



# University of Pittsburgh

*School of Medicine*

*Department of Radiology  
Neuroradiology Division*

200 Lothrop Street  
PST - 3950  
Pittsburgh, PA 15213-2582  
Telephone: 412-647-3510  
Fax: 412-647-0738  
deangelora@upmc.edu

**Robin DeAngelo**  
*Education Administrator, Center for MR Education*

TO: Radiology Resident/Fellow Program Director

FROM: Robin DeAngelo  
Administrator, Center for MR Education  
Department of Radiology, University of Pittsburgh Medical Center

DATE: March 14, 2013

RE: Kanal's Annual Radiology Resident/Fellow MR Physics Course – July 15-19, 2013

The Department of Radiology of the University of Pittsburgh Medical Center is proud to once again offer our annual Kanal's Radiology Resident/Fellow MR Physics Course. With this project we are continuing to implement our objective of standardizing the magnetic resonance educational background of all radiology residents and fellows as they prepare for Radiology board and/or CAQ examinations and careers as Diagnostic Radiologists.

This annual course, now well into its second decade, is an intensive, 40-hour classroom experience presented by Emanuel Kanal, MD, FACR, FISMRM, AANG. Dr. Kanal, recognized internationally as the preeminent educator in the field of magnetic resonance imaging, has taught the basics of the MR imaging process to literally thousands in his unique, humorous and energetic style, always focusing on the clinical applicability as the targeted goal.

As noted in last year's email, due to financial constraints we are no longer able waive tuition for residents/fellows. The tuition for physicians in training will now be \$1000 however we are offering to waive the tuition for every 3<sup>rd</sup> resident/fellow registered from the same program. This is the only course that offers a tuition promotion for physicians in training.

### ***Comprehensive educational forum***

The course will provide in-depth coverage of basic and advanced MR physics, including reconstruction algorithms, imaging parameters, advanced applications such as diffusion-weighted imaging, perfusion-weighted imaging, MRA and MR Spectroscopy, among others. (In light of constant and continued progress in the field of clinical diagnostic magnetic resonance, course content subject to change without notice.) The following is a partial list of topics to be covered:

- TR
- TE
- TI
- Flip Angle
- Partial Saturation Spin Echo
- Gradient Echo
- Fast Spin Echo
- Echo Planar Imaging & Other Fast Imaging Techniques

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- Spatial Localization & the Role of Gradients
- Receiver Bandwidth
- Chemical Shift
- Pulse Sequences
- Signal-to-Noise Ratio
- Contrast-to-Noise Ratio
- Fat Saturation
- MR Contrast Agents
- Magnetization Transfer
- Diffusion Weighted Imaging
- Perfusion Weighted Imaging
- MR Angiography
- MR Spectroscopy
- MRI Safety Issues

***Custom developed MR simulator software***

Residents/fellows will also benefit from Dr. Kanal's utilization of his custom-developed MR simulator software throughout the course. This comprehensive software tool improves visualization and understanding of the MR imaging process. MR imaging parameters can be changed on-the-fly, and "what-if" scenarios can be performed on various pathological entities, real or created, instantly simulating what the images might look like in human clinical MR imaging with virtually infinitely variable MR imaging parameters.

***Register today***

Kanal's Radiology Resident/Fellow MR Physics Course will be held July 15-19, 2013 in Pittsburgh, Pennsylvania. Registration is open to the first 100 registrants on a first-come, first-served basis. Reserve your resident/fellow slots today by contacting Ms. Robin DeAngelo, Administrator of Dr. Kanal's Center for MR Education, by phone at 412-647-3510 or via e-mail at [deangelora@upmc.edu](mailto:deangelora@upmc.edu).

***Tuition***

The tuition is \$1000 however we are offering to waive the tuition for every 3<sup>rd</sup> resident/fellow registered from the same program

We hope you will encourage your residents to take advantage of this unique and unparalleled educational opportunity to markedly enhance their skill level and confidence in the exciting, ever-growing field of magnetic resonance imaging.

