

# RSNA/AAPM Physics Modules & ROMPES activities

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# RSNA/AAPM Online Physics Modules

- A resource for Dx radiology trainees, mid-career radiologists, and educators
- Created through an RSNA/AAPM partnership
- Hosted on RSNA's website
- Supported by RSNA staff
- Maintained by a joint RSNA/AAPM committee of volunteers ("Physics Education Task Force")
- Accessible only by RSNA & AAPM members

# RSNA/AAPM Online Physics Modules

- 44 modules (currently) on Imaging Physics
- Accessible via web browser, including mobile devices
  - Not a “native app”
- A Radiation Biology Syllabus (not a physics module) is accessible in the same area of RSNA website



## Announcements

[Event Calendar »](#)

### RSNA 2014 Course Enrollment is Now Open

Ticketed courses fill up quickly, so enroll early to guarantee your seat at the celebration of a century.

### Purchase RSNA Scan: Year in Review While Supplies Last

We've bundled over 90 essential RSNA science and education offerings on a convenient USB drive for your professional library.

### View and Compare Images Online in RSNA Journals

RSNA's new Image Viewer tool makes it easy to compare, magnify and archive images and figures from journal articles.

## RSNA News

[RSNA News »](#)



### Video Glasses Cut Patient Anxiety in IR Procedures

July 01, 2014



### RSNA/ACR Programs Lead the Way in Patient-Centered Care

July 01, 2014



### Implementation of New Imaging Standards Postponed

June 30, 2014



# The American Association of Physicists in Medicine

We advance the science, education and professional practice of medical physics

Home | Directory | Career Services |  
Continuing Education | BBS | Contact



## Home

### My AAPM [click to close]

- Expense Claims
- My OLCE Status/Credits
- My SAMs Status
- My Committee Appointments
- Imaging Physics
- Medical Physics Education of Allied Health Professionals
- Medical Physics Education of Physicians
- Physics Education Task Force Subcommittee
- Radiography and Fluoroscopy Subcommittee
- Science Council
- TG150 Acceptance Testing and Quality Control of Digital Radiographic Imaging Systems
- TG250 Online Education
- Unit No. 19 PA State
- My Chapters
  - Delaware Valley
- My Directory Listing
- My Email Announcements
- My Member Profile

### AAPM

### Public & Media

### International

### Medical Physicist

### Members

### Current & Prospective Students

### Meetings

### Education

### Government Affairs

## Hello Dr. Gingold...

### AAPM Events that pertain to you...

- 2 Committees Vote(s) - Action: 2 vote(s) needed ~ 2 day(s) left to vote
- 56th AAPM Annual Meeting & Exhibition - 8 Upcoming Meeting(s)



### Latest AAPM Member Discussions

[see your discussion threads | all general discussions | forum notifications]:

- Jr physicist vs physics assistant [views: 1002 | updated: 7/14 4:42 PM]
- EGS vs. MCNP [views: 80 | updated: 7/12 1:26 AM]
- EGSnrc Monte Carlo code .... [views: 90 | updated: 7/11 10:20 PM]
- Invivo Dosimetry [views: 324 | updated: 7/11 6:31 AM]

## What's New

**Status of the Review of the Texas (TX) Sunset Advisory Commission Hearing and Report** [general | posted: 7/8/2014 | sunset: 8/31/2014]



### Webcast of the Month : QM Strategies for External Beam Radiotherapy

[general | posted: 7/7/2014 | sunset: 7/24/2014]



**AAPM Newsletter - July/August 2014 Edition Now Available** [publications | posted: 7/3/2014 | sunset: 7/24/2014]

**Awards & Honors Committee - Call for Nominations** [general | posted: 7/1/2014 | sunset: 10/15/2014]

**Please Note: No new logins for Medical Physics online may be created starting July 4th for up to 2 weeks as the backend database is being upgraded. If you need a Medical Physics online username and password, or need to change your password, please do so before July 4 by calling 1.800.874.6383 (USA and Canada).**

