East Carolina University®
Department of Physics

Colloquium

Friday, February 14th, Room N109, Howell Science Complex
3:15 p.m. (Refreshments at 3:00 p.m.)

Professor Yusung Kim
University of Texas MD Anderson Cancer Center

Innovations in Brachytherapy and Beyond

I will delve into transformative advancements in brachytherapy, emphasizing the critical role of MRI-guided adaptive techniques, real-time treatment planning, and the integration of artificial intelligence (AI) technologies. This presentation will explore the evolving landscape of modern brachytherapy, addressing key challenges and presenting innovative solutions that aim to enhance treatment accuracy and patient outcomes. I will highlight pioneering work in the development of high-resolution MRI imaging protocols and advanced applicator designs, which have revolutionized visualization and dosimetry in gynecologic cancer treatments. The talk will also cover the implementation of adaptive planning strategies that allow clinicians to optimize therapeutic delivery in response to dynamic clinical scenarios. Central to the discussion will be the emerging role of digital twin models—sophisticated computational frameworks that replicate patient-specific anatomy and tumor dynamics. I will showcase how these models, combined with AI-driven algorithms, enable personalized brachytherapy planning, facilitate online adaptive treatment, and support evidence-based clinical decision-making. I will outline the potential for these technologies to bridge the gap between research and clinical practice, ultimately transforming the standard of care in cancer therapy.

WebEx Link:
https://ecu.webex.com/ecu/j.php?MTID=m597b61dec85df5a0e1e21138fe56cd86