# Conference Meeting Daily Schedule

Kanal's MR Physics Course: Understanding and Applying  
Resident/Fellows Course

July 15- 19, 2013

7:30 – 8:00 am Registration Desk Open	7:30 – 8:00 am Registration Desk Open	7:30 – 8:00 am Registration Desk Open	7:30 – 8:00 am Registration Desk Open	7:30 – 8:00 am Registration Desk Open
8:00 – 10:00 am Intro to MR Concepts	8:00 – 10:00 am Spatial Localization & Gradients	8:00 – 10:00 am Gradient Echo	8:00 – 10:30 am CNR	8:00 – 9:00 am Computer Based MR Tutor (con't)
				9:00 – 10:45 am MRA
10:15 – 11:15 am T1, T2, and RPD – Part 1	10:15 – 12:00 pm Bandwidth & Chemical Shift	10:15 – 12:00 pm Contrast Agents	10:45 – 12:00 pm MRI Safety Issues	
11:15 – 12:00 pm T1, T2, RPD, TR, & TE – Part 2				11:00 – 12:00 pm MRA (con't)
	1:00 – 3:00 pm Intro to Pulse Sequences	1:00 – 2:00 pm Contrast Agents (con't)	1:00 – 3:15 pm Fast Imaging	
1:00 – 3:00 pm T1, T2, RPD, TR, & TE – Part 2 (con't)				1:00 – 5:30 pm NSF
	3:15 – 5:30 pm Pulse Sequences	2:15 – 4:00 pm Diffusion/Perfusion Weighted Imaging	3:30 – 5:30 pm Computer Based MR Tutor	5:30 pm End of Session
3:15 – 4:00 pm T2, T2*, 180° Pulse	5:30 pm End of Session	4:00 – 5:30 pm SNR	5:30 pm End of Session	
4:00 – 5:30 pm Spatial Localization		5:30 pm End of Session		
5:30 pm End of Session				

*\*\*Schedule times and topics are subject to change*

# 2013 Kanal's MR Physics: Understanding & Applying July 15- 19 • Pittsburgh

## 3 Easy Ways to Register

❶ Fax: (412) 647-0738    ❷ Phone: (412) 647-3510

❸ Mail: University of Pittsburgh, Presbyterian Hospital, Dept of Radiology, 200 Lothrop St, 3950 -PST, Pittsburgh, PA 15213, ATT: Robin DeAngelo

*\*Return completed form with full payment by check, money order or credit card.*

*Payment must be made in U.S. funds, drawn on a U.S. bank only and made payable to: Center for MR Education*

*Note: Registration and Confirmation materials will be emailed as soon as payment or status verification letter has been received.*

### ATTENDEE INFORMATION (please print legibly and check boxes below)

Name \_\_\_\_\_  
Last Name First Name

☐ MD   ☐ DO   ☐ PhD   ☐ RT   ☐ RN   ☐ Other \_\_\_\_\_

Last FIVE (5) digits of social security number *(for CME/CE credits)* \_\_\_\_\_

☐ Office

Institution/Company \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

City State Zip  
Code

Phone Fax

Email address \_\_\_\_\_

☐ Home

Complete Mailing Address \_\_\_\_\_

City State  
Zip Code

Phone \_\_\_\_\_

E-mail address \_\_\_\_\_

❶ Subspecialty: \_\_\_\_\_

❷ I have worked with MRI's for \_\_\_\_\_  
months/years

❸ How did you hear about the course? \_\_\_\_\_

(Tuition will be waived for every 3<sup>rd</sup> Resident/Fellow registered from the same program).

☐ \$3,000    Physicians, Physicists, Industry Reps

☐ \$1,700    Nurses and Technologists

### CANCELLATION POLICY

**All cancellation requests must be made in writing.**

Cancellations received in writing on or before July 9, 2012 will receive a full refund.

### VIDEO/AUDIO RECORDING POLICY

Video and/or audio recording by course participants is not permitted during the lectures. Unauthorized recording equipment is not allowed in the meeting room.

### SPECIAL NEEDS OF DISABLED PERSONS

Participation by all individuals is encouraged. Advance notification of any special needs will help us to provide better service. Please notify us of your needs at least two weeks in advance of the program.

### FOR MORE INFORMATION

Robin DeAngelo, Education Coordinator

deangelora@upmc.edu

<http://mredu.health.pitt.edu>

Phone: (412) 647-3510    Fax: (412) 647-0738

### PAYMENT INFORMATION: *Registrations will not be processed without payment or status verification letter*

AMOUNT: \$ \_\_\_\_\_

☐ Check enclosed (Make check payable to: Center for MR Education)

☐ VISA   ☐ Mastercard   ☐ American Express   ☐ Discover

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_ Card Security # \_\_\_\_\_

Name *(as it appears on card)* \_\_\_\_\_

Cardholders billing address: \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### REGISTRATION FEES

*(Please check one.)*

☐ \$1,000    Resident/Fellow In-Training