

*April 24, 2013*

*11:45 a.m.*

*9th Floor*

*Room 901*

*Photonics Center*

*8 Saint Mary's  
Street*

*Lunch will be  
served!*



## Photonics Forum

“Femtosecond Lasers: From Compact High-Repetition Rate Fiber Sources Towards Integrated Waveguide Lasers”

Dr. Michelle Sander, Assistant Professor of Electrical and Computer Engineering

Femtosecond lasers and the development of frequency combs have revolutionized multiple fields such as metrology, spectroscopy, medical diagnostics and optical communications. However, to enable wider adoption of the technology and new applications like optical sampling, multi-GHz repetition rate femtosecond devices with robust performance metrics, and a compact footprint are highly desirable.

In this talk, various approaches to develop GHz mode-locked laser systems at telecommunication wavelengths will be presented. An introduction into the fundamentals of mode-locking and femtosecond lasers will also be given. In addition, design aspects for GHz fiber lasers with sub-200fs short pulses will be discussed. In order to scale the repetition rate into the multi-GHz regime, novel thermally tunable waveguide interleavers will be demonstrated. These technologies are then combined in a miniaturized, robust on-chip device that paves the way towards on-chip, integrated femtosecond photonics.

Dr. Michelle Sander is an Assistant Professor in the Department of Electrical and Computer Engineering at Boston University. Her research focuses on novel ultrafast laser systems from compact femtosecond fiber lasers to integrated waveguide lasers. Dr. Sander received her Ph.D. in Electrical Engineering from the Optics and Quantum Electronics Group with Professor Erich Ippen and Professor Franz Kaertner at the Massachusetts Institute of Technology in 2012. Previously, she received a Diploma degree in Electrical Engineering from the Technical University of Braunschweig, Germany, and a Master of Science degree from the Georgia Institute of Technology.