity Recruitment through Education and Mentoring Program (DREAM) is a 10-week summer program designed to increase the number of underrepresented groups in medical physics by creating new opportunities, outreach and mentoring geared towards diversity recruitment of undergraduate students in the field of medical physics. Students participating in the program are placed into summer positions that are consistent with their interest.

Students are selected for the program on a competitive basis to be a DREAM fellow. Each DREAM fellow receives a $5,500 stipend from AAPM.

**ASTRO-AAPM Physics Resident/Post-Doctoral Fellow Seed Grant**

*(Application Deadline: February 15, 2020)*

AAPM and the American Society of Radiation Oncology (ASTRO) are jointly funding a research seed grant for Medical Physics Residents and Post-Doctoral Fellows. The goal of the joint seed grant is to advance the field of radiation oncology in novel ways through the support of talented early-career scientists performing physics and radiation oncology-related research. The Physics Seed grant aims to support the next generation of researchers. One grant of up to $25,000 will be awarded. The start date for the 2020 award will be July 1, 2020.

**AAPM / RSNA Imaging Physics Residency Grant**

*(Application Deadline: May 4, 2020)*

AAPM Board of Directors has approved $420,000 in support over 6-years ($70,000/year starting in 2019) to fund six spots in existing or new imaging residency programs. The RSNA Board of Directors approved $210,000 in funding for 3 additional slots in existing or new imaging residency programs. The purpose of the AAPM funding is to provide 50% support of a resident's salary for two imaging physics residents. The awardee institution(s) will provide the other 50% support. After the period of the award is over, the intent is that the awardee institution(s) will continue to fully support this new imaging physics residency position. CAMPEP accreditation is expected within the first year of the funding period if a program is not currently accredited. Open to existing or new imaging residency programs.

**Research Seed Funding Grant**

*(Application Deadline: May 4, 2020)*

Three $25,000 grants will be awarded to provide funds to develop exciting investigator-initiated concepts, which will hopefully lead to successful longer-term project funding from the NIH or equivalent funding sources.

## EXECUTIVE DIRECTOR'S REPORT, Cont.

Funding for grant recipients will begin on July 1 of the award year. Research results will be submitted for presentation at future AAPM meetings.

Applicants must be a member of AAPM at time of application (any membership category).

**AAPM Graduate Fellowship**

*(Application Deadline: May 18, 2020)*

The AAPM Graduate Fellowship is awarded for the first two years of graduate study leading to a doctoral degree in Medical Physics (PhD or DMP). Both BSc and MS holders are eligible to apply. Applicants must be a member of the AAPM at the time of application, (any membership category). Pending membership status not eligible. A stipend of $13,000 per year, plus tuition support not exceeding $5,000 per year will be assigned to the recipient.

Graduate study must be undertaken in a Medical Physics Doctoral Degree program accredited by the CAMPEP.

View additional information and access the online applications.

### 2020 Dues Renewal

2020 dues renewal notices were distributed in late October. You may pay your dues online or easily print out an invoice and mail in your payment. I am pleased to report that all twenty-one AAPM Chapters have elected to have HQ collect chapter dues. We hope that you will appreciate the convenience of paying your national and chapter dues with one transaction!

The AAPM Rules are very specific regarding the cancellation of membership if dues are not paid by the deadline and the fees required for reinstatement. As the administrative staff of the AAPM, we must consistently enforce the rules of the organization. It would be very difficult to make exceptions for some members and enforce such fees on others. If you need any assistance or have any questions about the dues process, please contact Janelle Priestly.

### Staff News

**Julia Colque** joined the AAPM HQ team on November 6 as the Staff Accountant. She has an MS in Accounting and has worked in accounting and legal settings for most of her career. Contact Julia with questions related to finance such as dues payments and expense reimbursements.

AAPM's new Meetings and Programs Coordinator as of December 16 is **Jordan Kehrt**. He hails from Indiana and is a 2018 graduate of Indiana University. After a short stint as a political campaign worker, Jordan focused on event management, most recently with the U.S. Green Building Council in DC as a contractor/Conference and Events Assistant.

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. ■

### OUR CONDOLENCES

***Zahoor M. Alvi, 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.)

# AAPM / RSNA IMAGING PHYSICS RESIDENCY GRANT

The AAPM Board of Directors has approved $420,000 in support over 6-years ($70,000/year starting in 2019) to fund six spots in existing or new imaging residency programs. The RSNA Board of Directors approved $210,000 in funding for 3 additional slots in existing or new imaging residency programs.

Sponsored by the AAPM Education and Research Fund.

A list of Award Recipients can be found here.

**Applicant Eligibility:**

The purpose of the AAPM funding is to provide 50% support of a resident's salary for two imaging physics residents. The awardee institution(s) will provide the other 50% support. After the period of the award is over, the intent is that the awardee institution(s) will continue to fully support this new imaging physics residency position. Demonstration of this intent should be included in the application materials.

- CAMPEP accreditation is expected within the first year of the funding period, if a program is not currently accredited.
- Open to existing or new imaging residency programs.
- 1st priority – New programs (hence new slots), no previous funding from any AAPM program. A new program is defined as one that has applied for CAMPEP accreditation after January 1, 2019, or has not yet applied for CAMPEP accreditation.
- 2nd priority – Existing program but with new slots, no previous funding from any AAPM program. A new slot is defined as one that has been created or filled after January 1, 2019.
- 3rd priority - Existing program but with new slots, has had previous funding from any AAPM program. A new slot is defined as one that has been created or filled after January 1, 2019.

Award Duration: July 1, 2021 – July 1, 2023

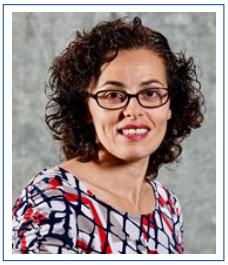
**Application Deadline: May 4, 2020**

Recipients Notified by: June 4, 2020

**FOR MORE DETAILS, VISIT: http://gaf.aapm.org/index.php#IPRWG**

# TRIALS, TRIBULATIONS, AND TRIUMPHS OF SELECTING A RESIDENT: A PROGRAM DIRECTOR'S PERSPECTIVE

**EDUCATION COUNCIL REPORT** Hania Al-Hallaq, PhD | Chicago, IL
Edward Clouser, MS | Phoenix, AZ ■ Wei Luo, PhD | Lexington, KY


*H. Al-Hallaq*


*E. Clouser*


*W. Luo*

One of the duties of the Medical Physics Residency Training and Promotion Subcommittee (MPRTP) is to promote residencies by fostering an environment that is both fair and transparent. To provide an insider's view into the resident selection process, we interviewed several program directors. The answers given below represent a summary of answers that best reflected the information gathered.

Because graduate programs do an excellent job of training graduate students, picking one for a residency position is difficult. Some would argue that the single most important step in training a resident is picking the correct candidates for your offering (i.e., the right "fit"). We offer you the trials, tribulations and triumphs of being a Program Director during the candidate selection season.

**Q1: What would you consider the best or most enjoyed part of the process?**

- Meeting candidates and hearing about their research and interests in medical physics
- Meeting new people, especially those who are talented and very passionate about getting into the field
- Meeting young energetic physicists
- Interacting with candidates and attending their presentations
- Meeting the candidates and determining which individuals will be a good fit for our program

**Q2: What is the biggest logistical hurdle you face each year in putting a resident selection process together?**

- Getting faculty to participate (in our department, certain clinics are cancelled during Physician Resident interviews but not for Physics interviews)
- Faculty cancelling at the last minute due to clinic issues
- Candidates often cannot make the interview dates so we accommodate with additional solo interview dates
- Trying to determine the best fit for our group, who will work hard and behave professionally

**The authors would like to thank the 11 participants who volunteered to be interviewed, the committee members who performed the interviews, and AAPM Education Council for allowing us to represent them in this newsletter.**

***Do you know* about the latest news regarding the residency selection process?**

**SDAMPP is sponsoring a self-reported calendar to share interview dates:** https://www.sdampp.org/calendar.php

**AAPM Education Council has recently** re-affirmed support for the MedPhys Match (MPM).

***We wish programs and candidates a rewarding and faux-pas-free interview season!***

## EDUCATION COUNCIL REPORT, Cont.

- Putting significant amount of time and effort into the interview process knowing the results may not turn out well (e.g., we only matched 1 of our 2 positions last year)
- Choosing whom to invite for an onsite interview from a long list of highly qualified candidates

**Q3: If you could hear the candidate's inner-voice or be a fly on the wall at the resident dinner, what piece of information would you like most to stumble upon?**

- What is their work ethic? Are they a team player? How will they get along with the team and fit into our department?
- Do they treat the "waiter with respect?" The way they treat people is indicative of how they will work as a member of the team.
- Is their interest in our program genuine?
- Is the candidate looking for a career where they can simply punch the clock or are they genuinely passionate about becoming a clinical physicist?
- Is the candidate truly interested in spending an additional year on research when applying to our hybrid program?

**Q4: Whether it is true, and whether you can do anything about it, what do you think is something the candidates look negatively upon with regard to individual institutions?**

- **Program-related**: cost of living, program location, too big or too small of an institution, environment too stressful/unfriendly, perception that residents are to be used primarily for labor, lack of structure; proportion of residents recruited into our residency from our graduate program
- **Faculty-related**: faculty missing interviews, too few faculty, perceived faculty commitment to residency education, faculty who are difficult to work with, less organized teaching plans from program director presentation, too few research projects
- **Equipment-related**: small variability in equipment/ procedure, availability of specific equipment (e.g., MR Linac, protons)

**Q5: Are there specific soft-skills you wish more candidates had or that you give extra credit for?**

- Ownership of their training: recognize and take responsibility for all aspects of their training/education, especially their failures
- Self-driven and able to complete projects
- Strong work ethic
- Professionalism, empathy, responsiveness, integrity
- Polite and respectful
- Organized
- Possess outside interests (e.g., athletics, community service)
- Good communicator, especially with non-physicists (e.g., patients, physicians)
- Potential to become confident leaders who can engage with others in the department

**Q6: Can you share a funny or awkward candidate or staff faux-pas you hope never happens again?**

- **Staff faux pas**: asking illegal questions even after having been advised about this issue; negatively discussing other residents, staff or their program's pet peeves with candidates
- **Candidate faux pas**: Not dressing professionally for an interview; focusing too much on salary; not having any idea about the institution to which they applied; contacting the program to try and get additional information to use in their rank list; slide presentation listing another program's name; expressing an unwillingness to work with a certain group of people (e.g., women); giving a presentation prepared for a meeting without modifying it to fit the longer or shorter interview timeframe; mistaking our Program Director for a resident; leaving mid-interview

## EDUCATION COUNCIL REPORT, Cont.

**Q7: What is your typical on-site interviewee to position ratio and how did you arrive at that number?**

| Number of Interviewees | Number of Positions | Description |
|---|---|---|
| 2-4 | 1 | Standard departmental interview process |
| 10 | 1 | Chosen based on past years of ranking/matching results and number of candidates who accept the interview |
| 3 | 1 | Determined before the match; it may be difficult to increase for recruiting hybrid residents because we need to take research into account |
| 7-12 | 1 | To provide a deep enough rank list |
| 10 | 1 | Based on faculty/staff availability, chance of matching, and ability to financially support lodging |
| 10 onsite/15-20 phone | 2 | To have a large enough pool to fill our spots |
| 25 | 2 | |
| 20 onsite/~30 Skype | 2 | |
| 20 | 5-6 | Video interviews used to select candidates for onsite interviews; logistically it's too difficult to do any more |

**Q8: If there was one thing you wish you could convey to every applicant that would make a portion or the entire process better, what would it be?**

- Relax and enjoy the process and meeting other physicists. Don't focus on the stressful aspects, i.e., competing for the slot.
- Do your homework! Do research on the program and know about the place in which you are interviewing.
- Avoid "interview fatigue!" This ultimately causes candidates to appear disinterested and/or disengaged.
- Be honest about your strengths and weaknesses.
- Only apply to programs that you would be willing to attend.
- We don't take it personally if you don't choose us as we understand everyone must make the best decision for their circumstances.
- Pay attention to details in your application: avoid grammar/spelling mistakes and get recommendation letters from individuals who really know you because generic letters are not useful.
- Study task group reports and know how to integrate them with theory.
- Understand the role of a clinical physicist: "I have noticed that physician resident candidates are much better at knowing their role …[in] treating cancer patients …, where[as] some medical physics resident candidates …just have book knowledge, so they don't seem to really get the gravity of their role as a physicist in patient care.

