Welcome to: CT-POW!

(Protocol Optimization Workshop)

Tuesday August 12, 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

7:45-8:15am
- Check In/Registration
- Attendees will be divided into 2 Groups (Hounsfield or Cormack)

8:15-8:30am
- Welcome: Tim Szczykutowicz PhD, DABR

8:30-9:00am
- CT 101: Introduction: Tim Szczykutowicz PhD, DABR

9:00-9:30am
- Protocol Optimization: Tim Szczykutowicz PhD, DABR

9:30-9:45am
- BREAK

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Schedule of Events

9:45-10:15am (*Group Hounsfield*)

- Protocolling: from family physician to sub-specialty radiologist: Carrie Bartels RT(R)(CT) and Kelsey Schluter BS RT(R)(CT)

10:15-10:45am (*Group Hounsfield*)

- A Comprehensive Guide to Interventional CT: Technology, Workflow, and Dose Considerations: Martin Wagner Dr.sc.hum

9:45-10:45am (*Group Cormack*)

- Hands-on CT Protocol Optimization LAB: Tim Szczykutowicz PhD, DABR; Rachel Bladorn BS RT(R)(CT) and Courtney Goetsch RT(R)(CT)

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

11:45-12:30pm

- LUNCH (Café Zupa's)

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Schedule of Events

12:30-1:00pm (*Group Hounsfield*)

- CT Dose: Are we really giving people cancer?: Tim Szczykutowicz PhD, DABR

1:00-1:30pm (*Group Hounsfield*)

- CT Reconstruction: from Filtered Back Projection to Deep Learning: Ran Zhang PhD

12:30-1:30pm (*Group Cormack*)

- CT Intervention: Hands on Biopsy LAB: Martin Wagner Dr.sc.hum and Kelsey Schluter BS RT (R)(CT)

1:30-2:30pm

- Group Hounsfield follows Group Cormack schedule from 12:30-1:30pm
- Group Cormack follows Group Hounsfield schedule from 12:30-1:30pm

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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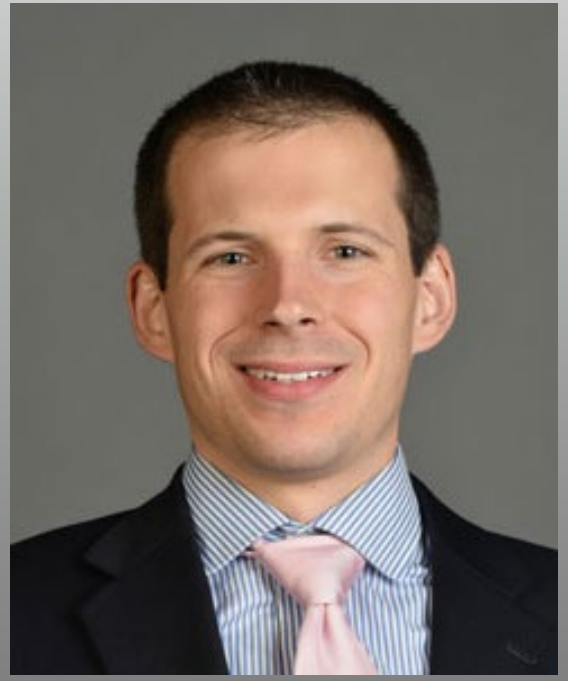
Upcoming Sessions:



Tim Szczykutowicz PhD, DABR

8:30-9:30am

CT 101: Introduction

- Learn how CT has evolved from the 1970s to modern-day scanners.
- Understand the major components of a CT scanner and how they work together.
- Appreciate how advances in technology have directly enabled clinical impact.

Protocol Optimization

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

Upcoming Sessions

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

Protocolling: from family physician to sub-specialty radiologist

- Understand how orders are placed and protocolled in EPIC
- Understand what happens after the orders are placed
- Learn how to navigate WIKI
- Understand the ordering process in EPIC and protocoling by Tech or radiologist.

