
POW!
CT-PROTOCOL OPTIMIZATION
WORKSHOP
OPTIMIZE TODAY. EMPOWER TOMORROW.
Monday
August 10, 2026
Day 1
C-TECC
CT Education and Collaboration Collective

WELCOME!

POW!

Visit our Website!

https://ctecc.radiology.wisc.edu/

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CT Education and Collaboration Collective

CT-POW (Computed Tomography – Protocol Optimization Workshop)

Learning Objectives:

As a result of participation in this educational activity, members of the healthcare team will be able to:

1. Implement strategies and tools into their practice.
2. Identify strategies to minimize radiation dose while maintaining image quality.
3. Gain insights into advanced scanning techniques and workflow improvements that support the team.
4. Explain how protocol optimization impacts diagnostic accuracy and patient outcomes.

CT-POW (Computed Tomography – Protocol Optimization Workshop)

Accreditation and Credit Designation Statements

Accreditation Statement

In support of improving patient care, this activity has been planned and implemented by the University of Wisconsin–Madison ICEP and Epic. The University of Wisconsin–Madison ICEP is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

American Medical Association (AMA)

The University of Wisconsin–Madison ICEP designates this live activity for a maximum of 14.00 AMA PRA Category 1 Credit™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Medical Physicist – CAMPEP Accreditation

This activity has been approved by CAMPEP for 14.75 MPCEC credit hours.

ASRT-Approved Category A Continuing Education

Approved by the ASRT for ARRT Category A continuing education credit. The learners could earn up to 12.50.

Continuing Education Units

The University of Wisconsin–Madison ICEP, as a member of the University Professional & Continuing Education Association (UPCEA), authorizes this program for 1.40 continuing education units (CEUs) or 14.00 hours.

Policy on Disclosure

It is the policy of the University of Wisconsin–Madison Interprofessional Continuing Education Partnership (ICEP) to identify, mitigate, and disclose all relevant financial relationships with ineligible companies* held by the speakers/presenters, authors, planners, and other persons who may influence the content of this accredited continuing education (CE). In addition, speakers, presenters, and authors must disclose any planned discussion of unlabeled/unapproved uses of drugs or devices during their presentation.

For this accredited continuing education activity, all relevant financial relationships have been mitigated, and detailed disclosures are listed below:

None of the planners and presenters have relevant financial relationships with ineligible companies to disclose, except the following:

1. **Giuseppe V. Toia MD, MS, Associate Professor, Department of Radiology**
    - Canon Medical Systems USA, Inc. (Independent Contractor - Consultant)
2. **Martin Wagner Dr. sc. hum, Assistant Professor of Radiology and Medical Physics**
    - Canon Medical Systems USA, Inc. (Grant); Siemens Healthcare (Grant); HistoSonics Inc (Consultant)
3. **Gregory Avey MD, Associate Professor of Radiology in Neuroradiology**
    - GE Healthcare (Consultant)
4. **Prashant Nagpal MD, FSCCT, Professor of Radiology; Section Chief of Cardiovascular Imaging**
    - Moderna (Stock); GE Healthcare (Consultant); HeartFlow, Inc. (Independent Contractor); Canon Medical Systems USA, Inc. (Grant)

**Ineligible companies are those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on, patients. The ACCME does not consider providers of clinical services directly to patients to be ineligible companies.*

Upcoming Sessions:

Tim Szczykutowicz PhD, DABR

CT 101: Introduction

- Describe the evolution of CT technology from the 1970s to modern-day scanners.
- Identify the major components of a CT scanner and explain how they work together.
- Explain how advances in CT technology have directly enabled clinical impact.

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Upcoming Sessions:

Ran Zhang PhD & Giuseppe V. Toia MD,MS

Photon Counting CT: A Crash Course

- Describe the difference between energy integrating and photon counting CT detectors.
- Describe the clinical impact of using photon counting detectors relative to energy integrating.
- Summarize the value of photon counting detectors across multiple imaging modalities.

