

Featured Speaker

Emanuel Kanal, MD, FACR, FISMRR, MRMD/MRSE, AANG

Director, Magnetic Resonance Services
Professor of Radiology and Neuroradiology
University of Pittsburgh Medical Center

Educational Objectives & Course Description

20 Hour Basic MR Physics: July 17-19

This three day, intensive educational conference is designed for technologists who are preparing for the advanced MR registry exam or those simply desiring to refresh/enhance their working knowledge of MR physics. All lectures will be given by **Dr. Emanuel Kanal**. Dr. Kanal is known for bringing the complex and often confusing world of MR physics into everyone's reach. Dr. Kanal uses his own custom-developed interactive computerized graphic MR tutorial software to complement his non-stop, energetic, yet easy going teaching style. Problem solving approaches are incorporated throughout the meeting to demonstrate how to clinically apply the topics and knowledge being covered. You will find yourself understanding MR physics concepts clearly and in plain English - perhaps for the first time ever. Concepts covered during the 20 hour basic course include (among others):

- Static magnetic field strength
- TR, TE, T1, T2 & Proton Density
- T2*, T1
- RF excitation flip angle
- Number of excitations (NEX)
- Image Production & Acquisition
- Fat Saturation
- 2D & 3D Fourier transform techniques
- Partial saturation techniques
- Inversion recovery sequences
- Spin echo imaging sequences
- Relaxivity
- Field Distortion
- Chemical saturation
- Gradient echo imaging sequences
- Chemical shift artifact
- Phase & Frequency Encoding
- Slice selection
- Gradient magnetic fields
- Ernst Angle
- Partial Fourier & NEX imaging
- Fast spin echo & other fast techniques
- K-space
- MRA and MRS Principals

The interaction of the all these parameters with slice quantity, imaged volume, scan time, image signal, contrast and resolving power is stressed throughout the discussions.

9.5 Hour Advanced Topics & MR Safety / Intracranial Gadolinium Accumulation Update: July 19-20

This 9.5 hour optional session will be focused on more advanced topics, including MR angiography, diffusion weighted MR imaging, perfusion weighted MR imaging, and MR spectroscopy. This session will also include a special 1.5 hour presentation on MR Safety AND a special 1.5 hour presentation on the recent concerns regarding intracranial gadolinium accumulation even in patients with normal renal function. As the pre-eminent physician authority on MR safety issues, Dr. Kanal will present a custom-developed summary of the ACR Guidance Document for Safe MR Practices. He will discuss how this impacts clinical and research MR sites, their design and physical layout, their personnel, and their daily operation. Dr. Kanal is the primary author of each version of the ACR Guidelines for MR Safe Practices including the 2002, 2004, 2007, and most recently, 2013 versions.


IMAGING FORUMS, INC.
P.O. Box 25909
Eugene, OR 97402



KANALS MR Physics

July 17 - 20, 2017

**HYATT REGENCY DULLES
Washington, DC**

Note: If you cannot attend, please pass this brochure to an interested colleague.



KANALS MR Physics

and How to Clinically Apply It July 17 - 20, 2017

Offers up to 29.5 hours of Technologist Category A CE Credit

2 Individual Sessions
20 hrs. Basic Physics
9.5 hrs. Advanced Topics
& MR Safety / Intracranial
Gadolinium Accumulation Update

Designed to assist technologists preparing for the advanced MR registry exam and/or to enhance their working knowledge of MR physics and how to clinically apply it.

ATTENDEE COMMENTS:

"Absolutely the BEST educational seminar I have EVER attended."

"I most enjoyed the clinical correlation and pathology slides."

"I wish I could put this information in a bottle and pour it out again and again."

**HYATT REGENCY
DULLES
WASHINGTON, DC**

Presented by:

Emanuel Kanal, MD, FACR, FISMRR, MRMD, AANG

and:

Northwest Imaging Forums, Inc.