Carrie Bartels RT (R)(CT) & Kelsey Schluter BS RT(R)(CT)

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

A Comprehensive Guide to Interventional CT: Technology, Workflow & Dose Considerations

- Understanding the use of interventional CT and being able to outline the typical procedural steps involved.
- Understanding various CT scanner options and specific features that are crucial for interventional CT systems, such as wide bore access, in-room control, and gantry tilt.
- Understanding dose-related concepts in interventional CT, including factors influencing operator scatter dose.
- Understanding visualization options and the significance of image artifacts and visualization planes along the needle in interventional CT for accurate device guidance.

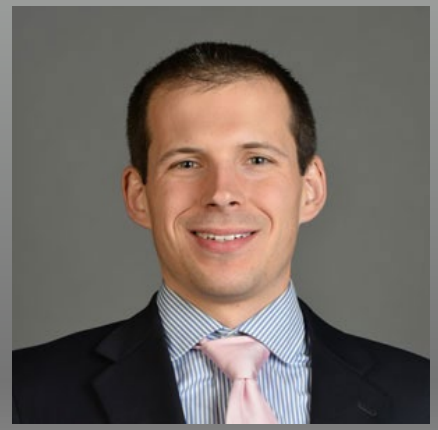
Martin Wagner Dr.sc.hum

Upcoming Sessions:

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

Hands-on CT Protocol Optimization LAB

- Gain practical experience in designing, executing, and analyzing CT protocols.
- Observe how improper protocol setup can cause scanners to “run out of output.”
- Learn how acquisition and reconstruction parameters directly affect spatial resolution.



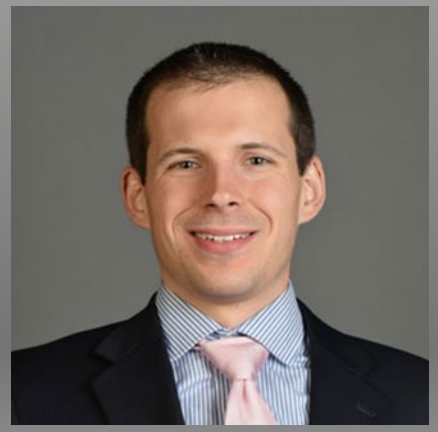
Tim Szczykutowicz PhD, DABR; Rachel Bladorn BS RT(R)(CT); Courtney Goetsch RT(R)(CT)

Upcoming Sessions

12:30-1:00pm & 1:30-2:00pm

CT Dose: Are we really giving people cancer?

- Understand the linear no-threshold (LNT) model and other common frameworks for radiation risk.
- Learn what cumulative effective dose is and why its clinical relevance is debated.
- Explore modern models that weigh the risks of under-dosing (missed diagnoses) against overexposure.



Tim Szczykutowicz PhD, DABR

1:00-1:30pm & 2:00-2:30pm

CT Reconstruction: from Filtered Back Projection to Deep Learning

- Understand the fundamental principles of Filtered Back Projection (FBP) and its historical significance in CT image reconstruction.
- Identify the inherent limitations of FBP and describe how iterative reconstruction (IR) methods address these challenges.
- Understand the foundational concepts of Deep Learning Image Reconstruction (DLIR) and discuss its potential to further enhance image quality.

Ran Zhang PhD

Upcoming Sessions:

12:30-1:30pm & 1:30-2:30pm

CT Intervention: Hands on Biopsy LAB

- Understanding patient positioning considerations for interventional procedures.
- Using integrated tools for needle path planning from a diagnostic CT image.
- Using the integrated laser for initial needle placement.
- Gathering hands on experience in navigating a needle to a target lesion in a phantom

