Enabling AI as a Metrology Tool in Radiation Physics
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Artificial intelligence (AI) and machine learning (ML) have garnered widespread interest due to the sensational behavior of algorithms such as ChatGPT and the parallel developments in other branches of deep learning. This has led to the perception that AI/ML is a panacea for difficult research questions. Yet at the same time, AI/ML is also viewed as black-box, which begs the questions of if and how it can be used as a tool for metrology. In this talk, I address such questions from the perspective of uncertainty quantification in order to highlight how AI/ML both quantifies *and introduces uncertainty* into measurements and predictions. I also use examples from radiation physics to illustrate when and how AI/ML can be useful as a modeling tool.