Accreditation

This complete 4 day program has been submitted for approval of **29.5 hours of Category A CE credit** (evidence of continuing education). The Basic Physics session (July 17-19) will offer up to 20 credit hours. The Advanced Physics session (July 19-20) will offer up to 9.5 credit hours. In order to obtain the maximum credit hours offered (29.5), you must attend ALL presentations on all four days. Guidelines approved for verifying attendance **for each lecture** will be followed and a certificate of attendance will be issued to each qualified attendee by Northwest Imaging Forums, Inc. and mailed after the course.

Hyatt Regency Dulles

2300 Dulles Corner Blvd Herndon, VA 20171

We will meet in the fabulous Hyatt Regency Dulles. Live, work and be yourself at our inviting, contemporary Herndon hotel near Washington Dulles International Airport and just a short metro ride away from all the sights and scenes our nation's capital. Enjoy door-to-door service with our complimentary airport shuttle, which also runs by the bustling Reston Town Center. Ensure your travel is relaxing and effortless with our newly renovated rooms, inviting atmosphere, and approachable staff always here to help.

29.5 Hour MR Physics Format - All lectures will be given by Dr. Kanal -

Monday 7/17 (8.0 Hours)

- 7:00** Registration Desk Opens - Coffee, Tea & Pastries
8:00 Opening Announcements - Matt Wilson
8:10 Nuclear Magnetic Resonance
- Nuclei, hydrogen protons, magnetism, resonance, RF excitation
9:00 Basic MRI
10:00 Coffee Break
10:20 Proton Density, T1 and T2
11:10 TR and TE
12:00 Lunch on Your Own
1:15 Spin Echoes and the 180 Degree Pulse
2:05 MR Imaging Review
2:55 Soft Drink Break
3:15 Gradient Echo Imaging - Part I
- Underlying concepts (how it is similar & different from spin echo)
4:05 Gradient Echo Imaging - Part II
- Flip Angle (Ernst angle & relationship between TR and flip angle)
5:00 End of Session

Tuesday 7/18 (7.0 Hours)

- 7:30** Registration Desk Opens - Coffee, Tea & Pastries
8:00 Announcements - Matt Wilson
8:05 Gradient Echo Imaging : Part III - TE versus T2*
8:55 Review of Image Production & Acquisition: Part I
- Gradients, spatial localization, slice selection, phase encoding, and frequency encoding part I
9:45 Coffee Break
10:05 Review of Image Production & Acquisition : Part II
- Phase encoding part II, frequency encoding part II, echo sampling / readout
10:55 Review of Image Production & Acquisition : Part III
- Fourier transform, spatial resolution / temporal dependencies
11:45 Lunch on Your Own
1:00 Fast Imaging Techniques - Playing with k-space
- Partial echo, partial NEX, introducing fast spin echo imaging
1:50 Fast, or Turbo, Spin Echo : Part I
- Underlying concepts, role of echo train length, effective TE, limitations
2:40 Fast, or Turbo, Spin Echo : Part II - Echo Planar Imaging
- Clinical application, EPI utilization and limitations
3:30 End of Session (topics & format subject to change)

Room Reservations: We have been given special reduced sleeping room rates at the Hyatt Regency Dulles of \$119.00 per night plus tax during dates of the conference. You should contact the Hyatt Regency Dulles by dialing 703 713 1234 and refer to Group Code: **Northwest Imaging Forums**. We urge you to make reservations by phone or on the web at <https://resweb.passkey.com/go/NWIF2017>, at your earliest convenience. **The Cutoff Date is 6/26/2017 or when our room block becomes full (whichever comes first)**

[Hyatt Regency Dulles / www.dulles.regency.hyatt.com](http://www.dulles.regency.hyatt.com)

Cancellation Policy

All cancellation requests must be in writing.

- 1) Cancellations received on or before 06/23/17 will receive a full refund. Those received after 06/23/17 but through 07/07/17 are subject to a 25% service charge.
- 2) No credit or refunds are available on or after 07/08/17. **No exceptions will be made.**
- 3) In the event that any situation beyond the control of NWIF makes it impossible to conduct the meeting as advertised, each paid attendee will receive a voucher to attend a future NWIF meeting.