**Q9: What do you view as the Pros or Cons of concepts like a national interview calendar or coordinating with other loco-regional residencies?**

- **Pros**: applicants can prioritize interview offers and manage interview costs better; evens the playing ground for programs and candidates; forces programs to think about their dates early in the process
- **Cons**: could force candidates to prioritize regions instead of programs; our busy clinical schedule does not permit the flexibility to coordinate our interview dates with other programs; may not be as applicable to programs in smaller cities

**Q10: Have you ever been asked a question during an interview that just left you scratching your head?**

- When describing what the job entails, it became clear that the candidate had no idea about the position to which they had applied.
- During the lunch break we put together for the candidates, one of them asked if we could wrap it up early and get to their interview faster.
- During a video interview, in response to each question the candidate would answer by asking me the same question. The candidate did not receive an onsite interview because they did not answer any question!
- When a candidate cannot think of any question to ask during an interview. ■

# 2020 AAPM GRADUATE FELLOWSHIP

The fellowship is awarded for the first two years of graduate study leading to a doctoral degree in Medical Physics (PhD or DMP). Both BSc and MS holders are eligible to apply. Applicants must be a member of AAPM at the time of application, (any membership category). Pending membership status not eligible. A stipend of $13,000 per year, plus tuition support not exceeding $5,000 per year is assigned to the recipient. The amount of tuition support granted will be at the discretion of AAPM. The award will be paid to the recipient's institution and distributed in accordance with the institution's disbursement procedures. It is AAPM's policy that none of the funds may be diverted to the institution's "facilities," "administrative," or other overhead categories and the full $13,000 stipend must be provided to the recipient.

Sponsored by the AAPM Education and Research Fund.

A list of Award Recipients can be found here.

Each applicant must be a graduate of an undergraduate program in physics or equivalent majors (e.g., engineering-physics, math-physics, or nuclear engineering or applied physics) from an accredited university or college in North America. The undergraduate grade point average must be greater than 3.5 (based on a 4.0). Each applicant must have submitted an application for graduate study to one of the accredited programs with subsequent acceptance.

**Required Supporting Documentation:**

- All post-secondary study transcripts (official transcripts only)
- Copy of Graduate Record Exam results (If applicable)
- Recommendation Form
- TWO reference letters (optional)
- Acceptance letter from intended CAMPEP Accredited Program
- CV including GPAs and publications (use CV Template)


Merge all files into one PDF and upload the complete application (PDF).

Send supporting documentation *only* to:

American Association of Physicists in Medicine
1631 Prince Street
Alexandria, VA 22314
ATTN: Jacqueline Ogburn
jackie@aapm.org

Award Duration: September 2, 2020 - September 2, 2022

**Application Deadline: May 18, 2020**
(All supporting documents are due by the application deadline.)

Recipient Notified on: June 15, 2020

# WORKING GROUP ON GRAND CHALLENGES (WGGC)

**SCIENCE COUNCIL REPORT** Samuel G. Armato, III, PhD | Chicago, IL

The Working Group on Grand Challenges (WGGC) evolved from within the Technology Assessment Committee in 2017 and is now a working group under Science Council. The WGGC is sponsoring its fourth round of challenges selected from among proposals submitted by AAPM members. These two AAPM-sponsored challenges ("MArkerless Lung Target Tracking Challenge" led by **Paul Keall** and "Open Knowledge-Based Planning Challenge" led by **Timothy Chan**) will be conducted in the months leading up to the 2020 AAPM Annual Meeting, and the results of these challenges will be presented in Vancouver at what has become an annual session: the AAPM Grand Challenges Symposium. Additional details on how to participate in these two challenges can be found here.

The WGGC is charged with promoting the conduct of grand challenges designed to assess or improve the use of medical imaging in diagnostic and/or therapeutic applications. To that end, a call for proposals goes out each Spring, with proposals due in late June. The WGGC has a budget that allows partial support for up to two proposals each year (including free registration to the Annual Meeting for one member from each of the two top-performing teams and one member of the organizing committee). The selected challenges are announced shortly after the Annual Meeting, which gives challenge organizers nearly a full year to complete their challenge. To promote best practices in the conduct of grand challenges, the "WGGC Challenge Organizer Policy" prohibits individuals who serve as challenge organizers from participating in the challenge. ■

# REPORT FROM AAPM RESEARCH COMMITTEE

## SCIENCE COUNCIL REPORT, CONT.

Paul Kinahan, PhD | Seattle, WA

### Summary of the NIBIB National Advisory Council meeting held September 11, 2019

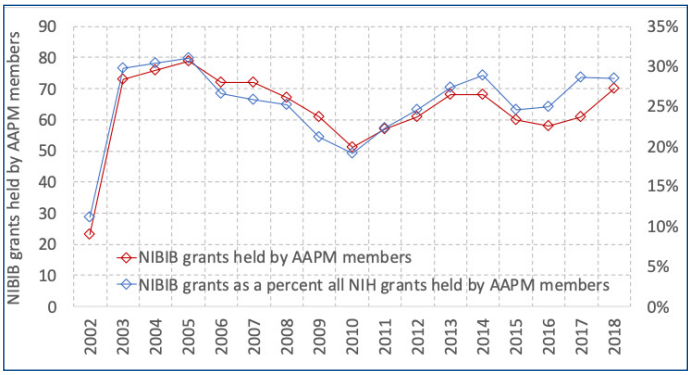
This is a summary of the public part of a NIBIB national advisory council meeting held September 11, 2019 at the Bolger conference center in Potomac, MD. The closed session was earlier in the day with the National Advisory Council members. The public session was open to attend but registration was required. Most registrants were representing some organization, and I attended to take notes for the AAPM. I note that our own Maryellen Giger is a new member of the council. However, she is there as an individual scientist and not to represent the AAPM in this role.

The NIBIB National Advisory Council meetings are held three times per year. The full list of council members, the meeting list and agendas, and other materials can be found here.

*NIBIB Director Bruce Tromberg addressing national advisory council (seated around table). There were approximately 45-50 other attendees, including 10-20 NIBIB staff.*

Detailed notes are below, but my summary impressions are:

1. Imaging is central to the mission of NIBIB.
2. The new Director of NIBIB, **Dr. Bruce Tromberg**, is very active and leading multiple new initiatives that will like extended the influence and impact of NIBIB.
3. The AAPM should have a representative here at least once per year, both to get updates from NIBIB but to keep in touch with other leadership representatives that attend.
4. Approximately 25% of AAPM member grants come from NIBIB and we accounted for 9% of their budget in 2015 (figure below).
5. While NCI accounts for the largest fraction of the NIH funds supporting AAPM member research, NIBIB is exploring new plans and initiatives, including a recent workshop "Accelerating the Clinical Adoption of Machine Intelligence Applications in Medical Imaging". It will be valuable for APPM and its members to stay abreast of NIBIB initiatives.
6. This connection could also be facilitated by the Academy of Radiology and Biomedical Imaging Research, which lead the formation of NIBIB, and is still actively involved.
7. This should perhaps be linked to the AAPM Government and Regulatory Affairs (GRAC). Also, similar to the way AAPM FUTURES looks to partner with APS and AIP, should RSRCH or other AAPM groups look to partner with forward-looking NIBIB initiatives?




*NIBIB grants to AAPM members from 2003 to 2018. Data courtesy of Matthew Scarpelli.*

**Directors Remarks: From NIBIB Director Dr. Bruce Tromberg**

- Two new *ex officio* members from FDA CDRH are now on the NIBIB National Advisory Council as part of a long-term plan to strengthen connections with other federal agencies.

## SCIENCE COUNCIL REPORT, Cont.

- One new ad hoc council member is **Ranu Jung, PhD** Engineering Dean from FIU (his research area is neural technologies for restoring limb health).
- There is a new strategic initiative theme for NIBIB: "*Engineering* the Future of Health."
- NIBIB mission statement: "Transforming through engineering the understanding of disease and its prevention, detection, diagnosis and treatment."
- There is a 9-month effort by a workgroup of the NIBIB national advisory council with seven subgroups that will produce multiple documents to galvanize the community — more on this below.
- NIBIB has hired two new extramural PhD faculty-level staff (very experienced).
- NIBIB has hired two more tenure-track intramural investigators (now total of eight) in areas in mechano-biology and immuno-engineering (both high profile early career scientists).
- This is the 20th anniversary of the Biomedical engineering summer intern program (BESIP) started by NIBIB. There were 120 applications for 16 positions on campus.
- There is also the undergraduate biomedical engineering program DEBUT: Design by Biomedical Undergraduate Teams Challenge. This is a growing NIBIB program.
- There was an NIBIB-sponsored workshop: 2019 ML-MSM (Machine learning and multi-scale modelling) meeting Oct 24-25, 2019. It sounded like it incorporated virtual imaging clinical trial, also with FDA.
- There is a 2019 synthetic biology consortium meeting.
- He gave a brief description of the 2019 NIH Point-of-Care technologies —t here are five center grants, with a meeting Nov 20-22, 2019 at NIH.
- Described the 'SPARC' portal launch for sharing curated data and methods for neural processes, as well as an online computing platform for simulating neural processes/modulation (an editorial in nature biotechnology 'translating neuromodulation' talks about it).
- There are now the NIH NOSI (Notices of special interest). One is Trauma care using x-rays and radiation (and two others). The NOSI are notices that potential PIs should pay attention to. The NOSI are a new announcement mechanism as described in NOT-OD-19-107 "NIH Expanding Usage of Notices of Special Interest."
- The number of NIBIB P41 center awards doubled in 2012 as NCRR transformed to NCATS. What are the long-term implications? In 2019 there were 29 P41s (BRTPs) at $33M/year with > 500 collaborative projects (i.e., a lot of bang for the buck). There will be more details presented at 2020 Council meetings. Likely will be rebranded as "National centers for biomedical imaging and bioengineering." Seem to be very cost effective for NIBIB, and a priority.
- There was a multi-center proposal to NIH common fund on "Harnessing data science for health discovery in and innovation in Africa." Recently approved by F. Collins. 19 NIH centers signed on. Big initiatives, with multiple projects, grants, and hubs.
- Budget update: Not much change, but lifting of Federal budget cap has removed sequestration.
- Five cool technologies were shown on a video blurb produced by NIBIB.
  1. Diabetes glucose measurement using transdermal laser
  2. Blood pressure with a wearable sensor
  3. Mammography breast cancer screening using photoacoustic imaging
  4. Infection sensing (finding WBCs via optic sensors on fingers) for cancer patients
  5. Neural wiring for protheses

**Q&A Session With NIBIB Director Dr. Bruce Tromberg**

Q: What is NIBIB's role in connecting with Federal agencies, will it expand?

A: Yes it will expand, NIBIB is adopting push-pull idea (from P41 mechanism) to connect to other NIH groups and Federal agencies.

Q: How will the common fund program "Harnessing data science for health discovery in and innovation in Africa" roll out?

A: It will use the standard NIH FOA advertising and grant process, there is a ready set of collaborators in Africa. This is different from 'standard' data science ideas and will call for a lot of innovation. This could/should be translated to low-resource low-cost activities in the US as well.

Q: Technology should be pointed out to Congress as a way to reduce costs.

A: Yes. No-one uses 'exploratory surgery' anymore. Please share stories with NIBIB that they can use.

