Welcome to: CT-POW!

(Protocol Optimization Workshop)

Wednesday August 13th, 2025

Brought to you by:

C-TECC
CT Education and Collaboration Center

“We recognize the land our buildings and campus occupy is the ancestral home of the Ho-Chunk Nation, who have called this land Teejop (day-JOPE) since time immemorial. In the first treaty following the Indian Removal Act in 1830, the state government forcibly removed the Ho-Chunk from their home in 1832. In the decades that followed, the federal and state government sought to completely remove the Ho-Chunk from Wisconsin. Despite these attempts, many Ho-Chunk people continued to return to their home in present-day Wisconsin. We acknowledge the circumstances that led to the forced removal of the Ho-Chunk people and honor their history of resistance and resilience. The Ho-Chunk Nation and the other 11 First Nations residing in the boundaries of present-day Wisconsin remain vibrant and strong. We recognize and respect the inherent sovereignty of the 12 First Nations that reside in the boundaries of the state of Wisconsin. This history of colonization informs our work and vision for a collaborative future.”

Meet our team

- **CT Education and Collaboration Team**
- Back Row, L-R:
- **Ran Zhang**, PhD; **Giuseppe V. Toia**, MD, MS.
- Middle Row, L-R:
- **Tim Szczykutowicz** PhD, DABR; **Martin Wagner** Dr.sc.hum; **Kelsey Schluter** BS RT(R)(CT); **Rachel Bladorn** BS RT(R)(CT); **Aria Salyapongse** MS.
- Front Row, L-R:
- **Frank Ranallo** PhD, DABR; **Courtney Goetsch** RT(R)(CT); **Carrie Bartels** RT(R)(CT); **Zahra Alyani Nezhad** MS.

- Not pictured: **Meghan Lubner** MD, FSAR, FACR

Schedule of Events

9:00-9:30am
- Check in/Registration
- Attendees will be divided into 2 Groups (Hounsfield or Cormack)

9:30-9:45am
- Welcome: Tim Szczykutowicz PhD, DABR

9:45-10:15am (*Group Hounsfield*)
- CT Contrast Agents and Enhancement Principles: Zahra Alyani Nezhad MS

10:15-10:45am (*Group Hounsfield*)
- CT Images: What Do These Values Mean and How Can We Use Them? Aria Salyapongse MS

9:45-10:45am (*Group Cormack*)
- Exploring the limits of Scanner Capabilities: Tim Szczykutowicz PhD, DABR and Ran Zhang PhD

10:45-11:45am
- Group Hounsfield follows Group Cormack schedule from 9:45-10:45am
- Group Cormack follows Group Hounsfield schedule from 9:45-10:45am

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Schedule of Events

11:45-12:30pm

- LUNCH (Jason's Deli)

12:30-1:00pm

- Avoiding CT Pitfalls: Tim Szczykutowicz PhD, DABR

1:00-1:45pm

- Anatomy Crash Course: A CT Primer for Non-Radiologists: Giuseppe V. Toia MD, MS

1:45-2:30pm

- Clinical Applications of CT in the Abdomen and Pelvis: Meghan Lubner MD, FSAR, FACR

2:30-3:00pm

- Questions, Comments, Knowledge Evaluation
- Pop Quiz! ***Winner will get some cool swag***
- Group Photo will be taken @ 3pm

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Upcoming Sessions

9:45-10:15am & 10:45-11:15am

CT Contrast Agents and Enhancement Principles

- Learn about the major types of contrast agents used in CT: why they work and their clinical applications
- Understand the route IV contrast agents take through the body: speed of travel, changes in enhancement, and commonly used imaging phases
- Review the factors that influence CT contrast agent enhancement

Zahra Alyani Nezhad MS

- 10:15-10:45am & 11:15-11:45am

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

- CT numbers, measured in Hounsfield units, are the fundamental units of CT images and come from the attenuation by patient tissues of x-rays.
- Spectral (i.e., multienergy) CT data can be used to make virtual monoenergetic images, suppress specific material signals, and quantify materials.
- Common issues with CT image units include: (1) beam hardening and streaking artifacts and (2) inaccurate material quantification or suppression.