Wednesday 7/19 (5.0 Hours)

- 7:30** Registration Desk Opens - Coffee, Tea & Pastries
8:00 Announcements - Matt Wilson
8:05 Fat Saturation and the Chemical Shift Artifact
8:55 Inversion Recovery : Part I - Underlying concepts, role of TI, TE, & TR
9:45 Coffee Break
10:05 Case Review
10:55 MR Contrast Agents - Mechanism of action, distribution, T2* shortening, time & concentration considerations, pulse sequence design
12:10 Interactive Session with Dr. Kanal
12:40 End of "Basic MR Physics" Program
(topics & format subject to change)

9.5 Hour Advanced Topics & MR Safety / Intracranial Gadolinium Accumulation Update

Wednesday 7/19 (4.5 Hours)

- 1:45** MR Angiography
- Flow & time of flight effect
- Affects of : TR, TE, flip angle, slice thickness, slab thickness
- 2D vs. 3D Fourier transform, saturation pulses, contrast enhanced MRA
- Clinical applications and case studies
2:35 High Relaxivity Contrast Agents
- How are they different and how do we use them?
3:50 Coffee Break
4:10 Sequence Optimization with High Relaxivity
4:40 Intracranial gadolinium accumulation and GBCA: 2017 update
5:55 End of Session

Thursday 7/20 (5.0 Hours)

- 7:30** Registration Desk Opens - Coffee, Tea & Pastries
8:00 Announcements - Matt Wilson
8:05 The ABMRS - What it means for you
8:35 Diffusion Weighted Imaging - What it is, how it works, how do we use it
9:50 Coffee Break
10:10 Perfusion Weighted Imaging - What it is, how it works, how do we use it; putting DWI/PWI together clinically; DWI/PWI matches & mismatches
11:25 Magnetic Resonance Spectroscopy - Basic concepts, clinical applications & case studies
12:40 End of Conference

Written Comments from Previous Attendees

"MRI made easy and fun!"

"Dr. Kanal has an excellent way of making the hardest topics understandable."

"I have learned more in four days than in 2.5 years!"

"Now I finally understand K-space!"

"The use of analogies was powerful, even artful."

"Every question was addressed thoroughly and completely."

Registration Form (Please Print - this form may be copied)

Please Note: - **Early Fee** is payment received on or before 06/23/17
- **Standard Fee** is payment received after 06/23/17 through 07/07/17
- **Late Fee** is payment received on or after 07/08/17

• **"Basic MR Physics" only : July 17-19**

All Attendees : Early Fee **\$680*** Standard Fee **\$700*** Late Fee **\$720***

• **"Advanced Topics & MR Safety / Intracranial Gadolinium Accumulation Update" only : July 19-20**

All Attendees: Early Fee **\$355*** Standard Fee **\$375*** Late Fee **\$395***

• **Best Value - Attend Both Programs : July 17- 20**

All Attendees: Early Fee **\$795*** Standard Fee **\$815*** Late Fee **\$835***

Registration Form (Please Print - this form may be copied)

Registration is also available online at: www.nwforums.com
Note — Registration is confirmed and processed only when payment is received.

Name (print) _____

Note: Email address is required for confirmation purposes.

Email Address (Print) _____

Facility _____

The address below is Work Home (Circle One)

Street _____

City _____ State _____ Zip code _____

Day Phone (_____) _____ Work Home (Circle One)

I will attend: (Circle One) Basic: June 6-8 Advanced: June 8-9 Both Programs

Payment enclosed or amount charged to credit card. \$ _____

Charge to: VISA MasterCard American Express Discover

Card Number _____ Exp. Date _____

3 Digit Credit Card Security Code (found on back of card) _____

Name on Card (print) _____

Card holder Signature (required) _____

Checks payable / send registration form to:



Northwest Imaging Forums, Inc.

P.O. Box 25909

Eugene, Oregon 97402

Kanal-17

Please contact us to register or with questions:

Phone: (888) 683-4930 Toll Free 9am - 5pm M-F Eastern Time

(541) 683-4930 Direct 9am - 5pm M-F Eastern Time

Fax: (541) 683-8499 24 Hours a Day

E-mail: registration@nwforums.com Web site: www.nwforums.com