## SCIENCE COUNCIL REPORT, Cont.

**Strategic Working Group:**

The Strategic Working group composed of members of the NIBIB national advisory council and NIBIB staff divided into seven subgroups, although there seemed to be more total members than on the national advisory council. **Maryellen Giger** is a new member of the council. Members had come out the day before to work on this. There were brief reports from seven sub-groups:

1. Quantitative data science model & computation — Maryellen Giger
   a. 8 major categories of topics, each with 3-10 subtopics
   b. combination of methods and?
   c. need to look at fusion of analytical and data-driven methods
   d. a major area is technology assessment and standards
2. Engineered Biology — Gordana Novakovac
   a. focused on principles and vision: NIBIB is a natural leader for engineering in biology, since it does not focus on a single organ system
   b. need a convergence of imaging and bioengineering
   c. consider milestone-driven grants
3. Sensing Health & Disease
   a. Identified about 10 subject areas: improve early detection, personalized medicine, exploit better sensors, enhance commercial translational mechanism
   b. adopted a 'what, why, how' approach
   c. lot of discussion about what are biomarkers and who validates them
   d. stated that multiplexed sensor data essential as disease is dynamic
   e. suggested use of current NIBIB C3I translational mechanism as a model
   f. suggested partnering with other agencies
   g. wearable technologies are a huge growth area
4. Biomedical Imaging Health and Disease
   a. NIBIB should be the lead in developing new Biomedical Imaging ideas all the way through, i.e. not hand off to other institutes.
   b. NIBIB should keep credit for technologies
   c. NIBIB should embrace basic science in imaging, i.e. imaging methods as research, e.g. preclinical, not as only a tool for diseases.
   d. NIBIB should be the lead in developing rigorous methods for AI in imaging
5. Advanced therapies and Cures — Ranu Jung
   a. more about the therapy than the disease
   b. provides an engineering framework and process: Discovery to delivery
   c. requires system level integration
   d. NIBIB should create a moonshot. Ideas can come from:
      i. Millennium project: 15 global challenges, from "state if the future index"
      ii. NAE grand challenges (14 engineering challenges)
   e. Recommendations for NIBIB sustainability — and put funds aside for the moonshot
   f. Noted that other ICs are "the bridge to use"
   g. Diversity
   h. stewardship: what happens to legacy technology?
6. Technology development pipeline
   a. unmet need: better way to design build and deliver (science or engineering?) for the betterment of health?
      i. funding: private-public partnerships, how does this currently work
      ii. meetings/communication/convening — this is profound
      iii. mentorship
7. Workforce — Carolyn Meltzer
   a. NIBIB-type work is essential, so we need the workforce
   b. gap areas: lack of diversity (both for workforce and leadership), commercialization, technology can help or exacerbate cultural inequality
   c. Can adopt a systems-level approach to biomedical training — identified gaps
   d. Mentorship should be included in grants
   e. Opportunities can be created (i.e. grants) to support career pathways, supporting diversity and multiple on-ramps, off ramps

**Next Steps:**

**Dr. Kris Kandarpa** NIBIB Director of Research Sciences and Strategic Directions and Acting Director, Division of Applied Science and Technology

The seven sub-groups will to each work towards a paper or product, mechanism is not entirely clear, but Dr. Tromberg stared that this is really important and seems like a lot of work but is on track.

## SCIENCE COUNCIL REPORT, Cont.

**Other Meeting Discussions During Breaks, Etc.**

**Dr. Carolyn Meltzer** and **Renae Cruea** — Agreed that it would be good to have a closer working relationship between AAPM and the Academy of Radiology and Biomedical Imaging Research (ARBIR)

**Martha Nolan** (ARBIR): Reviewed AAPM travel awards for Council of Early Career Investigators in Imaging Technology (CECI2) and MedTech and the leadership meeting. Will be May 3-5, 2020. Updated her on RSRCH leading the AAPM process for this.

**Dr. George Zubal** (NIBIB): program officer for x-ray and nuclear imaging grants. He is interested in promoting NIBIB research at AAPM, also mentioned end of Brain grants but interest in imaging alpha emitters

**Dr. Guoying Liu** (NIBIB) — program officer for MRI related grants.

**Dr. Krishna Kandarpa** (NIBIB) — noted above

**Dr. Behrouz Shabestari** (NIBIB) — program officer and leader of P41 programs in imaging. ■

## Apply for the AAPM Early Career Investigator in Imaging Travel Award

Become a member of the 2020 Academy Council of Early Career Investigators | May 3-5, 2020, Washington, DC

**Application Deadline:**
**January 24, 2020**

This is an exceptional opportunity for early-career imaging researchers to:

- Meet NIH Institute and Center directors and staff
- Meet national radiology leadership, industry leaders, and department chairs
- Meet Capitol Hill representatives and staff
- Present your research ideas on radiology or biomedical imaging
- Learn how science and health-care policies are developed
- Meet patient advocacy leaders who help drive research priorities
- Meet other future leaders in radiology, imaging science, and AAPM

The Science Council of the AAPM has established a travel award administered by the Research Committee to support the attendance of 1 or 2 early-career, research-oriented AAPM members to participate in the 11th Annual Coalition for Imaging and Bioengineering Research (CIBR) Medical Imaging Technology Showcase, which is sponsored by the Academy of Radiology and Biomedical Imaging Research (the Academy).

The Academy hosts the annual Medical Imaging Technology Showcase, an evening event in a senate or house office building on Capitol Hill, to educate members of Congress and their staff about the impact of imaging technology.

Funding will be provided for the awardees through the AAPM Education & Research Fund to travel to Washington, DC to participate in the Academy/CIBR activities at NIH and to communicate the value of biomedical imaging to Capitol Hill representatives and staff.

Awardees become part of the Academy's Council of Early Career Investigators in Imaging (CECI), who with the Academy advocates for federal investments in imaging research. CECI also serves as valuable a networking and educational resource for its members.

Last year was the first time that AAPM participated and it was huge success. There were 30 members of the Council of Early Career Investigators, and two were from AAPM, Emily Marshall and Brian Taylor. From Emily: "I spent three days surrounded by some of the country's most motivated minds in radiology research. ... I now have a strong network of people I may reach out to". From Brad: "I was also able to meet with program officers and officials to learn more on the NIH grant application process and funding opportunities. We also had the opportunity to spend a day at Capitol Hill with leaders in the imaging field. ... a great experience to learn more on NIH opportunities and to learn how to communicate your research to a diverse group who makes important decisions that can impact research productivity for years to come."

Details from last year's event, including an awesome 30-second video clip can be viewed here.

**Eligibility Criteria:**

- Post-doctoral fellow, diagnostic or nuclear medicine medical physics resident or fellow, or junior faculty member (i.e., no more than 10 years after post-graduate training and no prior substantial independent grant funding as PI).
- Research focus must be in radiology or biomedical imaging.
- Must be a member of AAPM at the time of application (any membership category) and maintain membership for the duration of the award period. Pending membership status is not acceptable.

**Required Supporting Material:**

1. Cover letter outlining why you wish to attend this event, including information on how it fits into your professional goals.
2. Abbreviated CV (no more than 5 pages).
3. For residents and fellows, a brief letter of support from supervisor confirming your ability to travel to this event, if selected.
4. Two letters of support, maximum of two pages each.
5. A short description of your research interests in layman terms (1 page maximum, 1 inch margins, 11 point font). Your primary audience for this entire event is non-scientific, so please keep that in mind when explaining your research. You will be expected to discuss these topics in your congressional meetings and with attendees at the Medical Imaging Technology Showcase on Capitol Hill.
6. Awardees will meet with representatives from NIH Institutes and Centers. Please indicate which Institutes and Centers you would be interested in visiting. While every effort will be made to accommodate your request, we cannot guarantee that specific Institute's and Center's staff will be available during your visit.

**Application Deadline: January 24, 2020**

*All materials are due by application deadline. Documents should be combined and submitted as one PDF. For questions, please contact:* Shayna Knazik *Recipients noti ied by February 15, 2020.*

View additional information and access the online application here. ■

# MASSACHUSETTS LAWMAKERS CONSIDER MEDICAL PHYSICIST LICENSURE

**LEGISLATIVE AND REGULATORY AFFAIRS' REPORT** Richard Martin, JD | Alexandria, VA

AAPM members, **Martin Fraser, Per Halvorsen**, and **Fred Fahey**, testified in favor of medical physicist licensure on November 19, 2019, at a hearing before the Joint Committee on Public Health at the Massachusetts State House. The Committee is considering "An Act Relative to the Practice of Medical Physics" (H1887) that would establish medical physicist licensure in Massachusetts.

Fraser, Halvorsen, and Fahey — the AAPM panel of witnesses — described their education, training, and work as medical physicists. They addressed the importance of medical physicist licensure to patients and urged the Committee to report favorably on the bill. After the panel's presentations, the Senate Chair, Joan Comerford, engaged AAPM members with questions about training and experience requirements for qualified medical physicists (QMP's). AAPM members are now planning follow-up meetings with key legislators to advocate for the bill's advance.

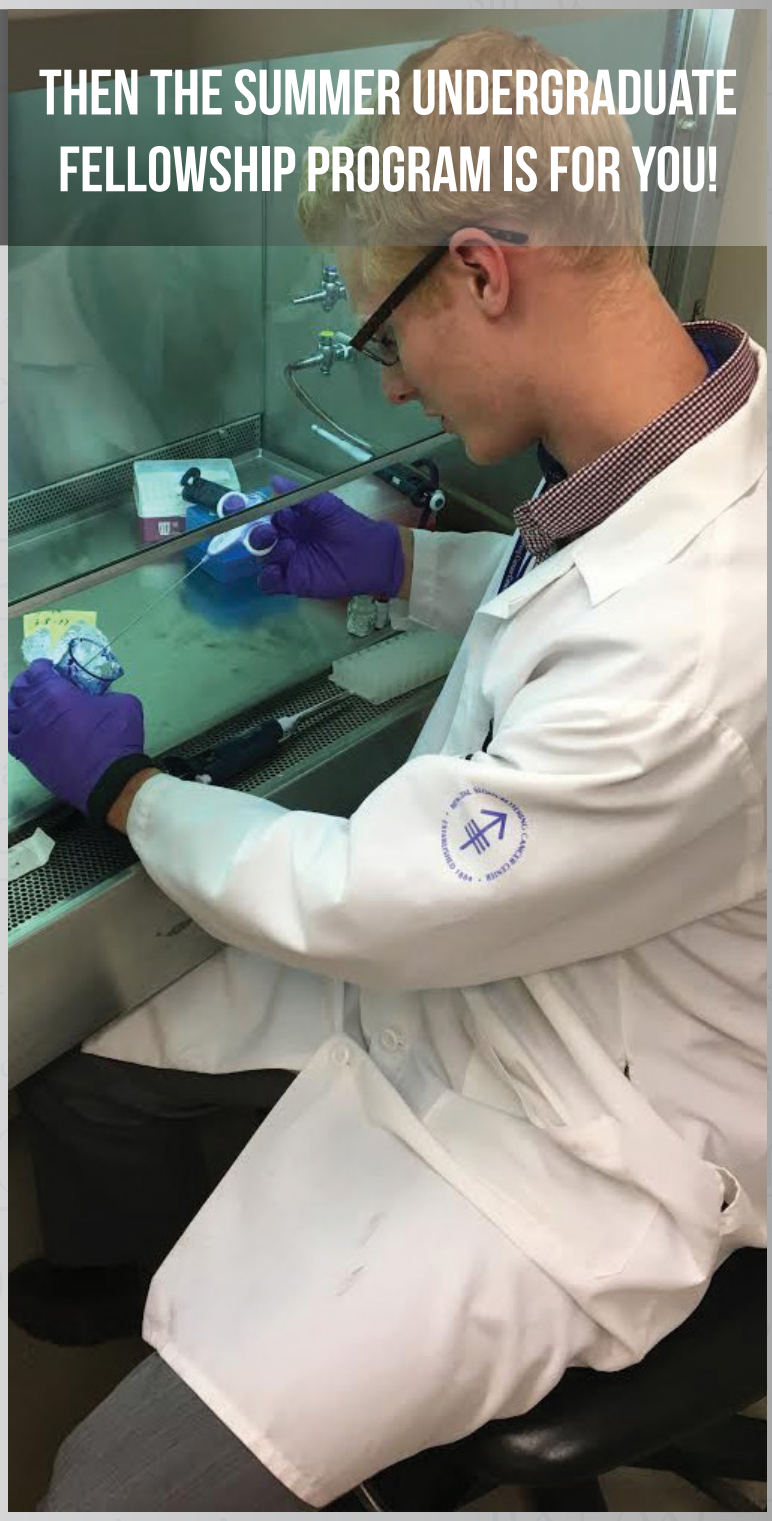
We will keep you updated on developments. Contact **Richard J. Martin, JD, AAPM Government Relations Program Manager**, at richard@aapm.org if you have any questions or would like additional information. ■

*Martin Fraser, Per Halvorsen, and Fred Fahey testifying before the Joint Committee on Public Health.*

# AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE

## INTERESTED IN APPLYING YOUR PHYSICS OR ENGINEERING KNOWLEDGE IN MEDICINE? WANT TO MAKE A CLINICAL IMPACT THIS SUMMER?

## THEN THE SUMMER UNDERGRADUATE FELLOWSHIP PROGRAM IS FOR YOU!

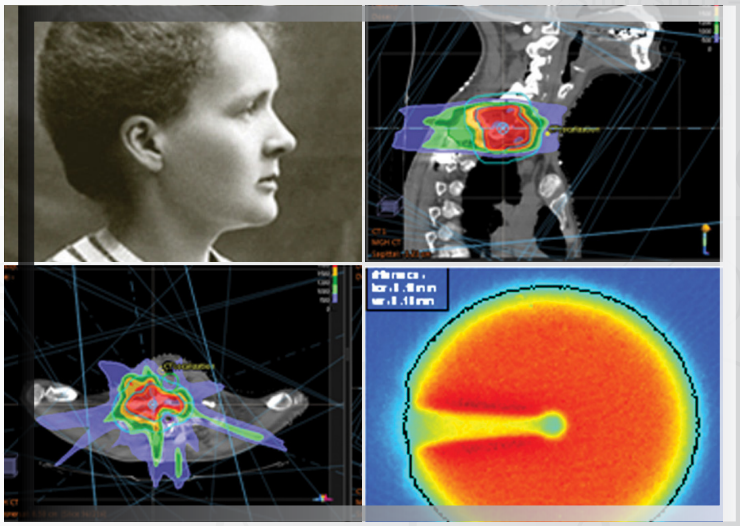


We provide opportunities for excellent undergraduates to gain experience in medical physics at leading clinical and research institutions. A large menu of mentor-defined projects is available and Fellows select their mentor according to their mutual interests.

