

American Association of Physicists in Medicine

1999 Summer School

# Practical Digital Imaging and PACS

June 27 – July 1, 1999



*From left: Canoeing on the Russian River, a popular summertime activity; hot air balloon tours of the wine country in Sonoma County; Napa Valley vineyards.*

**Sonoma State University, Rohnert Park  
California, USA**

***Scientific Directors:***

J. Anthony Seibert, Ph.D., Larry Filipow, Ph.D., Katherine Andriole, Ph.D.

***Local Arrangements:***

Stephen Thompson, M.S., Sherry Connors, M.S., Lee Goldman, M.S.,  
and members of the AAPM San Francisco Bay Area Chapter

**Register by April 30  
for Discounted  
Registration Fee!**

Register on-line at <http://www.aapm.org>

1999 AAPM SUMMER SCHOOL  
**Practical Digital Imaging and PACS**  
Sonoma State University ▲ Rohnert Park, California USA  
June 27 - July 1, 1999

This summer school is intended for medical physicists, administrators and radiologists who are going to be key personnel in their institution's inevitable evolvement into a largely filmless facility. Fully digital, filmless imaging is now very possible, with computing capability, network technology, soft-copy display quality, storage capacity, and overall cost at levels that make this endeavor very plausible. Practical aspects of the physics and technology behind the four main areas of digital imaging are presented:

- (1) Production of Images: CT, MRI, CR/DR, Ultrasound, Nuclear Medicine
- (2) Network / Communications: PACS and DICOM
- (3) Display / Analysis / Reporting: Workstations
- (4) Archival issues

Participants will gain a thorough, fundamental knowledge of these areas, including specifications, performance expectations, quality assurance testing, works-in-progress, and futures. The goal of this summer school is to enable participants to become knowledgeable members of their facilities who will be involved and will contribute to the implementation of digital, filmless radiology.

**Program Directors:**

J. Anthony Seibert, Ph.D. jaseibert@ucdmc.ucdavis.edu	Larry J. Filipow, D.Phil. filipow@raddi.uah.ualberta.ca	Katherine P. Andriole, Ph.D. kathy.andriole@radmac1.ucsf.edu
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**Faculty:**

Katherine P. Andriole, Ph.D.	UC San Francisco	Richard L. Kennedy, M.S.	UC Davis
David Avrin, M.D.	UC San Francisco	Richard L. Morin, Ph.D.	Mayo Clinic Jacksonville
John Boone, Ph.D.	UC Davis	J. Anthony Seibert, Ph.D.	UC Davis
Ian A. Cunningham, Ph.D.	Robarts Research Institute	Ken Spicer, M.D., Ph.D.	Medical Univ. of South Carolina
Keith Dreyer, D.O., Ph.D.	Massachusetts General Hospital	Brent K. Stewart, Ph.D.	University of Washington
Larry J. Filipow, Ph.D.	Univ. of Alberta Hospital	Douglas Tucker, Ph.D.	Storage Technology Corp.
G. Donald Frey, Ph.D.	Medical Univ. of South Carolina	David Weber, Ph.D.	UC Davis
Robert G. Gould, Sc.D.	UC San Francisco	Charles E. Willis, Ph.D.	Texas Children's Hospital
Nicholas J Hangiandreou, Ph.D.	Mayo Clinic	Martin Yaffe, Ph.D.	Sunnybrook Health Science Ctr.
John D. Hazle, Ph.D.	UT M.D. Anderson Cancer Ctr	James A. Zagzebski, Ph.D.	Univ. of Wisconsin
Janice Honeyman, Ph.D.	Univ. of Florida		

**Local Arrangements Chair:**

Stephen Thompson    sthompson@prowess.com

**For additional information, contact:**

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## SCIENTIFIC PROGRAM SCHEDULE

### SUNDAY, JUNE 27

Introduction to Digital Imaging and Overview	J. Anthony Seibert, Ph.D. Larry J. Filipow, D. Phil. Katherine Andriole, Ph.D.
PACS Overview	Larry L. Filipow, D. Phil.
Ultrasound	James A. Zagzebski, Ph.D.
Nuclear Medicine	David Weber, Ph.D.
CT	John Boone, Ph.D.
MRI	John D. Hazle, Ph.D.