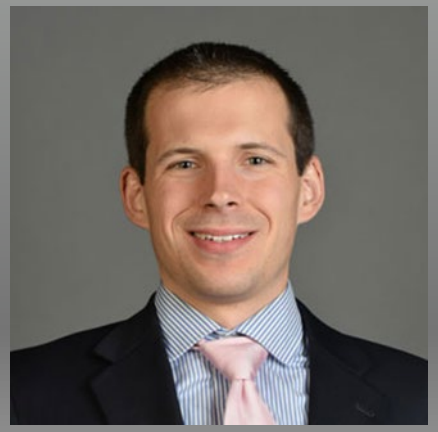
Aria Salyapongse MS

Upcoming Sessions

9:45-10:45am & 10:45-11:45am

Exploring the Limits of Scanner Capabilities LAB

- Qualitatively compare the effects of different CT reconstruction on overall image quality.
- Learn to measure quantitative image quality metrics.
- Understand the noise-resolution trade-off in CT reconstruction algorithms.
- Test vendor-claimed scanner specifications through hands on experiments.
- Discover why many specifications cannot be achieved simultaneously in real-world use.



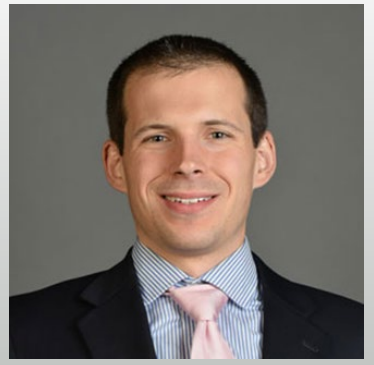
Tim Szczykutowicz PhD, DABR & Ran Zhang PhD

Upcoming Sessions

12:30-1:00pm

Avoiding CT Pitfalls

- Learn how evolving technology requires rethinking protocol design—legacy practices can reduce diagnostic utility.
- Understand how poor patient positioning, especially in MSK imaging, can degrade image quality.
- Identify and avoid well-meaning but misguided “dose reduction” decisions in pediatrics and pregnancy.



Tim Szczykutowicz PhD, DABR

1:00-1:45pm

Anatomy Crash Course: A CT Primer for Non-Radiologists

- Learn major structures and anatomic landmarks of the brain.
- Learn major structures and anatomic landmarks of the chest.
- Learn major structures and anatomic landmarks of the abdomen.
- Contextualize clinical anatomy in approaches to radiology research.

Giuseppe V Toia MD, MS

1:45-2:30pm

Clinical Applications of CT in the Abdomen and Pelvis

- Understand why CT is most appropriate for specific indications
- Understand how we tailor contrast phase, image thickness and anatomical plane to visualize specific lesions & structures.
- Examine a range of clinical CT applications with supporting case examples