Fellowships are offered for 10 weeks during the summer (May through September) and available to undergraduate students who are entering their junior or senior years.

**Application Deadline:**
**February 3, 2020**

For more details, visit:
**http://gaf.aapm.org/index.php#SUFP**



Sponsored by the AAPM Educational Council through the AAPM Education and Research Fund

**PROGRAM CONTACT:** Jacqueline Ogburn, jackie@aapm.org or 571-298-1228

# HOW DOES THE ABR STRUCTURE THE SEQUENCE AND CONTENT OF THE MEDICAL PHYSICS EXAMS?

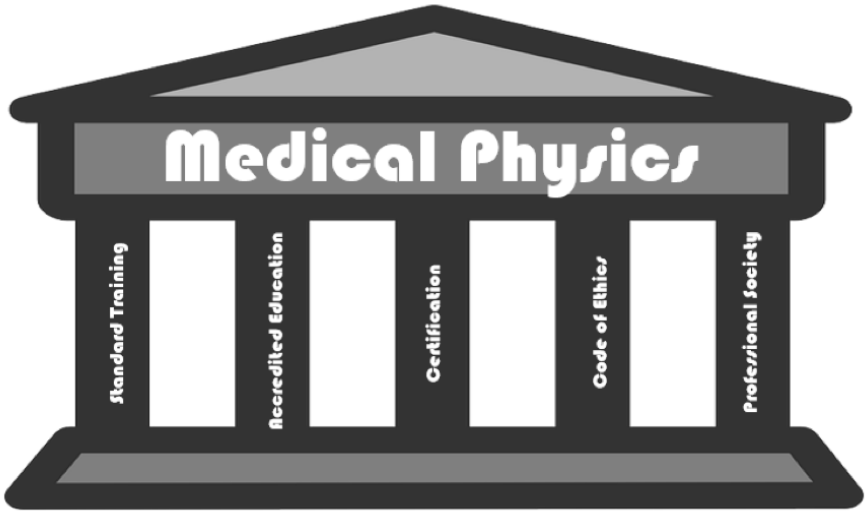
**ABR NEWS** Kalpana M. Kanal, PhD ■ Matthew B. Podgorsak, PhD ■ Robert A. Pooley, PhD, ABR Trustees | J. Anthony Seibert, PhD, ABR Governor

## Medical Physics as a Profession

The development of medical physics as a profession in the last 50 years has improved the practice of medical physics to the benefit of our patients. The hallmarks of a profession are usually noted as:

- A standardized and accredited training – AAPM and CAMPEP
- A code of ethics — AAPM
- A professional society — AAPM
- A process for certification — ABR
- Licensure — NO

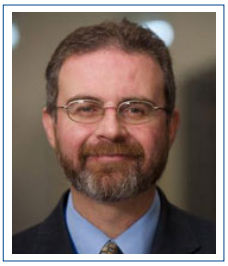
While medical physicists are licensed only in a few states (FL, HI, NY & TX) the other characteristics above are firmly established.




Most members of the public support professionalism, including maintenance of certification (MOC), because they conclude that professionalism protects them from incompetent practitioners. There has also been a train of thought that sees the existence of professions as a significant restraint of trade:

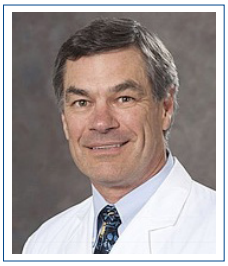
*No doubt the same may be said of all professions. They are all conspiracies against the laity — George Bernard Shaw*

*K. Kanal*



*M. Podgorsak*

*R. Pooley*



*J.A. Seibert*

**If you have questions, please contact the ABR through our website, by phone at (520) 790-2900 or by e-mail.**

***Always Ask the ABR First***

Tim Harford made the argument in his 2006 book *The Undercover Economist*. This perspective is only held by a small fraction of people. Most people feel that the benefits of professionalism far exceed the downsides.

## The Role of Board Certification in Assuring Competent Medical Physicists

Board certification is an important element in certification. The ABR serves as the certification board for most medical physicists in the United States. It is one of the two ABMS boards that certifies both physicians and non-physicians.

As its mission states "Our mission is to certify that our diplomates demonstrate the requisite knowledge, skill, and understanding of their disciplines to the benefit of patients." This is done by a series of requirements to qualify for the certification process and a series of examinations to measure the competency of the candidate. If it were possible to measure competency by the exam process alone there would be no need to have requirements. In that case, anyone could register and take the certification exams. Unfortunately, that is not possible, many of the competencies of a medical physicist can only be acquired by training. Many others must be assessed by a candidate's supervisors.

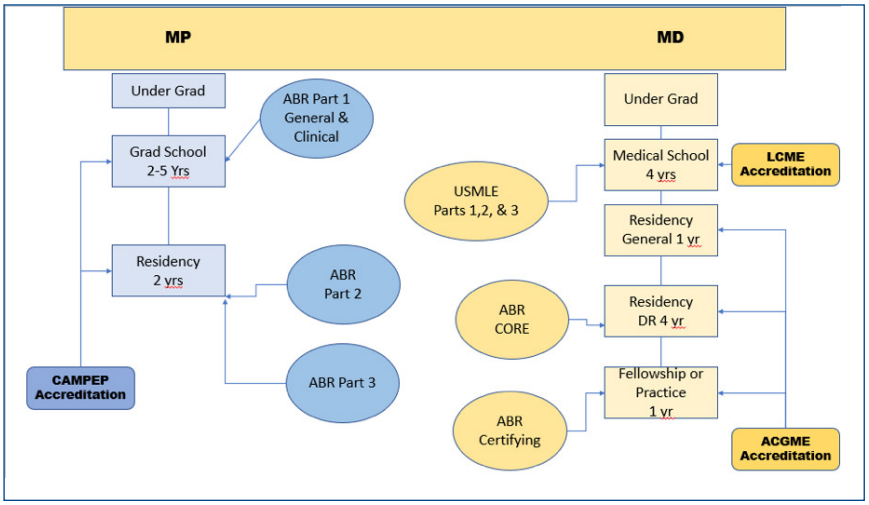
The supervisor must attest:

*"The supervisor must also attest that the training covered the items in the ABR standards. These standards are derived from and are similar to the material described in AAPM Report 249 (Section 2.5, 3.5, or 4.5). In the area of general medical physics competency, the supervisor must attest that the candidate is trained in appropriate medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice as described in AAPM Report 249. Finally, the supervisor must attest that the candidate meets the commonly accepted canons of ethical behavior such as those described in the AAPM Code of Ethics and is qualified to practice medical physics independently."* Given that the candidate has received appropriate training as attested to by the program director the candidate may enter the exam process.

## The Education and Training of a Medical Physicists

The required education and training of medical physicists is much like those for other medical professionals (MDs, PharmDs, Audiologists, etc.). The chart below shows the path for medical physicists and diagnostic radiologists.

A key difference is the absence of USMLE Parts 1,2, & 3 in the medical physics educational process. There are roughly 20,000 medical doctors that graduate per year but only about 1,300 of them enter DX or RO residencies (6%). There are roughly 350 students per year in CAMPEP programs (MS & PhD). Essentially all students in CAMPEP-accredited graduate programs want to enter medical physics residencies. The ABR Part 1 exam serves the role of the USMLE exams for medical students but it concentrates exclusively on medical physics.



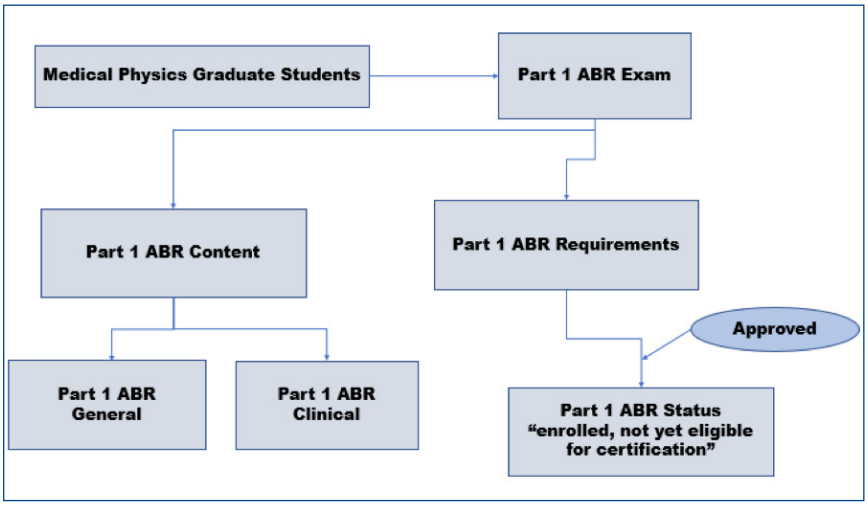

## Part 1 Requirements

The Part 1 Exam is broad in scope and does not focus on any specialty within medical physics. The exam is administered in two parts: General & Clinical. Both parts must be passed.

There are requirements to become a candidate for the exam. The general exam section focuses on medical physics at the level of common graduate courses. The clinical exam section focuses on anatomy, medical terminology, and physiology at the level of an introductory course taught in a college of health sciences, as well as radiobiology at the level of an introductory graduate

course. The exam also includes ethics and professionalism at the level of the RSNA-AAPM Ethics and Professionalism modules.

Like all of our exams, there are specific requirements that are driven by the need to require adequate preparation.




Entry into the Part 1 Exam can be from several routes.

1. A medical physics graduate program including DMP
2. A certificate program
3. A medical physics residency
4. A program for internationally trained medical physicists called a structured mentorship.

Until recently the requirements for items 1 & 2 could be met through enrollment and good standing in or graduation from a CAMPEP-accredited program. In the last five years the board has become concerned that candidates may not be fully prepared when they take the Part 1 exam. We feel strongly that proper exam preparation is an important part of becoming certified, so after lengthy discussions internally and with our colleagues the board changed the requirements so that approval for the exam required completion of the CAMPEP core material prior to taking the exam. The timing of the annual Part 1 exam was also moved to January starting in 2022 to facilitate the results being available prior to the residency match.

## Part 1 Content

The Part 1 Exam, like all ABR examinations, is criterion based. This means that a passing score is established prior to the exam with the possibility of all passes or all failures[1]. The exam has no results curve because the passing score is set by a statistical process.