### MONDAY, JUNE 28

Digital Angography and Fluoroscopy	Robert G. Gould, Sc.D.
Film Digitizers and Laser Printers	J. Anthony Seibert, Ph.D.
Computed Radiography: Overview	Katherine Andriole, Ph.D.
Computed Radiography: QA / QC	Charles E. Willis, Ph.D.
Digital Mammography and Direct Radiography	Martin Yaffe, Ph.D.
Image Quality and Dose	Ian A. Cunningham, Ph.D.

### TUESDAY, JUNE 29

Networks, Pipes, Connectivity	Brent K. Stewart, Ph.D.
DICOM	Richard L. Kennedy, M.S.
PACS Brokers and HL-7	Richard L. Morin, Ph.D.

Afternoon off to enjoy Sonoma!

### WEDNESDAY, JUNE 30

Databases, File Management and Storage	Douglas Tucker, Ph.D.
Web Servers	Keith Dreyer, D.O., Ph.D.
Compression and Encryption	Nick Hangiandreou, Ph.D.
Teleradiology	Brent K. Stewart, Ph.D.
Workstations: Physicians Issues	Ken Spicer, M.D., Ph.D.
Workstations: Acceptance Testing and Quality Control Considerations	Janice Honeyman, Ph.D.

### THURSDAY, JULY 1

PACS Economic Issues and Justifications	David Avrin, M.D.
PACS RFP	Larry J. Filipow, D. Phil.
A PACS Case Study	G. Donald Frey, Ph.D.

## CONTINUING EDUCATION CREDITS

The Summer School has applied to CAMPEP for a maximum of 24 hours of Medical Physics Continuing Education Credits (MPCEC). Credits will be awarded to medical physicists who participate in the program and submit the required documentation to the Program Director.

## MEETING LOCATION

Sonoma State University is located just one hour north of San Francisco and the Golden Gate Bridge, in a small town in Sonoma County, California . The Sonoma County region offers visitors award-winning wineries, redwood forests, 76 miles of handsome Pacific Coast beaches (complete with a fishing village), a restored Russian Colony outpost, self-guided tours of farms that offer everything from goat cheese to horse and wagon rides, and much more.

Sonoma County contains more than 31,000 acres of wine grapes planted with approximately 145 wineries on the 10 growing regions within the county. For eight years in a row, wines made from Sonoma County grapes have won more awards in major U.S. wine competitions than wines from any other wine growing region. Wineries welcome visitors to chateaus, hop kilns, farmhouses, historical buildings and ultra-modern facilities. In addition to Tasting Rooms which are open daily (usually 10:00 a.m. to 4:30 p.m.), there are special tastings and activities taking place throughout the county every weekend.

Sonoma State University, established in 1960, is one of 22 state funded schools in the largest university system in the US, the California State University. The Summer School lectures will be held in the two year old Person Theatre which has capacity for 475 registrants. The theatre is just a few minutes walk from the residence communities.

## LODGING AND MEALS

Lodging at Sonoma State University is available in the modern townhouse style residential community. Summer School registrants will be housed in the Sonoma Housing complex which is a short walk from both the conference venue and the dining facilities. The residential suites typically have two bedrooms, a semi-private bathroom, and a shared sitting area. A **SINGLE** room is a bedroom with a twin bed in a two room suite which shares the bathroom and sitting area with the other bedroom in the suite. A **TWIN** room is a bedroom with two twin size beds in a two room suite. The bathroom and sitting area are shared with guests in the other bedroom.

All rooms contain a telephone jack (but no telephone) and a small desk. Please bring your own reading lamp, as lighting at the desk is not guaranteed to be optimal. Additionally, you may bring a telephone which can be used free of charge for campus and local calls or long-distance calls with a calling or credit card.

Meals are provided in the dining facilities near the residential community. The modern facilities exclusively provide meal service to Summer School registrants at specific dining hours. The menu changes daily and starts with a hearty breakfast featuring a wide assortment of fruit, cold cereal, and hot morning entrees. Lunch and dinner offer a fresh salad bar, vegetarian and non-vegetarian entrees, dessert, and a wide selection of refreshing beverages. For those who enjoy good coffee, Sonoma State University offers Starbucks brand coffees at all meals.

Check-in time is 2:00 pm on Saturday, June 26. Check-out time is 2:00 pm on Thursday, July 1, or if you elect to stay an additional night, 11:00 am on Friday, July 2.

