

# COLLOQUIUM

## Medical Physics and the Search for Big Data

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4:00 p.m. - Wilson Hall, One West

Medical physicists working in Radiation Oncology are involved in day-to-day clinical tasks including safety and quality assurance, accelerator maintenance, software and new treatment technique development. Historically, clinical research and development focused on making radiation delivery more precise, introducing hardware improvements, radiation intensity modulation, and image guidance during treatment. The next frontier in precision medicine is using the outcomes of previously treated patients to predict the best treatment for a new patient – the “Big Data” in cancer treatment is everything relevant to outcome for an individual patient, including imaging, genomic, and possibly lifestyle factors, and a model relating those factors to clinical outcomes. In this talk, I will describe the current state-of-the-art in Radiation Therapy and the role of the medical physicist, the hot research topics in the field, and the challenges I see in making use of our Big Data – many of which could benefit from tools used in other fields of physics.