The content of the exam is determined by a committee that has broad representation from all branches of medical physics. The committee members are also called content experts because they have expertise in the content of the exam. This committee reviews publications like AAPM, ASTRO and ACR reports as well as material from the NRC, ICRP, IOMP and IAEA. The committee then proposes a blueprint for the exam which is reviewed and approved by the medical physics trustees. The top two levels of the blueprint are published on the ABR website as the content guide. The blueprint is used to assemble the exam. The assembled exam is then reviewed by a separate committee of content experts. The questions are also reviewed by an ABR editor who is a specialist in writing clear questions that conform to the common rules of English grammar. The exam is then reviewed one more time by a trustee and then sent to PearsonVue for administration.

## Summary

The ABR is proud of the role it has in providing a robust and defensible certification process which serves the needs medical physicists and works to protect the public. The certification process is independent of professional societies and enables medical physicists to oversee their own certification process. The Part 1 Exam plays an important role in this process since it provides evidence that candidates are well grounded in the basics of medical physics and are ready to undertake training in the medical physics specialty of their choice.

## Diversity within the ABR

An article on gender diversity within the ABR, *Gender Diversity Within the American Board of Radiology: History, Current Status, and Future Implications,* has been published. It is available online. ■

[1]*This is unusual but has happened for exams with few candidates.*

# 2020 RESEARCH SEED FUNDING GRANT

Three $25,000 grants will be awarded to provide funds to develop exciting investigator-initiated concepts, which will hopefully lead to successful longer term project funding from the NIH or equivalent funding sources. Funding for grant recipients will begin on July 1 of the award year. Research results will be submitted for presentation at future AAPM meetings. The award is not intended to provide salary support for the applicant, however any other research-related expenses, including travel to scientific meetings, will be supported. Travel expense should be included in the submitted budget. At the end of the 12-month period a report must be forwarded to the AAPM, along with itemized expenses. The award will not support indirect costs. Any unspent funds should be returned to the AAPM.

Sponsored by the AAPM Science Council through the AAPM Education and Research Fund.

A list of Award Recipients can be found here.

**Eligibility:**

- 5 years or less since awarding of PhD.
- Must be a member of the AAPM at the time of application. (any membership category) Pending membership status not eligible.
- No previous grants >$50,000 as principle investigator.
- Previously funded projects are ineligible.
- Prior Seed Grant recipients are ineligible.

**Application Requirements:**

a. Five-page description of research project (including figures and tables), separated as follows:
b. specific aims
c. background and significance
d. preliminary results
e. research plan
f. literature cited
g. budget
h. Letter of support from division/ department chair demonstrating support for the project and authorization of time and resources to complete the proposed research.
i. CV (no more than 4 pages).

Note that sections (e) and (f) do not count towards the five-page limit.

As the competition for the seed grant is high, eligible applicants are encouraged to also submit their applications for other awards, e.g. www.cancer.gov/researchandfunding/training/.

**Review Criteria**

- 50% Scientific merit of proposal (significance, innovation, environment, and soundness of approach)
- 25% Potential for project to develop into a major project fundable by NIH, DOE, DOD, etc.
- 25% Background of investigator

**Application Deadline:** May 4, 2020

(All supporting documents are due by the application deadline.) **You must log onto the AAPM website to view the apply button.**

**Award duration:**
July 1, 2020 – August 31, 2021

**Recipients notified by:**
June 10, 2020

## FOR MORE DETAILS, VISIT:

http://gaf.aapm.org/index.php#SEED

# ACR ACCREDITATION: FREQUENTLY ASKED QUESTIONS FOR MEDICAL PHYSICISTS

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

Before I get into the interesting information and in response to recent inquiries, I want to emphasize that the QC forms provided for the ACR DM QC Manual are only applicable to the new ACR manual in conjunction with the large phantom.

In December, the ACR Accreditation team unveiled a new customer support platform to enhance the accreditation experience. With the new user-friendly system, ACR Accreditation customers have a single place to access all required accreditation resources and a help desk to submit their queries and support requests.

The new platform offers a complete solution center for accreditation participation and support. Everything you need to know about ACR Accreditation and how to participate is at your fingertips. Now you can find solutions, discover answers and create a support ticket all in one place.

The ACR Accreditation Support solution offers these advantages:

- Easier accessibility: All accreditation program requirements, forms, articles and resources are gathered in one place
- More robust search functionality: An easy-to-use search tool delivers instant access to all documents related to a specific accreditation query
- Enhanced interactivity: The help desk solution guides you through all the documents and processes required for accreditation in every modality
- Streamlined support ticketing: If you have a question or need help with any accreditation challenge, you can simply open a ticket, which automatically assigns you to the appropriate ACR Accreditation team member
- Improved status tracking: Rather than wait for an email response to your query, you can now track the status of your support ticket right from the platform

In September 2019 the ACR released a toolkit for mammography clinics. The toolkit is publicly available and includes clinical decision aids, handouts, an infographic, and screening education videos – one set of materials for referring clinicians and a second set for patients, lobbies, and web. The materials even have blank spaces for clinics to add their own branding. I encourage all of my medical physics colleagues to become familiar with the resources, especially those who support in mammography clinics, and to share them far and wide – some of you may even want to include the patient decision aid (or another resource) with your annual mammo physics survey report, adding value to the service you provide. Access the full free toolkit here. ■

**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.**

**The ACR Board of Chancellors recently announced that Priscilla (Penny) F. Butler, MS, FACR, FAAPM will be awarded the ACR Gold Medal, the College's highest award, at the ACR Annual Meeting in May, 2020, in Washington, DC. Penny will be the fourth female physicist to receive the ACR Gold Medal, joining Marie Curie, Edith H. Quimby, and Rosalyn S. Yalow. Penny will be the 16th physicist overall to receive the ACR Gold Medal, joining this impressive list:**

**1927 W. D. Coolidge, PhD**
**1931 Marie Curie, DSc**
**1931 C.C. Lauritsen, PhD**
**1963 Edith H. Quimby, ScD**
**1965 Lauriston S. Taylor, PhD**
**1976 Harold O. Wyckoff, PhD**
**1978 E. Dale Trout, DSc**
**1982 John G. Trump, DSc**
**1988 John S. Laughlin, PhD**
**1991 Edward W. Webster, PhD**
**1993 Rosalyn S. Yalow, PhD**
**1994 Jack S. Krohmer, PhD**
**2002 James A. Purdy, PhD**
**2010 William R. Hendee, PhD**
**2012 Richard L. Morin, PhD**

**Congratulations, Penny!!!**

## DAILY QA
*Finished before your first cup of coffee*

## MONTHLY QA
*Never re-learn workflow again*

## ANNUAL QA
*Confidence with fewer gray hairs*

## STEREOTACTIC
*When millimeters matter most*

## ABSOLUTE DOSIMETRY
*"Pinpoint" is our margin of error*

## PATIENT DOSIMETRY
*Pre-treatment is just the beginning*

***QA Solutions.*** ***Our expertise is at your service.***

STANDARD IMAGING®

MORE THAN JUST QA PRODUCTS, FIND QA SOLUTIONS AT

**www.standardimaging.com**

1411-00, 2/18

# CMS FINALIZES MEDICARE HOSPITAL OUTPATIENT PROSPECTIVE PAYMENT SYSTEM CHANGES FOR 2020

**HEALTH POLICY & ECONOMIC ISSUES** Wendy Smith Fuss, MPH | Delray Beach, FL

The Centers for Medicare and Medicaid Services (CMS) recently released the 2020 Hospital Outpatient Prospective Payment System (HOPPS) final rule, which provides facility payments to hospital outpatient departments. All policies and payments are effective on January 1, 2020. This rule does not impact payments to physicians or freestanding cancer centers.

CMS estimates an overall 1.30 percent increase in hospital outpatient facility payments in 2020. Final 2020 payment changes for radiation oncology related Ambulatory Payment Classifications (APCs) range from 2.3 to 15.5 percent increase in payment. Payment for medical physics consultation codes 77336 and 77370 have a nominal 2.3 percent payment increase in 2020.

CMS did not implement AAPM's request to discontinue the Comprehensive APC (C-APC) payment policy for several brachytherapy device insertion procedures and single session stereotactic radiosurgery (SRS) procedures. CMS stated that they continue to believe that the C-APC policy is appropriately applied to these surgical procedures for the reasons cited when the policy was first adopted and note that the commenters did not provide any empirical evidence to support their claims that the existing C-APC policy does not adequately pay for these procedures.

CMS will continue in 2020 to pay separately for the 10 planning and preparation services (CPT codes 70551, 70552, 70553, 77011, 77014, 77280, 77285, 77290, 77295, and 77336) adjunctive to the delivery of the stereotactic radiosurgery treatment using either the Cobalt-60-based or LINAC based technology when furnished to a beneficiary within 1 month of the SRS treatment.

Effective January 1, 2020, CMS is changing 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. This change is a minimum level of supervision and state regulations or accreditation standards may still require direct supervision. 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. In written comments, the AAPM recommended that CMS exempt all radiation therapy services from the CMS proposal to apply a minimum required level of General Supervision for hospital outpatient therapeutic services furnished by hospitals and CAHs. CMS

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

states that 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.

CT and MRI imaging services will realize decreased reimbursement beginning in 2020 due to a revised payment methodology that CMS will phase-in over a 2-year period. For 2020, CMS proposed to use all claims with valid CT and MRI cost center cost-to-charge ratios (CCRs), including those that use a "square feet" cost allocation method, to estimate costs for the APCs for CT and MRI services. In 2020, CMS will calculate the imaging payment rates using both the transition methodology (excluding providers that use a "square feet" cost allocation method) and the standard methodology (including all providers, regardless of cost allocation method) and will assign the imaging APCs a payment rate that includes data representing 50 percent of the transition methodology payment rate and includes data representing 50 percent of the standard methodology payment rate. Beginning in 2021, CMS will set the imaging APC payment rates at 100 percent of the payment rate using the standard payment methodology (including all providers, regardless of cost allocation method).

CMS notes the potential impact the CT and MRI CCRs may have on other payment systems. CMS understands that payment reductions for imaging services under the HOPPS could have significant payment impacts under the Medicare Physician Fee Schedule (MPFS) where the technical component payment for many imaging services is capped at the HOPPS payment amount. CMS states that they will continue to monitor HOPPS imaging payments in the future and consider the potential impacts of payment changes on the MPFS and the ASC payment system.

Below is a summary of the final HOPPS APC payments for 2020.

**SUMMARY OF 2020 RADIATION ONCOLOGY HOPPS PAYMENTS**

| APC | Description | CPT Codes | 2019 Payment | 2020 Payment | Payment Change 2019-2020 | Percentage Change 2019-2020 |
|---|---|---|---|---|---|---|
| 5611 | Level 1 Therapeutic Radiation Treatment Preparation | 77280, 77299, 77300, 77331, 77332, 77333, 77336, 77370, 77399 | $123.77 | $126.58 | $2.81 | 2.3% |
| 5612 | Level 2 Therapeutic Radiation Treatment Preparation | 77285, 77290, 77306, 77307, 77316, 77317, 77318, 77321, 77334, 77338 | $321.82 | $335.12 | $13.30 | 4.1% |
| 5613 | Level 3 Therapeutic Radiation Treatment Preparation | 32553, 49411, 55876, 77295, 77301, C9728 | $1,191.92 | $1,245.20 | $53.28 | 4.5% |
| 5621 | Level 1 Radiation Therapy | 77401, 77402, 77789, 77799 | $116.99 | $122.69 | $5.70 | 4.9% |
| 5622 | Level 2 Radiation Therapy | 77407,77412, 77600, 77750, 77767, 77768, 0394T | $224.46 | $236.33 | $11.87 | 5.3% |
| 5623 | Level 3 Radiation Therapy | 77385, 77386, 77423, 77470, 77520, 77610, 77615, 77620, 77761, 77762, | $519.85 | $538.77 | $18.92 | 3.6% |
| 5624 | Level 4 Radiation Therapy | 77605, 77763, 77770, 77771, 77772, 77778, 0395T | $704.72 | $740.44 | $35.72 | 5.1% |
| 5625 | Level 5 Radiation Therapy | 77522, 77523, 77525 | $1,078.97 | $1,246.62 | $167.65 | 15.5% |
| 5626 | Level 6 Radiation Therapy | 77373 | $1,690.57 | $1,768.26 | $77.69 | 4.6% |
| 5627* | Level 7 Radiation Therapy | 77371, 77372, 77424, 77425 | $7,644.24 | $7,941.53 | $297.29 | 3.9% |

**Comprehensive APC*

# CMS CONTINUES RADIATION ONCOLOGY EQUIPMENT PRICING TRANSITION



The Centers for Medicare and Medicaid Services (CMS) recently released the 2020 Medicare Physician Fee Schedule (MPFS) final rule. The MPFS specifies payment rates to physicians and other providers, as well as technical payments for freestanding cancer centers. It does not apply to hospital-based facilities. All policies and payments are effective January 1, 2020.