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Upcoming Sessions:

Tim Szczykutowicz PhD, DABR

Protocol Optimization

- Explain the fundamental tradeoff between scan speed and radiation dose.
- Describe the underlying physics of contrast enhancement in CT.
- Explain how modern automatic exposure control (AEC) systems manage image quality and radiation dose.

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Upcoming Sessions:

Zahra Alyani Nezhad MS

CT Contrast Agents and Enhancement Principles

- Describe the major types of contrast agents used in CT, including why they work and their clinical applications.
- Explain the physiologic pathway of IV contrast agents through the body, including speed of travel, enhancement changes, and commonly used imaging phases.
- Review the factors that influence CT contrast agent enhancement.

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Upcoming Sessions:

Aria Salyapongse MS

CT Images: What do these values mean and how can we use them?

- Explain how CT numbers, measured in Hounsfield units, are derived from x-ray attenuation in patient tissues and form the fundamental units of CT images.
- Describe how spectral (multienergy) CT data can be used to generate virtual monoenergetic images, suppress specific material signals, and enable material quantification.
- Identify common issues associated with CT image units, including beam hardening and streaking artifacts, as well as inaccurate material quantification or suppression.

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Upcoming Sessions:

Martin Wagner Dr.sc.hum &
Rachel Bladorn BS RT(R)(CT)

Hands-on CT Protocol Optimization LAB

- Execute and analyze CT protocols through hands-on experience.
- Observe how improper protocol setup can cause scanners to "run out of output."
- Explain how acquisition and reconstruction parameters directly affect spatial resolution.

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Upcoming Sessions:

Giuseppe V. Toia MD,MS
&
Kelsey Schluter BS RT(R)(CT)

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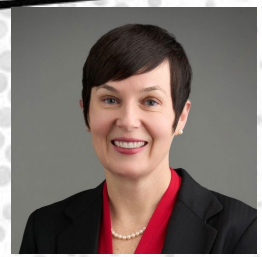
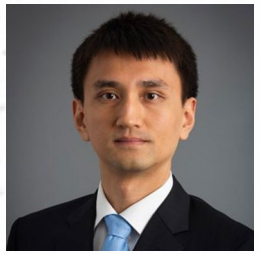
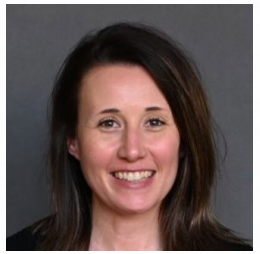
Multi-Material Phantom Scanning & Spectral Decomposition LAB

- Review pre-acquired photon-counting CT datasets of a multi-material phantom with energy-resolved information.
- Generate material-specific images (e.g., iodine, calcium, water) through spectral decomposition techniques.
- Evaluate the accuracy and image quality of material differentiation achieved with photon-counting CT.

Upcoming Sessions:



Meghan Lubner MD, FSAR
Ran Zhang PhD
Carrie Bartels RT(R)(CT)
Courtney Goetsch RT(R)(CT)

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WHAM!: Workflow Hurdles and Methodology

- Identify a specific CT protocol, dose, or workflow challenge from the participant's institution and clearly define its clinical and operational impact.

- Analyze contributing factors to the identified challenge (i.e., dose, workflow, contrast) using a structured problem-solving framework (e.g., workflow mapping, protocol review, dose drivers).

- Develop a feasible, evidence-based optimization strategy that can be adapted and implemented within the participant's own CT department addressing a dose, workflow, or contrast problem.

Upcoming Sessions:

Tim Szczykutowicz PhD, DABR

CT Dose: Are we really giving people cancer?

- Review basic CT dosimetry metrics: CTDIvol, DLP, SSDE, ED
- Explain the linear no-threshold (LNT) model and other common frameworks for radiation risk.
- Describe cumulative effective dose and discuss why its clinical relevance is debated.
- Evaluate modern models that balance the risks of under-dosing (missed diagnoses) against radiation overexposure.