[publications | posted: 6/30/2014 | sunset: 7/18/2014]



**2013 Education & Research Fund Annual Report** [education | posted: 6/24/2014 | sunset: 7/24/2014]



**2014 AAPM Summer School - SRS/SBRT/SABR: Safely and Accurately Delivering High-Precision, Hypofractionated Treatments : Online Evaluation System Available** [meetings | posted: 6/22/2014 | sunset: 7/25/2014]



**iAAPM 2014**  
innovation

focus on our future



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### Current Issues



**SUGGESTION BOX**



**July**  
Webcast

**CAMPEP**

**CME GATEWAY**

www.flickr.com





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### Education

#### My AAPM

#### AAPM

#### Public & Media

#### International

#### Medical Physicist

#### Members

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#### Meetings

#### Education

- AAPM's role in the Education of Medical Physicists in the USA
- CAMPEP
- Non-CAMPEP Programs
- Residency Common Application (CAP)
- Online Learning Center
- SAMs
- Virtual Library
- Educators Resource Guide
- Maintenance of Certification (MOC)
- Grants & Fellowships
- Online Ethics & Professionalism Modules
- **RSNA/AAPM Online Physics Modules**
- American Nuclear Society Research Fund

#### Government Affairs

#### Publications

#### Career Services

#### Corporate Affiliates

#### Links of Interest

The AAPM supports its mission to advance the science, education and professional practice of medical physics by fostering the education of medical physicists, physicians and other professionals.

The AAPM promotes high quality educational programs at the Graduate and Postgraduate levels in **collaboration with other organizations**, and awards **Training Grants and Fellowships**.

There is growing emphasis within the medical community on the professional training and qualification of medical physicists. The AAPM supports Residencies in medical physics as the pathway to professional qualification by supporting **CAMPEP**, by awarding **Grants and Fellowships**, and through **CAP** which helps match trainees to physics residency programs. It co-sponsors the American Board of Radiology (**ABR**) and the American Board of Medical Physics (**ABMP**) and supports Board Certification of medical physicists as a pre-requisite for becoming a **Qualified Medical Physicist**. It provides opportunities for members to obtain **continuing education** credits and address maintenance of certification requirements (**MOC**) through CAMPEP and to view, print or generate reports of CME credits through the **CME Gateway**. The AAPM also provides **Online Ethics & Professionalism Training Modules**.

Various Public Education and **Student** programs of the AAPM reach out to the public, to other educators and professionals and to potential recruits to foster a better understanding of the role of medical physics in health-care and the nature a career as a medical physicist.

The **Publications Program** supports the varied educational needs of the medical physics community, and provides opportunities for self-study that qualify for credits through CAMPEP.

The **Meetings Program** of the AAPM provides a rich set of educational opportunities in local, national and international settings. Many of the presentations made at AAPM meetings are recorded and made available to members. Many self-study opportunities are accessible through the **Virtual Library** and the **Online Learning Center** and may qualify for credits through CAMPEP.

The **International Program** of the AAPM supports a variety of International Educational Programs and other outreach to the **Developing Nations**.

Members of the AAPM have responsibilities for the education and training of Radiologists, Radiation Oncologists and other professionals who perform radiological procedures. Members of the Association provide educational courses, author texts or provide other educational resources that address these communities. The AAPM recommends or endorses course **curricula** and provides other resources including the **RSNA/AAPM Online Physics Modules**.

This Website acts as the portal to all AAPM educational programs and to the diverse activities of this Association. RSS feeds from the home page provide notification of new topical postings.