CMS updated the current conversion factor of $36.04 to $36.09 in 2020, which results in a small payment increase for many radiation oncology codes.

Beginning in 2019, CMS finalized a policy to update pricing recommendations for approximately 1,300 supplies and 750 equipment items. Given the potentially significant changes in payment that may occur, CMS phases-in the use of the new direct practice expense input pricing over a 4-year period from 2019-2022. This policy significantly decreases reimbursement for stereotactic body radiation treatment (SBRT) delivery and High Dose Rate (HDR) brachytherapy treatment delivery.

| Equipment Item | CPT Codes | 2018 Price (prior to update) | 2020 Price | 2022 Price (fully transitioned) |
|---|---|---|---|---|
| SRS System, SBRT, six systems, average | 77373 | $4,000,000 | $3,486,861 | $2,973,722 |
| HDR Afterload System, Nucletron-Oldelft | 77767, 77768, 77770, 77771, 77772 | $375,000 | $253,787 | $132,575 |
| Brachytherapy Treatment Vault | 77767, 77768, 77770, 77771, 77772 | $175,000 | $184,057 | $193,114 |

In the 2019 MPFS final rule, CMS finalized a number of coding, payment and documentation changes to reduce administrative burden and improve payment accuracy for evaluation and management (E/M) visits. Although CMS did not propose changes to E/M coding and payment for 2020, they are finalizing changes effective January 1, 2021. CMS estimates that overall payment for radiation oncology services will decrease by 4.0 percent and 8.0 percent for radiology services beginning in 2021. These estimates provide insight into the magnitude of potential changes for certain physician specialties.

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

**Endorsed by the AAPM**
AAPM does not endorse the product in question: rather, it endorsed the educational component of the program.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

## Registration is Open

# QA & DOSIMETRY SYMPOSIUM

**February 21-22 // Orlando, Florida**

**See the agenda now**

QADS is the premier Radiation Oncology event focused exclusively on continuous improvement in Quality and Patient Safety.

Earn CE credits* from **24 talks across four timely sessions:**

- Safety & Independent QA in Radiation Oncology
- Stereotactic Treatment & QA
- Advancements in Planning & QA
- Emergent Modalities & QA Considerations

**Register today to save your seat >**

QADS12
2020 QA & DOSIMETRY SYMPOSIUM

SUN NUCLEAR corporation

** CE credits to be applied for: SAM, MPCEC, and MDCB*

# SPECIAL INTEREST FEATURE: Students and Trainees Subcommittee

## CHAIR'S YEAR IN REVIEW: THE STUDENTS AND TRAINEES SUBCOMMITTEE

Kristen A. McConnell, PhD | San Diego, CA

In 2019, the AAPM Students and Trainees Sub-committee (SPASC aka "the STSC") consisted of 14 student and trainee voting members, two voting faculty advisors, one voting liaison from the Professional Council, and five non-voting members. Since its start, the STSC has worked to enhance the student and trainee experience by offering perspectives and advice on issues relevant/related to them. 2019 was no different: we successfully organized and hosted multiple events at the 2019 AAPM Annual Meeting in San Antonio, started collaboration for the 2020 joint annual meeting with the COMP student council, expanded our social media presence, and continued to offer our perspectives and advice.

### 61st Annual Meeting in San Antonio

Our members worked diligently to coordinate with AAPM HQ, WGSTR, WGNMCP, and countless others to plan and host multiple events:

- **Annual Student Meeting** | The Student Meeting addresses issues in the changing field of medical physics and exposes students, trainees, and audience members to current topics that may revolutionize our field. This year, the event took on a different flavor. In our "tech-style" talk, moderators engaged presenters in a freewheeling discussion after formal talks. Also, at the meeting, presenters Todd Atwood and Derek Brown offered attendees free registration at their Patient Communication course at the University of California San Diego. Five students attended this workshop, and one resident who attended, Anna Laura Licon, took what she learned and implemented a similar physics patient communication program at her own institution, UT Health San Antonio.
- **Residency Fair** | Beginning in 2015 at the Anaheim meeting with only 47 registered programs in a small ballroom, the Residency Fair has grown into a large-scale networking event. This year we hosted over 80 programs and 200 students and trainees. We continue to receive positive feedback from students and trainees that this event helps them gain a sense of each program's personality and helps them decide which programs they will apply to in the MedPhys Match. We also heard from multiple programs that this is an equally good opportunity to access candidates ahead of time to get a sense of who they'd like to invite out. This event is growing so large that we are looking for ways to upgrade the space to host it! A special thanks to the ACR and PTW-New York for sponsoring refreshments at this event!
- **Annual Student Night Out** | The Student Night Out (SNO) continues to be one of our most heavily attended events with a turnout of over 180 students and trainees this year. The event offers local eats and inspires networking and camaraderie among students and trainees. This year we hosted it on the San Antonio Riverwalk at Casa Rio. A special thanks to Scandidos for being the exclusive sponsor for this event!
- **MedPhys Slam** | In our second annual MedPhys Slam, 18 contestants representing their AAPM chapters translated their own research for a nontechnical audience and judging panel. Our esteemed emcee, John Bayouth, kept the show running with humor and poise, and the judges (KENS5 meteorologist Bill Taylor, UT Health San Antonio Dean David Weiss, Spurs Sports Announcer Dan Weiss, and San Antonio Hispanic Chamber of Commerce Amanda Gamez) provided vital wisdom for communicating science to non-specialists. Each contestant had already won their local AAPM competition but were put to the test in a larger venue. Communicating medical physics research beyond the academic sphere is critical so that people outside the field can understand the impact funding

this research has on the future of medicine. A special thanks to our contestants: Joshua Mathews (SUNY Buffalo), Autumn Walter (University of Wisconsin Madison), Luke Maloney (Georgia Tech), Alisha Shutler (Cristiana Care Health Systems), Adam Mahl (University of Colorado Anschutz Medical Campus), Mychaela Coyne (Purdue), Ricardo Rademacher (Genesis Healthcare Partners and Affiliates), Eric Morris (Henry Ford Cancer Institute), Karl Mund (University of Florida), Emily Draeger (Yale University), Mary Peters (MD Anderson Cancer Center), Kun Qing (Rutgers Cancer Institute of New Jersey), Tianjun Ma (Cleveland Clinic), Elizabeth Brown (University of Nebraska at Omaha), Rachel McCarroll (University of Maryland Medical Center), Alon Witztum (University of California San Francisco), Dallin Francom (Oregon Health and Science University), and Peter Jermain (University of Massachusetts – Lowell). Our winners were Ricardo Rademacher (1st), Mychaela Coyne (2nd), and Mary Peters (People's Choice). Congrats to all! Next year, MedPhys Slam will be hosted with other STSC events on Sunday.

- **Interview Workshop** | The Interview Workshop offers participants an opportunity to practice their oral communication and interviewing skills with residency directors, industry recruiters, and established physicists. Feedback from this event consistently praises how helpful receiving constructive feedback is from professionals. This year, Russel Tarver spoke at the start of the workshop about interview tips and tricks before the participants practiced their skills with a series of mock interviews. Thank you to our volunteers for sharing your knowledge with future physicists!
- **ACR Meet & Greet** | The ACR hosts this social event with the STSC, providing attendees with an opportunity to network and meet physicists from the ACR. It is also an opportunity to understand what the ACR does for our field on a broader policy level. This is a great event for students and trainees interested in policy and regulatory affairs to learn more about activities open to medical physicists. Make sure to watch for this event next year!
- **Non-Clinical Career EXPO & Breaking out of the Clinic Symposium** | Our Working Group to Promote Non-Clinical Career Paths for Medical Physicists (WGNMCP) hosted two events targeted at alternative career options for medical physicists. In addition, the working group, along with the social media team, launched its 7-part Non-Clinical Careers Blog Series. If you are interested in non-clinical career options, check it out!
- Social Media | The STSC is expanding our presence on social media – this year we reached over 1000 likes on Facebook and over 500 followers on Twitter! To continue our advocacy, we joined Instagram to complement our existing social channels. Between the three platforms, our team posts 5 days per week and actively monitors the web for the latest opportunities in job openings, postdoctoral research, grants and fellowships, and community involvement, so be sure to follow us for the most up-to-date information. Find us on Facebook (www.facebook.com/aapmstsc) or on Twitter or Instagram at @aapmstsc.

### We don't just host events!

The STSC doesn't just organize events for the Annual Meeting! When we aren't busy hosting and planning events, we are focused on issues that affect the student and trainee community. In 2019, we offered our perspectives and opinions to the Education Council regarding recent news that residency programs are withdrawing from the Match, and we crafted survey questions aiming to understand what trainees care about when looking for a residency. At the annual meeting, we had four students (Sameer Taneja, Reed Kolany, Jake Rembish, and Kristen McConnell) attend the ABR Advisory Committee as trainee members to offer perspectives on the ABR exam process. Phillip Wall is currently collaborating with SDAMPP to create a repository of useful websites and resources for students and trainees. Our committee has also been working with AAPM to look for online avenues to host more of our content, so be on the lookout for a revamped STSC website in the future! Additionally, we have worked with President-Elect Saiful Huq to provide feedback on ways to get students and trainees involved in more AAPM

SPECIAL INTEREST FEATURE, Cont.

activities and committees, so be sure to look out for more information on these initiatives in the new year!

### Get Ready for 2020…

In January 2020, **Ara Alexandrian** will take over the committee as Chair with **Mallory Glenn** as our newly elected Vice Chair. This year **Todd Atwood** was added as an additional faculty advisor to complement **Jay Burmeister's** ongoing participation. We are grateful for their advice and advocacy. In 2020, we also are adding five new members. We received 24 applicants to fill these positions and credit this large recruitment in part to the new and improved Committee Classifieds pages. Kudos to AAPM staff on this new design, and thanks to all the enthusiastic students and trainees for their interest in volunteering! ■

### THANK YOU TO THE STSC MEMBERS!

# TIPS AND TRICKS FOR CHOOSING AN ADVISOR

Soleil Hernandez | Houston, TX

## A Mentorship Initiative by MD Anderson's Medical Physics Program

The Medical Physics peer-mentorship program at MD Anderson is an initiative led by the student body to help first-year students become academically and socially acclimated to graduate school. This is a volunteer-based program where each first year student is paired with a more senior student to foster an integrated environment between newcomers and the upper classmen. Throughout the year, the peer-mentorship program organizes various luncheons that help facilitate communication between mentors and mentees. One of the key decisions students will face in their first year in our program is selecting an advisor. With this in mind, the veteran students at MD Anderson led a "Tips and Tricks for Choosing an Advisor" session to help guide students in their decision making process. This meeting was organized as a casual question and answer session. Both first year students and mentors submitted questions prior to the session. These questions as well as the discussion that followed are summarized below:

**Q1. Should I prioritize a project that I like or a PI that I like?**

Most veteran students agreed that this is a personal decision that depends on the student. For most, prioritizing a PI that could help see a project through from start to finish was the most important priority when selecting an advisor. Having a project that you love can be complicated by an unsupportive advisor. At the end of the day, you want someone who will support a positive learning environment and give you guidance on how to best advance your project. Students also noted that having an advisor who supports them outside of research is also important as there are many milestones to overcome in our program such as coursework, the candidacy exam, and committee meetings. Students also emphasized that you should not rely on a professors reputation and should talk to the students in that group to get the best idea of what type of person works well with that advisor.

**Q2. How much emphasis should I put on my advisor's expectation of my work/life balance?**

This answer was dependent on the student. The consensus was that you should pick an advisor who supports the lifestyle that you would like to live. For some students, their project is their most important priority at this phase of life, and for them, they prefer to spend long hours in the lab advancing their project as this brings them the most fulfillment. For other students, it was essential to have an advisor who supports taking breaks and making time for activities outside of their project. Many students stated that their productivity increased after stepping away from their project to clear their heads. The veteran students unanimously agreed that it was important to them to select an advisor who was supportive of taking breaks to see family, especially for big life moments and emergencies.