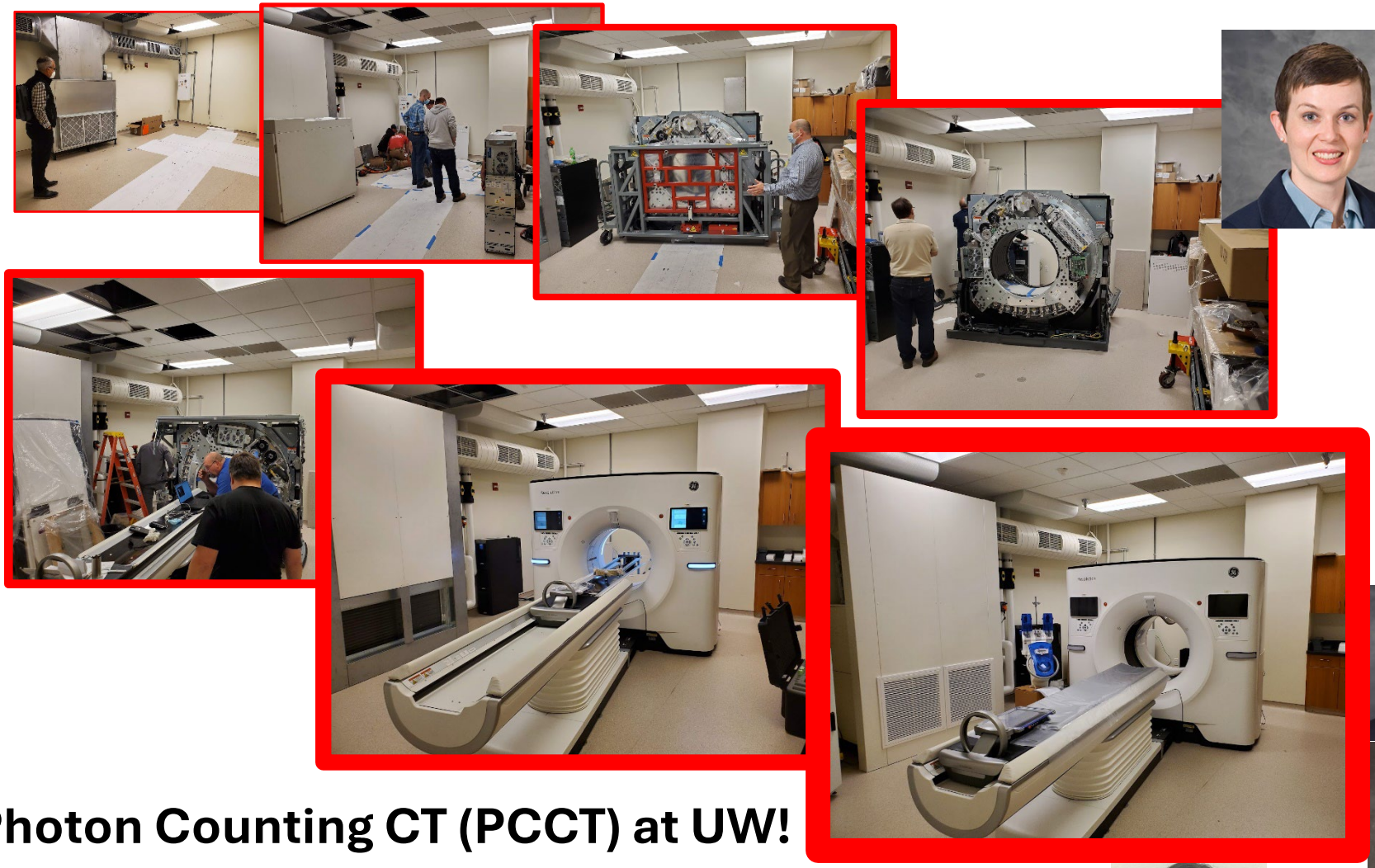
Meghan Lubner MD, FSAR, FACR

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

Canon
CANON MEDICAL SYSTEMS USA, INC.

The **UW/Canon Collaboration** is a pioneering initiative aimed at advancing CT imaging protocols to improve diagnostic accuracy, optimize workflows, and reduce radiation exposure. This partnership between the **University of Wisconsin Department of Radiology** and **Canon Medical Systems** is focused on developing state-of-the-art imaging solutions that enhance clinical outcomes for patients worldwide.

- **The UW/Canon partnership is driven by a commitment to innovation and excellence in CT imaging. The key objectives of this collaboration include:**
  - Developing and refining CT protocols that enhance image quality while minimizing radiation dose.
  - Integrating advanced imaging technologies to improve workflow efficiency and patient safety.
  - Conducting clinical trials and research to validate new protocols and optimize scanning techniques.
  - Sharing expertise and best practices with healthcare providers globally.
- **Current Projects:**
  - PiQE Reconstruction in Left Atrial Appendages.
  - PiQE Reconstruction in Abdominal Imaging.
  - Advancements in Interventional Imaging.



Photon Counting CT (PCCT) at UW!

1 of 3 sites in the world with a prototype silicon-based photon counting detector

Thank you for joining us!

CT POW Quiz:
Day 2
Test your knowledge!