The RSNA/AAPM modules are designed to supplement physics curricula at radiology residencies and to be a resource for continued self-study by radiologists. The modules are one resource that may be used in addition to other forms of self-study such as text books, journal articles, and other on-line resources. In addition, educators may find them useful as a framework or supplement for didactic lessons. **The modules are not intended to be the primary or sole source of information for residents preparing for board exams.**

These modules are available to RSNA members and AAPM members as part of the benefits of membership. Please click on the appropriate [log in](#) to access the modules. To view the system requirements [click here](#). For any questions, comments, or concerns regarding the RSNA/AAPM Physics Modules, please contact us at [physics@rsna.org](mailto:physics@rsna.org).

### Fundamentals

1. [Atoms, Radiation, and Radioactivity](#)
2. [Interactions of Radiation and Tissue](#)
3. [Radiation Measurements and Units](#)
4. [X-Ray Tubes and Spectra](#)

### Basic Imaging Science and Technology

1. [Image Perception and Performance Evaluation Including CAD](#)
2. [Image Display](#)
3. [Image Processing and Reconstruction](#)
4. [PACS](#)

## **Radiation Biology**

1. Basic Radiation Biology
2. Radiation Effects

## **Radiation Protection**

1. Fundamemtals of Radiation Protection
2. Radiation Dose and Risk
3. Radionuclide Dosimetry and Nuclear Regulations
4. Estimating Cancer Risk from Imaging Procedures

## **Projection X-Ray Imaging**

1. Basic Concepts in Radiography
2. Digital X-Ray Imaging
3. Radiographic Image Receptors
4. Image Quality and Dose in Radiography
5. Mammography Image Quality and Dose



## 8. Mammography Image Quality and Dose

### Fluoroscopy

1. Fluoroscopy Systems
2. Radiation Dose and Safety in Interventional Radiology

### Computed Tomography

1. CT Systems
2. CT Image Quality and Protocols
3. Radiation Dose in CT
4. Imaging Gently: CT Imaging and Radiation Protection of Pediatric Patients

### Ultrasound

1. Ultrasound - Concepts and Transducers
2. Basic Ultrasound Imaging and Display
3. Interaction of Ultrasound Tissue and Doppler
4. Image Quality - Artifacts - Doppler - Safety

### Magnetic Resonance

## **Magnetic Resonance**

1. Basic Principles of Nuclear Magnetic Resonance
2. MRI: Image Formation
3. MRI: Image Characteristics
4. MRI: Pulse Sequences
5. MRI: Instrumentation
6. MRI: Image Artifacts
7. MRI: Special Acquisition Methods
8. MRI: Tissue Properties, Contrast Agents and Reactions
9. MRI: Quality/Bioeffects/Safety
10. MRI: Siting and Environmental Protection