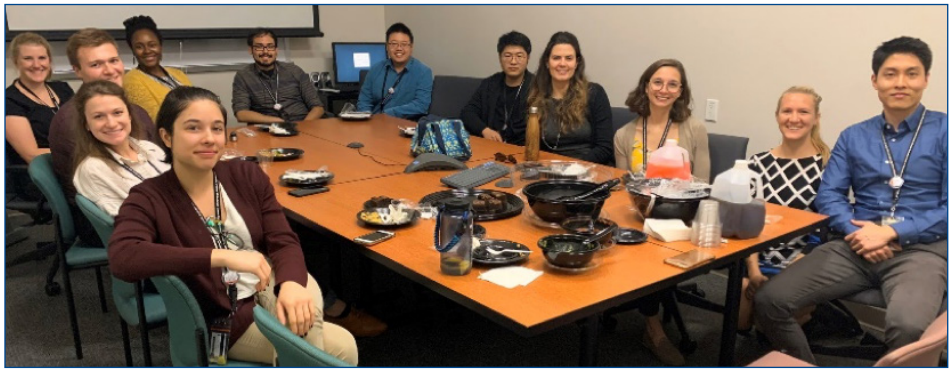
**Q3. What are the pros and cons of having a "hands-on" versus "hands-off" advisor?**

In this session, we defined hands-on as having multiple meetings a week and hands-off as having a professor who travels often and meets on an as needed basis. The pros discussed for the hands on advisors was that when students were faced with difficulties, they were able to quickly get help. Some students found that meeting weekly held them accountable and maximized their productivity. One con of the hands-on advisor was that some students may feel pressured to produce enough progress each week to keep their advisor satisfied with their progress. The pros of the hands-off advisor were that it gave students who are more independent the freedom to advance their project at their own pace. The cons expressed were that their advisor may not always be aware of problems in their projects as they arise.

**Q4. Is the number of students graduated by that advisor an important factor to consider?**

The consensus was that it is important to have an advisor who has graduated a student or who has served on a student's committee so that they understand the milestones that must be achieved before graduating a student. Another important factor expressed was that advisors who have multiple students have a better ability to formulate a cohesive project in a reasonable PhD time-frame. Additionally it was

mentioned that an advisor who may not have graduated a student in many years may be difficult to work with since they may be unfamiliar with the expectations of a PhD student. For our program specifically, there are countless regulations set by the graduate school that we must remain accountable for and it is helpful to have an advisor who is familiar with these milestones.



*Medical Physics Mentors and Mentees from left to right: Barbara Marquez, Kelly Nealon, Brandon Reber, Mary Peters, Fre'Etta Brooks, Daniel El Basha, Tianzhe Li, Yao Zhao, Daniela Branco, Rebecca Ditusa, Shannon Hartzell, and Yulun Le.*
*Not pictured: Soleil Hernandez and Evan Gates*

**Q5. How much emphasis should I put on the lab environment?**

The answer to this question was dependent on the student. Most students agreed that this was an important factor to consider. For some students, their lab environment included working with post docs that served as liaisons to their advisor. In this case, it was important to have a positive learning environment with the post doc. Other students from larger labs emphasized how comradery and team science really helps them progress through their PhD. These students claimed that having a large lab was helpful in learning interpersonal skills since they are constantly working with different personalities. Students also mentioned that it was helpful to have labs with students who were willing to help edit abstracts and manuscripts.

**Q6. Is it okay to ask how long my project will take?**

Yes! The consensus was that not only is it okay to ask what your advisors expectations are, but it is important to establish and update a timeline for your project so that you can hold yourself accountable. Students also emphasized that is important to have a project that you have the resources and knowledge to achieve in a reasonable amount of time. Students recommended laying out the project with the advisor as well as the expectations of what resources will be needed to achieve the project. One student in particular mentioned that having a timeline that you maintain over the course of your PhD is helpful to remind your advisor of all that you've accomplished.

**Q7. What kind of qualities about your advisor help you reach your career goals?**

Students mentioned that their advisors encourage them to apply for external fellowships and guide them throughout the application process. Other students noted that their advisors allow them to travel and present their research which is important to professional development. Students mentioned their advisors have been supportive of allowing them to take additional courses at other institutions as well as courses sponsored by professional organizations.

**Q8. Can I work with an advisor who may have limited funding?**

Most students agreed that while it is possible to work with an advisor with limited funding, it is a tricky process. Students noted that there are many benefits to choosing an advisor with adequate funding but acknowledge that some students may not have this option. In this case, students recommended applying for external fellowships before committing to that advisor to secure funding. ■

***Acknowledgment:*** *This session was led entirely by students at all stages of our program and these opinions are our own. We would like to thank our program manager,* **Dr. Wendt**, *for providing us with the resources to sustain a peer mentorship program.*

Delta⁴
by ScandiDos

# DELTA⁴ DISCOVER

## REPLACE PRE-TREATMENT VERIFICATION


## ONLY TRANSMISSION DETECTOR APPROVED AND IN CLINICAL USE DURING TREATMENT

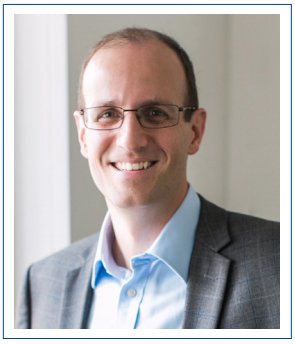
**BOOK A DEMO**

*Innovative and Efficient QA*

*www.delta4family.com*

# IROC-HOUSTON RESEARCH HIGHLIGHTS FROM THE PAST THREE YEARS

**IROC HOUSTON REPORT** Stephen F. Kry, PhD | IROC Houston QA Center



IROC Houston's primary mission and NIH funding are related to providing quality assurance for clinical trials, including review of charts for patient on trials and evaluation of institutional radiotherapy performance through output checks, anthropomorphic phantoms, and site visits to review basic dosimetry. However, as scientists, the physicists at IROC are also constantly motivated to explore and understand the unknowns facing the radiotherapy community. This works particularly well when the unanswered questions relate to IROC's core mission of improving the accuracy and consistency of radiotherapy. To this end, IROC physicists use independent funding to pursue research questions. While IROC Houston has been involved in more than 50 peer-reviewed publications over the past 3 years, some of these have been particularly important to IROC and to the improvement in radiotherapy quality. Four highlights are discussed below.

**Pencil beam algorithms are unsuitable for proton dose calculations in lung.** While there had been observations of dose discrepancies associated with pencil beam algorithms for proton beams in heterogeneous anatomy, IROC's unique capability to examine numerous proton treatment planning and delivery systems allowed for the serious extent of this problem to be revealed. In response to these findings and this publication, the NCI has banned pencil beam algorithms for proton treatments in the thorax and there is clear pressure for institutions to implement a Monte Carlo solution.

**Treatment planning system calculation errors are present in most Imaging and Radiation Oncology Core-Houston phantom faailures.** There has been long-standing interest in understanding why so many institutions (~15%) fail to meet IROC's generous ±7 criteria when irradiating our phantoms. This study found that in 68% of failing IMRT phantom results, the institution had a statistically significant and clinically relevant error in their dose calculation, most likely due to inadequate beam modeling. This is particularly concerning because this sort of error would manifest in patient treatments.

**MRIgRT dynamic lung motion thorax anthropomorphic QA phantom: design, development, reproducibility, and feasibility study.** The radiotherapy community is on the cusp of MR-planned and MR-guided treatments being mainstream. These treatments are different than normal treatments in that they use different imaging and positioning and emphasize target tracking and adaptive planning. An independent tool, containing tissue equivalent materials visible with both CT and MR, is needed to provide thorough quality assurance for this technique is critical for safe adoption.

## IROC HOUSTON REPORT, Cont.

**Independent recalculation outperforms traditional measurement-based IMRT QA methods in detecting unacceptable plans.** Patient specific IMRT QA remains a standard part of medical physics practice throughout the community, but is under increasing scrutiny for failing to detect important errors. This study emphasized the inability of community-standard measurement-based IMRT QA to detect failing IROC phantom results; in contrast, a simple measurement based approach dramatically outperformed the measurement-based standard, challenging the approach medical physics should take for IMRT QA. ■

Taylor PA, Kry SF, Followill DS. Pencil beam algorithms are unsuitable for proton dose calculations in lung. *Int J Radiat Oncol Biol Phys*.99(3):750-756;2017

Kerns JR, Stingo F, Followill DS, Howell RM, Melancon A, Kry SF. Treatment planning system calculation errors are present in most Imaging and Radiation Oncology Core-Houston phantom failures. *Int J Radiat Oncol Biol Phys* 98(5):1197-1203;2017.

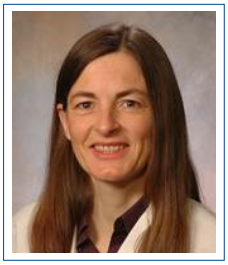
Steinmann A, Alvarez P, Lee H, Court L, Stafford R, Sawakuchi G, Wen Z, Fuller C, Followill D. MRIgRT dynamic lung motion thorax anthropomorphic QA phantom: design, development, reproducibility, and feasibility study. *Med Phys* 46(11):5124-5133;2019

Kry SF, Glenn MC, Peterson CB, Branco D, Mehrens H, Steinmann A, Followill DS. Independent recalculation outperforms traditional measurement-based IMRT QA methods in detecting unacceptable plans. *Med Phys*. 46(8):3700-3708;2019.

# ANNUAL MEETING BUZZ...

**ANNUAL MEETING SUBCOMMITTEE REPORT** Robin Stern, PhD, Chair | Sacramento, CA
Ingrid Reiser, PhD, Vice Chair | Chicago, IL


R. Stern


I. Reiser

## The Cost of e-Posters

Remember traveling to the meeting, trying to stuff that long poster tube into the overhead bin of the airplane? Remember picking up your poster from the printing shop, rushing because you had to get there before five in the afternoon when they would close for the weekend? Remember having to pay for that poster?

Fortunately, those days are gone — thanks to e-posters. E-posters bring many benefits to the presenters – no more printing, carrying, mounting paper posters — and also to meeting attendees. No more endless rows of posters that are only accessible during specific hours. Instead, e-poster viewing is available at large screens in the exhibit hall, with a modern self-guided interface and the opportunity for lively discussions with the authors. Or, you can view e-posters at your own time on your own private computer. So, e-posters are a clear win-win for everyone, right?

Not quite. E-posters actually come at a substantial cost to the AAPM. In 2019, the cost of each e-poster was about $100, fully covered by the AAPM. What makes up this cost? The cost of the e-poster management software that provides poster upload and display functionality, plus the many large screens sprinkled throughout the exhibit hall for e-poster viewing.

This year the AAPM is introducing an e-poster fee of $50 to offset some of this cost. This keeps in line with the cost of printing a traditional paper poster. The AAPM is not alone in this — ASTRO charges both an abstract submission fee AND an e-poster fee. Some meetings don't charge, but many of those still use traditional paper posters.

Why are we doing this? Well, there's just no free lunch, and as meeting organizers we have to be financially responsible. Presenters, you may have to pay for your poster as in the old days, but at least you don't have to drag around that poster tube.

## Meet the Team: The Organizers of the 2020 Annual Meeting in Vancouver

With the start of the new year, it's time to get ready for the next AAPM Annual Meeting! The 2020 AAPM Annual Meeting will be joint with COMP, the Canadian Organization of Medical Physics, and it will be held in beautiful Vancouver, BC, July 12 – 16, 2020. This year's meeting is all out international — the theme is **"Improving Health Quality. Increasing Global Impact."** So

**IMPORTANT 2020 JOINT AAPM | COMP MEETING DATES TO REMEMBER**

**January 15, 2020**
Website activated to receive electronic abstract submissions.

**March 4, 2020**
Meeting housing and registration available online.

**March 5, 2020**
**8:00 pm Eastern (5:00 pm Pacific)**
Deadline for receipt of 300 word abstracts and supporting data

**By April 14, 2020**
Authors notified of presentation disposition.

**May 29, 2020**
Deadline to receive discounted registration fees.

**June 15, 2020**
Housing reservation deadline.

Deadline to cancel housing reservation without a $25 cancellation fee.