## UPON ARRIVAL ON SATURDAY

Check-in and registration is being handled by AAPM volunteers at the Sonoma Residence community. Although rooms are not available until 2:00 pm on Saturday, the registration desk will open at 11:00 AM to accommodate early arrivals. The Icebreaker reception will be held from 7:00 pm - 9:00 pm adjacent to the residential community. In typical California style, the reception will be a casual affair. Bring your favorite shorts and jeans - ties should be left at home.

All summer school sessions will be held at the Person Theatre and will begin early Sunday morning.

## TRAVEL INFORMATION

AAPM has selected Conventions in America (CIA) as the official travel agency for this meeting. Call (800) 929-4242 and refer to Group #608 to receive the following discounts or the lowest available fares on any other carrier:

**American Airlines** – save 5% - 10% on lowest applicable fares - take an additional 5% off with minimum 60 day advance purchase. Starfile #2269UO

**Southwest Airlines** – 10% off lowest everyday fares - all rules apply. File #F0989

Arrangements have also been made for discount car rental through **Avis Rent A Car** – rates start as low as \$40 / day for economy models or \$172.99 / wk with unlimited mileage.

Outside 800 area, call (619) 232-4298, fax (619) 232-6497, web site <http://www.scitravel.com> (REFERENCE #608), e-mail [flycia@scitravel.com](mailto:flycia@scitravel.com)

### **San Francisco International Airport**

SFO is the recommended airport with the best shuttle service. Allow 2 hours for the trip to campus by shuttle, 1¼ hours by car. Car rental makes for an adventurous, but very pretty, drive through the streets of San Francisco – over the Golden Gate Bridge. Shuttle information will be included in your confirmation letter.

### **Oakland International Airport**

No shuttle. The car rental is not the most convenient but the drive from OAK is easier than from SFO. Allow 1½ hours.

### **Sacramento International Airport**

No shuttle. Car rental is very convenient with an easy 1½ hour drive.

Driving directions will be included in your confirmation letter.

## **OFF CAMPUS HOUSING**

Although registrants are encouraged to stay on campus to obtain the full summer school experience, plenty of nearby hotels are available for those who wish to stay off campus. A list of hotels and their telephone numbers is provided. None of these hotels are within walking distance of the campus, but they are all within a 5 minute cab or shuttle ride. Please be aware that the Summer School has made no arrangements with these hotels for special rates or transportation. It is the responsibility of the registrant to arrange transportation to and from the University campus.

Best Western Inn	(707) 584-7435
Good Night Inn	(707) 584-8180
Motel 6	(707) 585-8888
Double Tree Hotel	(707) 584-5466
Ramada Limited	(707) 584-1600

## **TUESDAY AFTERNOON**

The Sonoma County area is, of-course, famous for world-class wines. The Summer School LAC has planned a chartered tour through the area's picturesque hillsides and valleys on the way to several nearby wineries. Sonoma, home of the two oldest wineries and the last Mission built in California, is on the list of destinations for wine tasting, history, and tours. The area's stunning diversity of coast, canyons and rolling woodlands creates countless microclimates that give each vineyard a unique signature. Take in a lazy afternoon and sample these treasures that will keep you planning how to return to Northern California's Wine Country for more. A chartered bus will leave the University after lunch. The groups will return in time for the evening social. Tickets are not included in the registration fees and must be purchased separately. (See "optional tickets" section on registration form.)

For those who don't wish to participate in the organized tour, meet in the Companions Hospitality Suite for suggestions for fun local outings. There are world class golf courses within easy reach. Additionally, one could catch a Ferry Boat to San Francisco's famous Pier 39 in just a 30 minute drive from the campus. From there, the possibilities are endless!

## **TUESDAY EVENING SOCIAL**

Keeping in tune with the relaxed Sonoma Valley atmosphere, the Tuesday Evening Social will be held at the Rohnert Park Wine Center, set in a beautiful parkland with views of the rolling Sonoma hills. The evening will begin with a wine and food tasting session by a professional wine taster who will show us the basics about tasting, selecting and serving wines. You will enjoy grazing through a selection of California cuisines while learning about the local wines. There will also be an opportunity to purchase your own wines from the selection of local wines available.