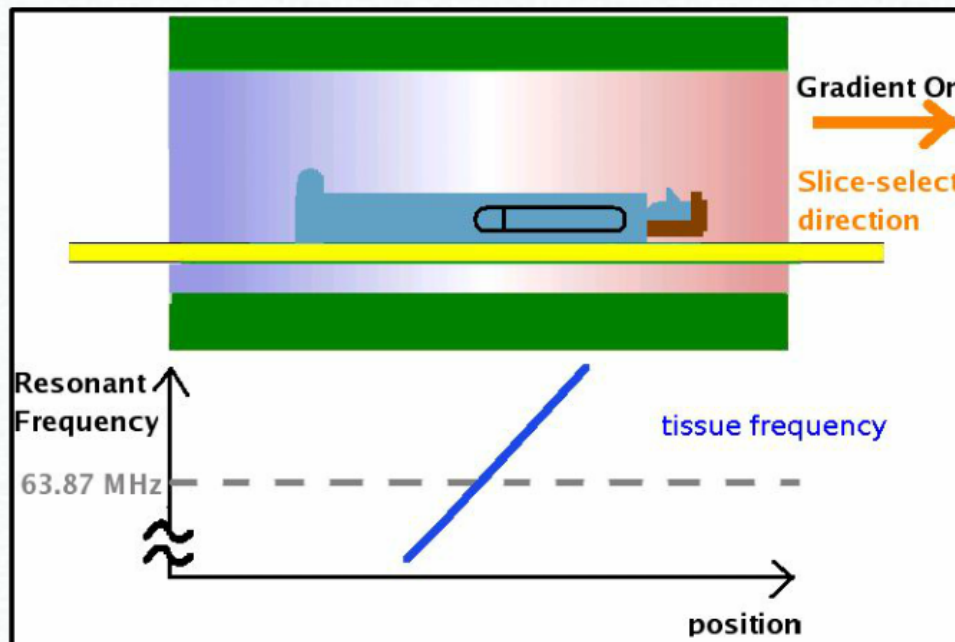
## **Nuclear Medicine**

1. Radiation Detection Instrumentation in Nuclear Medicine Practice
2. Gamma Cameras / Image Quality
3. Nuclear Medicine: Radioisotopes and Radiopharmaceuticals
4. SPECT/SPECT-CT/Image Quality
5. PET/PET-CT/Image Quality

### Description of Excitation of a Slice of Tissue

For this example, assume a 1.5T magnetic field.

2. Gradient is turned on, altering resonant frequency.



## 2 - MRI: Image Formation

[Instructions](#) | [Begin Module](#) | [Post Test](#)

Basic Concepts

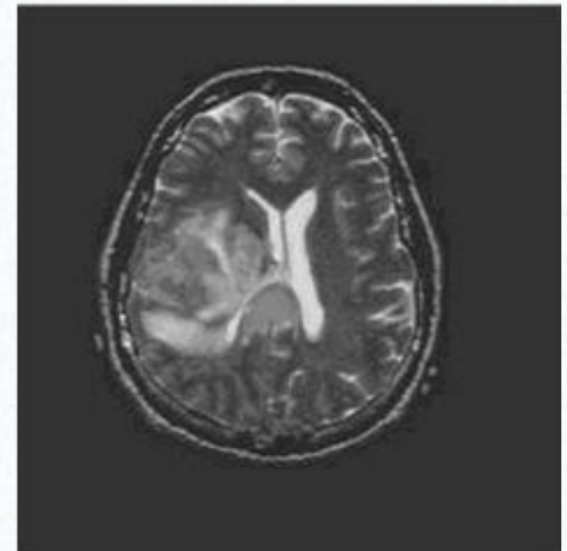
Exciting a Slice & Phase/Frequency Encoding

3D Imaging vs. 2D Imaging Sequences

How Image Formation Leads to Particular Artifacts

1. For the image below acquired using a 2D sequence, assume that you wish to image a smaller field of view that focuses on the region of tumor. Assume that the MR Tech changes no other aspects of the sequence but FOV. Along which direction should phase encoding occur to minimize the chance of aliasing?