2020 JULY 12–16 VANCOUVER, BC
JOINT AAPM | COMP MEETING

## ANNUAL MEETING SUBCOMMITTEE REPORT, Cont.

look forward to sessions on global cancer care and how Medical Physicists can have an impact.

The organizing committee is making an extra effort to put together the most interesting and engaging meeting program yet! This year's organizing team members include **Kristy Brock, Carri Glide-Hurst, Ke Sheng, Lei Ren, Ioannis Sechopoulos** and **Carrie Hruska** as well as **Nathan Becker** (COMP) for the scientific program. We will have a "Data Science" specialty track chaired by **Maryellen Giger** and **Chuck Mayo**.

The education program is headed by **Tyler Fisher**, along with **David Carlson, Laura Cervino, Frank Dong, Robert McDougall, Jennifer Smilowitz** and **Deidre Bachelaar** (COMP). **Eileen Cirino, David Jordan** and **Boyd McCurdy** (COMP) are the organizers of the professional program, and **Norman Brown** is heading the technical exhibits.

Get ready to submit your abstract! Abstract submission opens soon, January 15, 2020 - and the submission deadline is March 5, 2020!

***We're looking forward to having you join us in Vancouver in July!*** ■

# ON BEHALF OF THE ICMP-2019 SCIENTIFIC AND PROGRAM PLANNING COMMITTEES

**REPORT FROM ICMP-2019** María-Ester Brandan, PhD | Ciudad de Mexico , MEX
Geoffrey S. Ibbott, PhD | Jericho , VT

*M. Brandan*

*G. Ibbott*

The International Organization for Medical Physics (IOMP) represents about 25,000 medical physicists worldwide and comprises 6 regional organizations, 86 adhering national member organizations and 1 affiliate member. Its objectives are to organize international cooperation in medical physics and allied subjects; to contribute to the advancement of medical physics in all its aspects, especially in developing countries; and to encourage and advise on the formation of national organizations of medical physics in those countries which lack such organizations. Every three years, the IOMP collaborates with the International Federation for Medical and Biological Engineering to sponsor the World Congress on Medical Physics and Biomedical Engineering. In between World Congresses, the IOMP sponsors the International Conference on Medical Physics (ICMP); an international conference, generally held in conjunction with a meeting of one of the regional organizations.

The 24th ICMP (ICMP-2019) was held in Santiago, Chile, in early September, in conjunction with the 8th Latin American Congress of Medical Physics, and the 2nd Chilean Congress of Medical Physics. The Conference Organizing Committee therefore consisted of AAPM member Madan Rehani, President of IOMP, **José Luis Rodríguez**, SOFIMECH President, **Rodolfo Alfonso**, ALFIM President, **Eva Bezak**, IOMP Secretary General (from August 1, 2019) and Virginia Tsapaki, IOMP Secretary General (until July 31, 2019).

ICMP-2019 was attended by 493 registrants from 54 countries. Fully 65% of the work submitted for proffered oral and poster presentations came from Latin America and the Caribbean. The countries most represented in the presentations were Chile, Brazil, Argentina and Peru. Thus, ICMP-2019 was truly international and became an important forum for the development of medical physics in the region.

The program of invited and proffered talks and electronic posters greatly exceeded our expectations. The program included a wide variety of contemporary topics, highlighted numerous scientific accomplishments, and represented a range of regional and cultural perspectives. The program, like those in the past, was designed to entice international attendees, and at the same time, offered sessions designed specifically for local participants.

Every morning, at least one of the scientific sessions was held in Spanish, with a mix of international and local speakers, and topics of special interest to Latin


**Some of the attendees at ICMP-2019!**

**From left: Rodolof Alfonso (ALFIM President), Madan Rehani (IOMP President), and José Luis Rodríguez (SOFIMECH President)**

American physicists. In most afternoons, there were four parallel tracks of proffered oral presentations, grouped without overlap so that most attendees were able to find talks of interest and relevance to their specialties. E-poster sessions were organized to minimize conflicts with the oral sessions, to allow participants to visit posters without having to miss oral presentations on related topics.

At least 20 AAPM members delivered invited presentations and many more contributed to the proffered oral talks and posters. Several also served as session moderators. Of special note was the keynote presentation by President **Cynthia McCollough** entitled "CT technology — and dose — in the 21st century." President-Elect **Saiful Huq** spoke on "Radiation oncology — New paradigms and future challenges." And in a special presentation, **T. Rockwell Mackie** was awarded the IOMP's John Mallard Award. The Mallard Award is given to honor a medical physicist who has developed an innovation of high scientific quality and who has successfully applied this innovation in clinical practice. Dr. Mackie then delivered a talk entitled "A case for upright radiotherapy."

During a reception for IOMP leadership, three AAPM members were inducted as new IOMP Fellows: **Drs. Mahadevappa Mahesh, Ehsan Samei**, and J**. Anthony Seibert**.

Ultimately, the program consisted of 114 oral presentations, of which five were organized into a special session for young investigators, where the presentations were scored by an international team of judges. The best presentation and two runners-up received awards at the closing ceremony on the last afternoon of the conference.

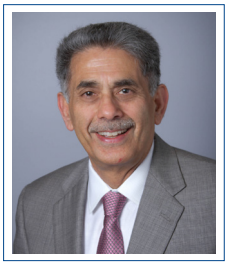
The remaining 109 oral presentations and 260 e-posters were sorted into the following topics: Diagnostic and Interventional Radiology, with subtopics of General, Dosimetry, and Radiation Protection specific to Radiology; Radiation Oncology, with subtopics of Treatment Planning, Treatment Delivery, Dosimetry, Brachytherapy, and Quality Assurance. Additional topics included Reference-Quality Dosimetry; Nuclear Medicine; Non-Ionizing Radiation; Biomedical Engineering; Radiation Protection; and Education and Professional Issues. The program was then arranged so that registrants could attend both the talks and E-posters on the topics of their interest.

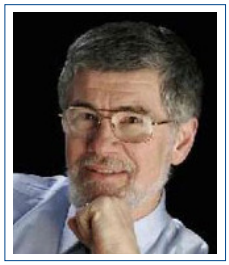
Twenty-four commercial sponsors contributed to the conference. The coffee breaks were held in the exhibit area and sufficient time was allowed between sessions for attendees to mingle and visit the technical exhibits. The Local Organizing Committee led by **José Luis Rodríguez** did an outstanding job by selecting a superb venue, managing multiple parallel sessions with many speakers and moderators, and organizing a number of enjoyable social events. ■

# REPORT ON THE FOURTH AMPR / AAPM TRAINING COURSE IN MOSCOW, RUSSIA

**IEAC REPORT** Joanna E. Cygler, PhD | Ottawa, ON, Canada
Jatinder Palta, PhD | Richmond, VA ■ David W.O. Rogers, PhD | Ottawa, Canada


*J. Cygler*


*J. Palta*


*D. Rogers*

This article reports on the fourth joint training course on "Medical Physics in Clinical Radiotherapy", organized by the Association of Medical Physicists of Russia (AMPR) and the AAPM. The course was held in Moscow, Russia in September 2019. As in previous years, **Marina Kislyakova** coordinated all course activities on behalf of AMPR and made everything run very smoothly.

AAPM's participation in the course is organized by the International Educational Activities Committee (IEAC), whose Chair delegated the coordination of the AAPM contributions to **Joanna Cygler**, Chair of the AAPM International Training and Research Coordination subcommittee, which operates under IEAC and whose charge is to facilitate medical physics training and research opportunities for international medical physicists.

There is a pronounced shortage of clinically qualified medical physicists in Russia and AMPR puts a significant effort into organizing various teaching initiatives to improve the situation in the country. They had formed educational partnerships with organizations such as IAEA and ESTRO. They live by the "train the trainer first" motto and regularly send their teaching faculty to various advanced courses to keep abreast with the fast-evolving medical physics field.

One of AMPR's initiatives is a collaboration with AAPM on educational activities.

The September course was the fourth AAPM collaborative teaching course with the AMPR over the past seven years. The participants came from all over Russia and stayed in Moscow for a total of four weeks of training at the AMPR's International Training Center (ITC) that is housed in the N.N. Blokhin National Medical Research Centre of Oncology in Moscow. The Blokhin Institute is the leading cancer research and teaching hospital in Russia. It is also the home of the AMPR. The part of the course joint with AAPM took place during the last week of the 4-week educational endeavor consisting of lectures and practical sessions.

**"One of AMPR's initiatives is a collaboration with AAPM on educational activities."**

**We sincerely hope that AAPM will continue to support this collaboration with the AMPR, and other international educational efforts, in the future.**

## IEAC REPORT, Cont.

The course was attended by 20 participants who came from all regions of Russia. The major cities represented at the course included Moscow, Tver, Tomsk, Orenburg, Kurgan, Yakutsk, Kirov, Blagoveshchensk, Izhevsk (Republic of Udmurtia), Cheboksary (Republic of Chuvashia), Saransk (Republic of Mordovia), Kazan (Republic of Tatarstan), Yakutsk, (Republic of Sakha (Yakutia). The participants came from clinics that were equipped not only with cobalt units, but also with modern radiotherapy equipment and treatment planning systems (Varian or Elekta) and needed to expand their knowledge in advanced technologies. There were also three participants who worked at a university or service company.

Lectures were given by the faculty from both the AMPR and AAPM. The AAPM faculty were **Jatinder Palta, David Rogers** and **Joanna Cygler**. The lectures included topics like: Uncertainties in the Planning and Delivery of Advanced Radiotherapy, Image guidance and Response Assessment, Implementation of TG100 in clinical practice, Monte Carlo dose calculations for photon and electron beams, Clinical Implementation of Monte Carlo based treatment planning, Independent MU calculations, Modern Dosimetry Protocols, Dose-to-Medium and Dose-to-Water, In Vivo Dosimetry, etc. The course was run in Russian, since many of the attendees did not speak English. The AAPM lectures were live-translated into Russian by senior Russian medical physicists, who received the lecture handouts in advance of the course.

From various discussions some of us had with the course organizers and to a lesser degree with some students, we gathered that the collaboration with AAPM is valued very highly. AAPM lectures translated into Russian provide invaluable educational material. Some participants also mentioned to us how inspirational it was for them to personally meet internationally known AAPM medical physics experts. ■

*AAPM faculty with some of the course participants.*

IAEA
International Atomic Energy Agency

# IAEA INTERNSHIP PROGRAMME

## Are you looking for practical experience in an international environment?

**The purpose of the IAEA internship programme** is to provide people studying toward a university degree or who have recently received a degree with the opportunity to gain practical work experience in line with their studies or interests and expose them to the work of the Agency and the United Nations. At the same time, it benefits the IAEA and its programmatic work to obtain the assistance of qualified students specialized in various professional fields.

The duration of internships is normally not less than three months and not more than one year. However, a minimum of one month is also accepted. Interns are subject to the authority of the Director General and must observe all applicable IAEA rules, regulations, instructions and procedures.

## Details of the Programme

To be eligible for the internship programme, applicants must be at least 20 years of age and have completed at least three years of full-time studies at a university or equivalent institution towards the completion of their first degree.

Individuals may apply up to one year after the completion of a bachelor's, master's, or doctorate degree. Applications submitted after that time will not be considered. Applicants must not have previously participated in the Agency's internship programme.

A working (oral and written) knowledge of English is essential. Knowledge of other official IAEA languages (Arabic, Chinese, French, Russian, or Spanish) is an asset. Interns should be able to adapt to an international, multicultural and multilingual environment, have good communication skills and be able to work in a team.

Interns are selected from candidates whose study disciplines are relevant to the Agency's work.

The IAEA provides a stipend of EUR 500 to interns who do not receive financial support from an institution, university or other source, and an additional EUR 500 is offered to interns who pay for his/her own accommodation to a non-family third party. The stipend is not a salary, but an allowance to assist with basic subsistence costs during the internship period.

## Applying for an internship at the IAEA

Applicants must complete an online job application form for a specific internship opportunity, answering all mandatory questions. They must also include two signed letters of recommendation. Recommendation letters with electronic signatures are not acceptable.

Applicants who do not comply with these guidelines or do not meet the essential requirements for IAEA internships will not be considered.

**Additional details and information available** here.


1631 Prince Street, Alexandria, VA 22314 | p. 571-298-1300 • f. 571-298-1301 | **aapm.org**