## **WEATHER AND WARDROBE**

Sonoma County and Rohnert Park have mild summer weather. Although days can be warm, the average July temperature

is 83 degrees, there is very little humidity and the temperature cools down to an average of 51 degrees at night. Bring light jackets or sweaters for evenings. Short sleeve shirts and cool pants or shorts are recommended during the day. For those planning trips to San Francisco (an hours drive) or to the coastal beaches (26 miles east), bring warmer clothes. Mark Twain once said that the "coldest winter I've ever had was a summer in San Francisco." Because of the location in the San Francisco bay, and reputation for foggy days (and nights), the city can be as much as 20 degrees cooler than the inland cities such as Rohnert Park.

## RECREATIONAL FACILITIES

The university does not have drop in facilities available to summer conference attendees. However, a swimming pool is available for use as well as many local jogging trails, playing fields, and tennis courts.

## COMPANIONS PROGRAM

Registered Companions will have access to the Hospitality Suite, where a light continental breakfast will be served each morning. The Hospitality Suite will serve as the meeting place where Companions will gather to plan their day. The Sonoma County region is home not only to world-class wines but also to world-class entertainment and activities. The 1999 AAPM Summer School is lucky to be held the same weekend as a prestigious NASCAR automobile racing event held in nearby Sears Point Raceway. For ticket information, call (800) 870-RACE. Companions will have multiple choices of events that can be organized on-site based on interest, but many may choose to simply rent a car and create their own program. Organized events could include several shopping and site-seeing visits to San Francisco where activities could include a tour of Alcatraz, visits to Pier 39 and Ghiradelli Square, and walking tours of Chinatown and North Beach. For the more adventurous, a river rafting trip down the Russian River and/or a hot-air balloon tour of Napa Valley could be arranged. Fun for the whole family at Marine World Africa USA, a theme and thrillseekers fun park in Vallejo, is an hours drive away. These are but a few of the many activities that can be arranged for companions and families. The Summer School LAC is currently working to *narrow* down the list to a manageable few items.

## CHILDCARE

The University does not provide on campus childcare. Parents who require childcare services must make their own arrangements prior to arriving on campus.

## DEVELOPING COUNTRIES

The following countries are recognized by the AAPM as developing countries. Residents of these countries are entitled to discounted registration fees (see Registration Form).

### Latin America/Caribbean

Argentina	Ecuador	Mexico
Barbados	El Salvador	Nicaragua
Belize	Guadeloupe	Panama
Bolivia	Guatemala	Paraguay
Brazil	Guyana	Peru
Chile	Haiti	Suriname
Colombia	Honduras	Trinidad & Tobago
Costa Rica	Jamaica	Uruguay
Cuba	Martinique	Venezuela
Dominican Rep.		

### Asia/Near East

Afghanistan	Jordan	Oman
Algeria	Korea, DPR	Pakistan
Bangladesh	Laos	Papua N. Guinea
Bhutan	Lebanon	Philippines
Cambodia	Libya	Sri Lanka
China (PRC)	Malaysia	Syria
Egypt	Maldives	Thailand
India	Mongolia	Tunisia
Indonesia	Morocco	Vietnam
Iran	Myanmar (Burma)	Yemen
Iraq	Nepal	

### Africa (sub-Saharan)

Angola	Gabon	Niger
Benin	Gambia, The	Nigeria

Botswana  
Burkina Faso  
Burundi  
Cameroon  
Cape Verde  
Central African Rep.  
Chad  
Comoros  
Congo  
Cote D'Ivoire  
Djibouti  
Equatorial Guinea  
Eritrea  
Ethiopia

Ghana  
Guinea  
Guinea-Bissau  
Kenya  
Lesotho  
Liberia  
Madagascar  
Malawi  
Mali  
Mauritania  
Mauritius  
Mozambique  
Namibia

Reunion  
Rwanda  
Senegal  
Sierra Leone  
Somalia  
Sudan  
Swaziland  
Tanzania  
Togo  
Uganda  
Zaire  
Zambia  
Zimbabwe

### **Europe and the Newly Independent States**

Albania  
Andorra  
Belarus  
Bosnia and Herzegovina  
Bulgaria  
Croatia  
Czech Republic  
Estonia

Hungary  
Latvia  
Lithuania  
Macedonia  
Moldova  
Poland  
Romania

Russia  
San Marino  
Serbia and Montenegro  
Slovakia  
Slovenia  
Turkmenistan  
Ukraine