- ☐ S-I
- ☐ A-P
- ☐ L-R

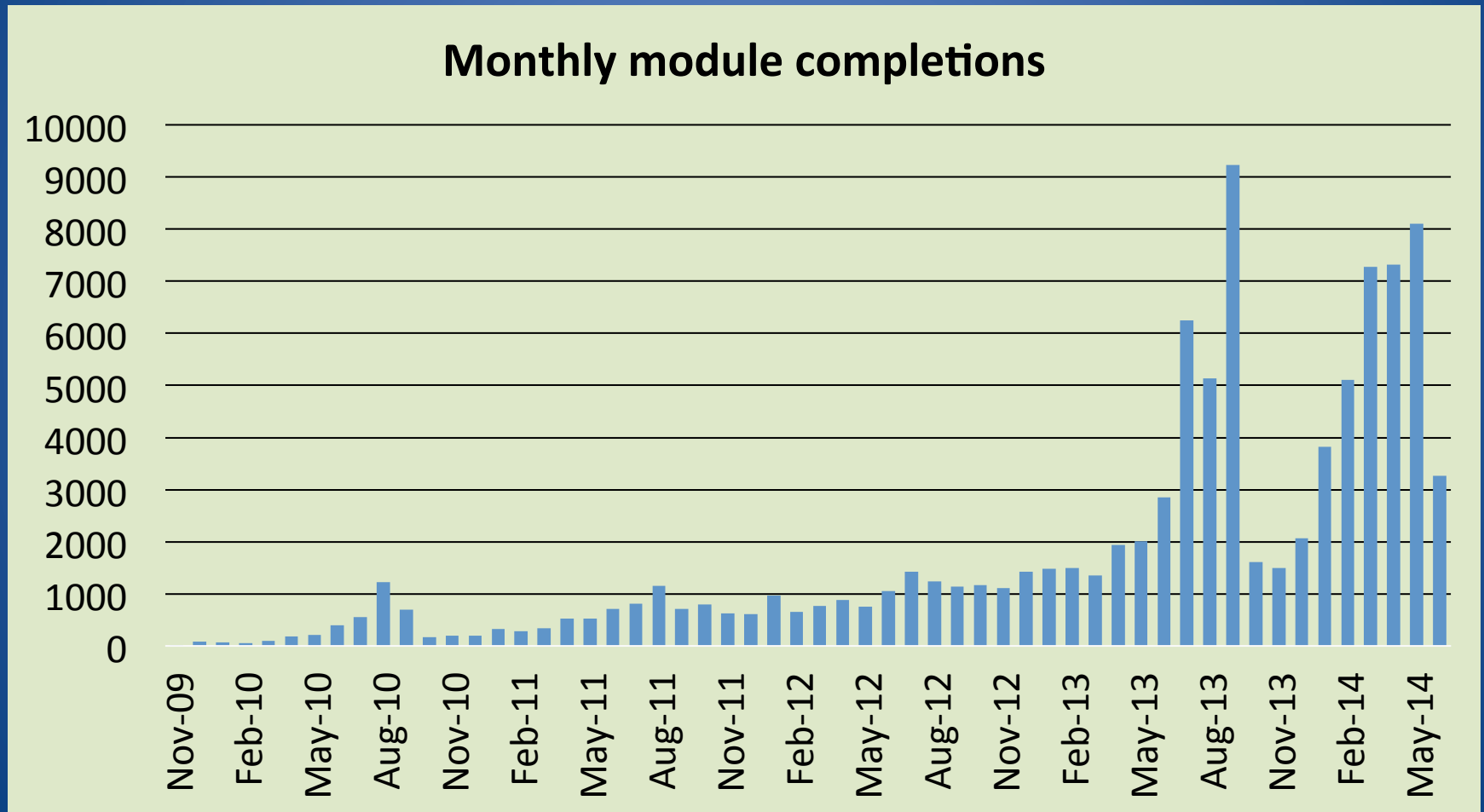


Submit

◀ BACK

NEXT ▶

# RSNA/AAPM Physics Modules





# RSNA/AAPM Physics Modules

- Cumulative Nov 2009 - June 2014:
  - 96000 module completions (total)
- Oct 2013 – May 2014:
  - Avg ~ 4600 completions per month total
  - Avg ~ 110 completions/month/module

# RSNA/AAPM Physics Modules

- Roadmap:
  - Add post-test remediation
  - Review modules for accuracy, level, accessibility
    - Edit & update
  - Overhaul a few modules
  - Align the modules with published curricula
    - AAPM Diagnostic Radiology Residents Physics Curriculum (2009)
    - ABR Core Exam Study Guide – Physics section (2014)
  - Add search capability

# ROMPES

- Radiation Oncology Medical Physics Education Subcommittee
- Charge:
  - Establish goals for educational resources including web-based modules for RadOnc residents and physicians
  - Coordinate with other educational organizations (eg, ASTRO, RSNA, ACR, ARRS)

# ROMPES: Current Activity

- Developing a series of narrated slide presentations
- Based on ASTRO therapy physics curriculum
- Early pilot stage
- No timetable yet
- Only physicists are involved
- Seeking volunteers to contribute content