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Upcoming Sessions:

Tim Szczykutowicz PhD, DABR

Avoiding CT Pitfalls

- Explain how evolving CT technology necessitates rethinking protocol design and why legacy practices can reduce diagnostic utility.
- Describe how poor patient positioning, especially in MSK imaging, can degrade image quality.
- Identify and avoid well-intentioned but misguided dose reduction decisions in pediatric and pregnant patient imaging.

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UW is home to a prototype Deep Silicon Based CT scanner from GE Healthcare

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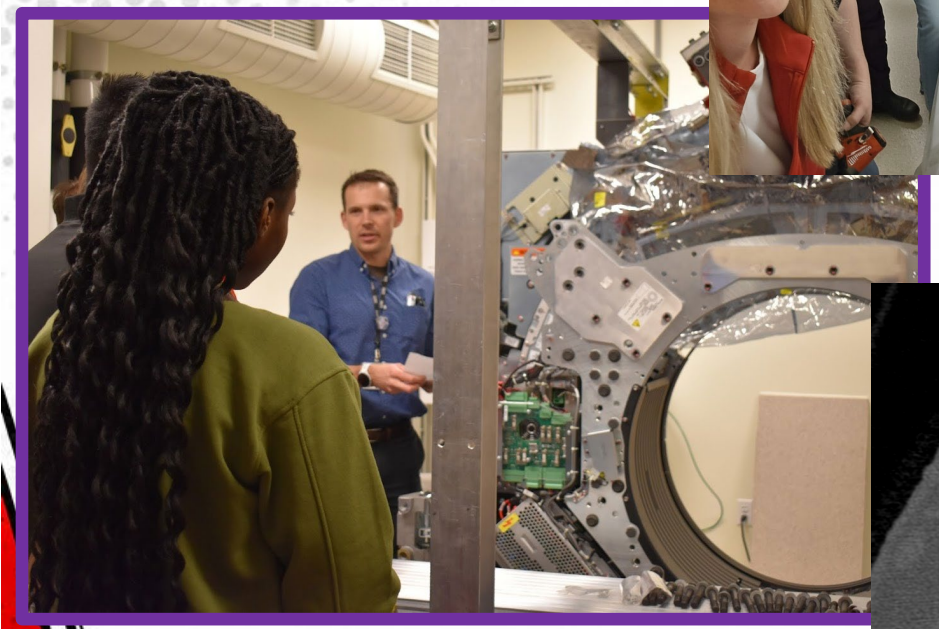

