# Fall 2024 Physics Colloquium

Friday, December 6, 2024

3:00 PM

PAS 201 or Zoom

(https://arizona.zoom.us/j/81283840289)

## Donna Strickland

**University of Waterloo, Nobel Laureate, Physics 2018**

## From Nonlinear Optics to High-Intensity Laser Physics

**Abstract:** The laser increased the intensity of light that can be generated by orders of magnitude and thus brought about nonlinear optical interactions with matter. Chirped pulse amplification, also known as CPA, changed the intensity level by a few more orders of magnitude and helped usher in a new type of laser-matter interaction that is referred to as high-intensity laser physics. In this talk, I will discuss the differences between nonlinear optics and high-intensity laser physics. The development of CPA and why short, intense laser pulses can cut transparent material will also be included. I will also discuss future applications.

**Bio:** Donna Strickland is a professor in the Department of Physics and Astronomy at the University of Waterloo and is one of the recipients of the Nobel Prize in Physics 2018 for developing chirped pulse amplification with Gérard Mourou, her PhD supervisor at the time. They published this Nobel-winning research in 1985 when Strickland was a PhD student at the University of Rochester in New York state. Together they paved the way toward the most intense laser pulses ever created.

Strickland was a research associate at the National Research Council Canada, a physicist at Lawrence Livermore National Laboratory and a member of technical staff at Princeton University. In 1997, she joined the University of Waterloo, where her ultrafast laser group develops high-intensity laser systems for nonlinear optics investigations.

Strickland was named a Companion of the Order of Canada. She is a recipient of a Sloan Research Fellowship, a Premier's Research Excellence Award and a Cottrell Scholar Award. Strickland served as the president of the Optical Society (OSA) in 2013. She is a fellow of OSA and SPIE, the Royal Society of Canada and the Royal Society. She is an honorary fellow of the Canadian Academy of Engineering as well as the Institute of Physics. She is an international member of the US National Academy of Science.

Strickland earned a PhD in optics from the University of Rochester and a B.Eng. from McMaster University.

**** Refreshments served in PAS 218 at 2:30 PM – 3:00 PM ****

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