



## Diagnostic and Nuclear Medical Physics Residency Program Summary of Rotation Presentation Topics

*Last updated: 10/26/2021*

### **Radiography**

- (2021) Diagnostic reference levels (DRLs) for adult and pediatric radiographic exams
- (2021) Exposure and practice analytics in digital radiography
- (2021) NCRP recommendations for ending routine gonadal shielding during abdominal and pelvic radiography (NCRP Statement No. 13) – *Journal Club*
- (2020) Advanced image processing in digital radiography
- (2020) Dual energy x-ray absorptiometry (DXA)
- (2019) EOS scoliosis imaging system
- (2019) Dental radiographic technologies
- (2018) Radiographic techniques for scoliosis patients
- (2018) Exposure index in digital radiography
- (2017) Heel effect and how to mitigate it in clinical procedures, physics testing and image processing
- (2017) AAPM TG 151: ongoing quality control in digital radiography
- (2016) Routine applications, special procedures, and QC for projection radiography

### **Fluoroscopy**

- (2020) Fluoroscopy-guided trans-catheter aortic valve replacement (TAVR)
- (2020) The process of estimating peak skin dose (PSD) in fluoroscopy
- (2019) My clinical observations of non-interventional fluoroscopy procedures
- (2019) Medical physics guide to calculating peak skin dose from RDSR data
- (2018) My shadowing experience in non-interventional fluoroscopy
- (2018) Interventional fluoroscopy in cardiology
- (2017) Patient skin dose estimation in fluoroscopic procedures
- (2017) TheraSphere® Yttrium-90 microsphere therapy
- (2016) Clinical applications and methods to monitor and reduce patient dose in fluoroscopy

### **Mammography**

- (2021) Contrast enhanced mammography
- (2021) Detector calibration in mammography
- (2020) Mammography screening recommendations and data

- (2020) Medical physicist's tests in the 2018 ACR digital mammography QC manual
- (2019) Contrast-enhanced digital mammography and tomosynthesis-guided biopsies
- (2019) Technology improvements in Siemens DBT: Insite 2D and EMPIRE
- (2018) Breast tomosynthesis: clinical use, accreditation and technical parameters
- (2018) PRIME: digital mammography with grid-less acquisition and software-based scatter correction
- (2017) My clinical shadowing experience in mammography

### **IT and Display**

- (2021) Practical application of AAPM Report 270 in display quality assurance: A report of Task Group 270 – *Journal Club*
- (2021) AAPM Report No. 248: interoperability assessment for the commissioning of medical imaging acquisition systems
- (2018) Computer-aided diagnosis in low-dose CT lung cancer screening
- (2018) Overview of deep learning in medical imaging – *Journal Club*

### **CT**

- (2021) CT metal artifacts and reduction techniques
- (2021) CT imaging of CSF brain leak
- (2021) Size-specific dose estimate (SSDE) in body and head CT
- (2020) Technological advances and dose reduction in cardiac CT
- (2020) Deep learning image reconstruction in computed tomography
- (2019) Magnification correction factors for size-specific dose estimates (SSDE) calculations
- (2019) Pediatric CT protocol optimization
- (2018) Coronary angiography with computed tomography
- (2018) CT dose reduction technology
- (2017) CT regulations and patient dose tracking

### **MRI**

- (2021) MRI contrast agents
- (2021) Knee MRI: clinical use and pulse sequences
- (2020) MRI shimming
- (2020) MRI flow imaging
- (2019) Diffusion-weighted imaging in MRI
- (2019) Breast cancer screening with MRI
- (2018) Liver iron quantification with MR imaging
- (2018) MR-guided high-intensity focused ultrasound (MRgFUS)
- (2017) MRI scanners, physics testing and patient procedures

## **Ultrasound**

- (2021) Breast ultrasound: accreditation and clinical use
- (2020) Echocardiography
- (2019) Spatial compound imaging in ultrasound
- (2019) Clinical applications and accreditation of breast ultrasound
- (2017) Ultrasound accreditation, quality assurance, artifacts and clinical applications

## **Radiation Safety**

- (2020) Regulatory structure for diagnostic radiation safety in the United States
- (2019) NCRP Report No 180: management of exposure to ionizing radiation: radiation protection guidance for the United States – *Journal Club*
- (2018) Overview of accreditation bodies for advanced imaging services
- (2017) Summary of NCRP 147

## **Nuclear Medicine**

- (2021) Regulations pertaining to nuclear medicine safety
- (2021) Effect of image reconstruction parameters on PET quantitative accuracy and image quality
- (2020) Clinical application of ion chamber and GM counter in Yttrium-90 therapy procedures
- (2020) Radiopharmaceutical production and image quality
- (2020) AAPM Report No. 177 (Section 5): acceptance and annual testing of gamma camera

## **Additional Journal Club**

- (2017) AAPM Report No. 301: an updated description of the professional practice of diagnostic and imaging medical physics