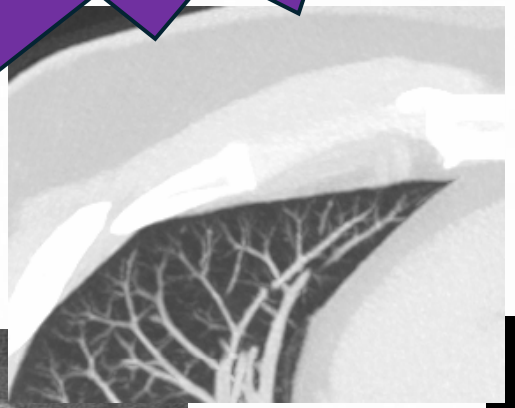

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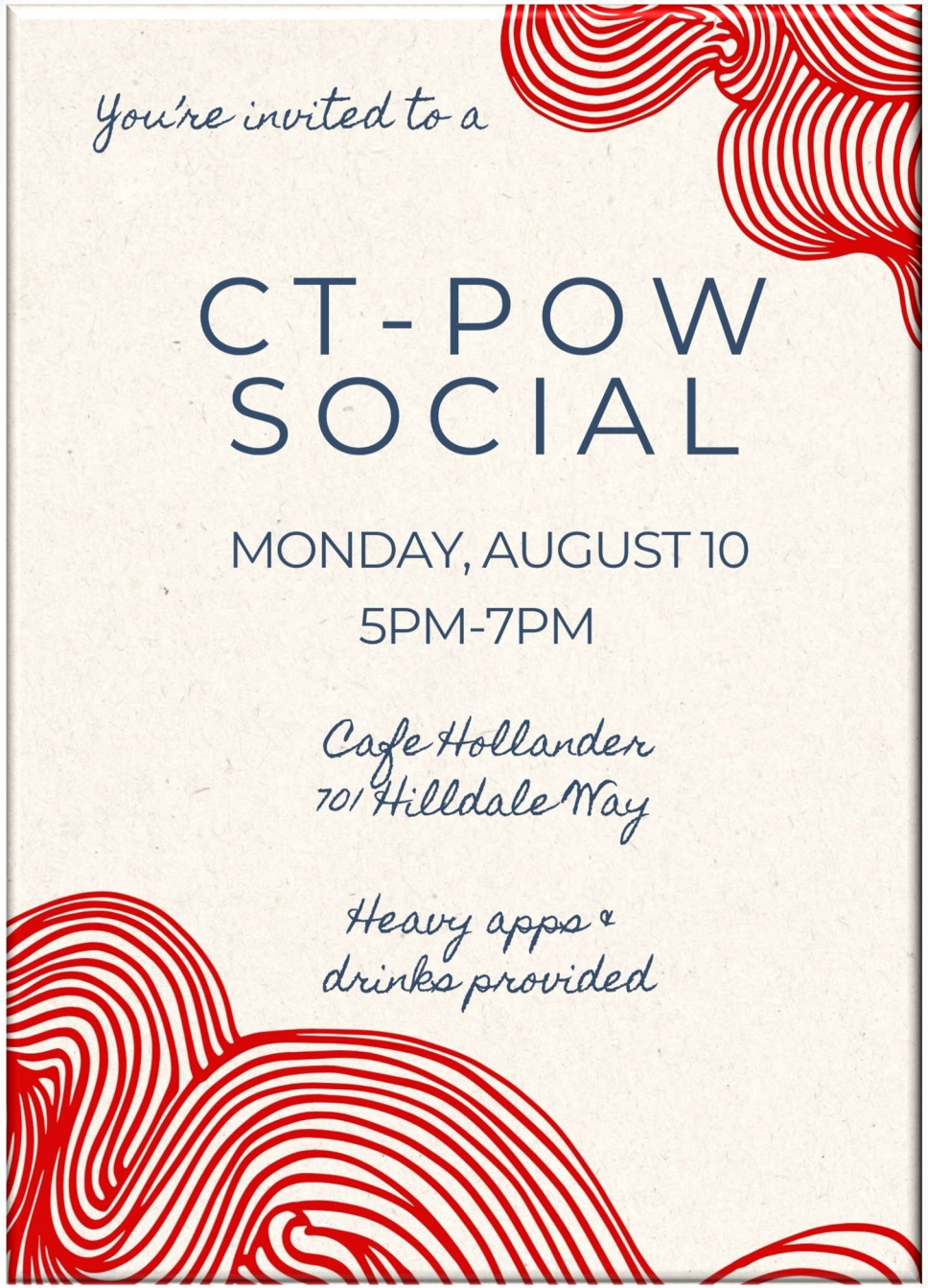
Department of Radiology
University of Wisconsin School of Medicine and Public Health

Canon
CANON MEDICAL SYSTEMS USA, INC.

UW and Canon are collaborating on developing state-of-the-art imaging solutions that enhance clinical outcomes for patients worldwide.

- **Current Projects:**
  - PiQE Reconstruction in Left Atrial Appendages.
  - PiQE Reconstruction in Abdominal Imaging.
  - Advancements in Interventional Imaging.



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Thank you for joining!