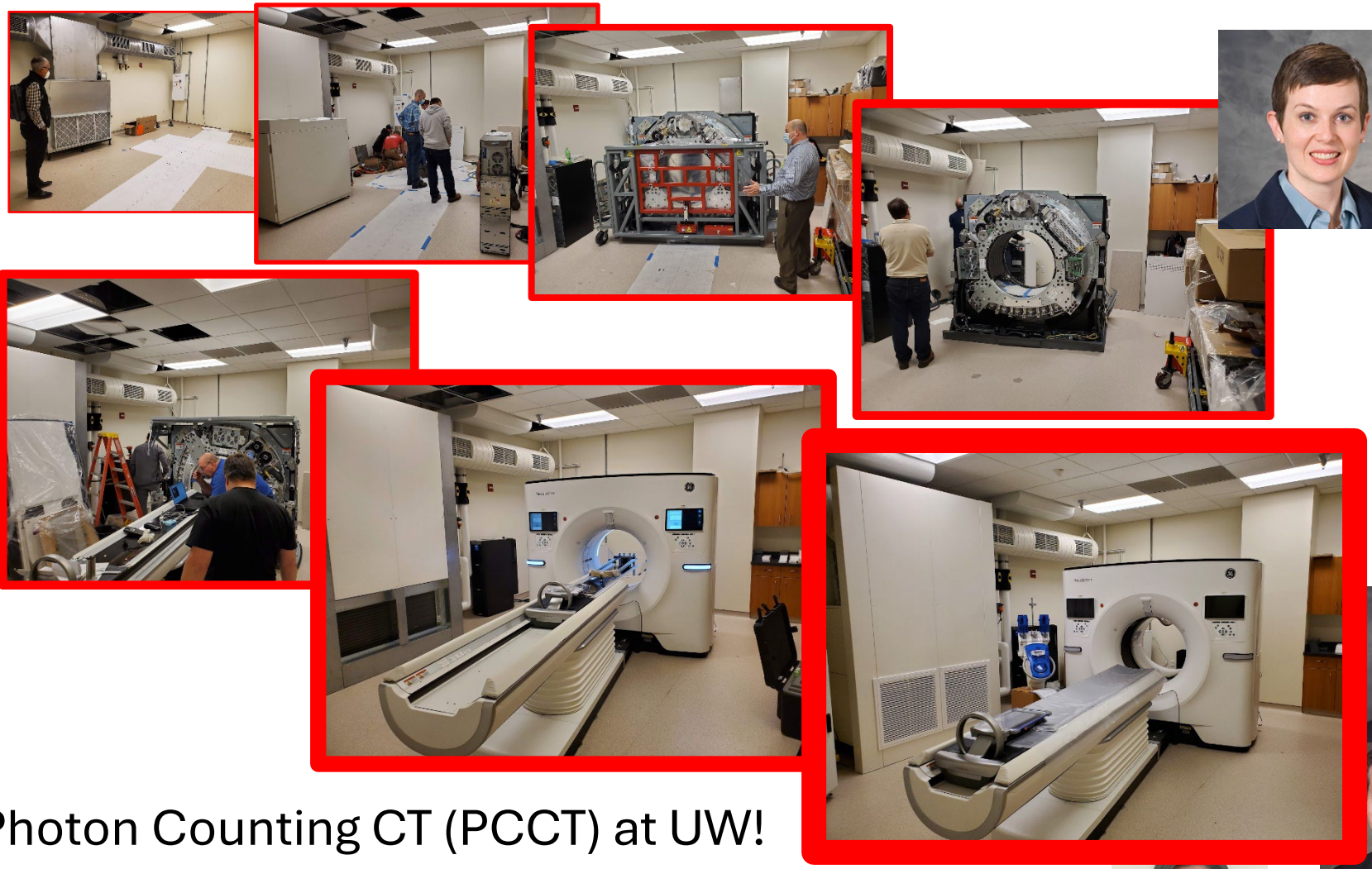
Martin Wagner Dr.sc.hum & Kelsey Schluter BS RT(R)(CT)

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 1

Test your knowledge!