Spectral Line-by-Line Pulse Shaping for Optical Arbitrary Waveform Generation

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Abstract: Pulse-shaping techniques, in which user-specified, ultrashort pulse fields are synthesized by means of parallel manipulation of optical Fourier components, have now been widely adopted. Mode-locked lasers producing combs of frequency-stabilized spectral lines have resulted in revolutionary advances in frequency metrology. However, until recently, pulse shapers addressed spectral lines in groups, at low spectral resolution. Line-by-line pulse shaping, in which spectral lines are resolved and manipulated individually, leads to a fundamentally new regime for optical arbitrary waveform generation, in which the advantages of pulse shaping and of frequency combs are exploited simultaneously. In this talk, we discuss the technology development of line-by-line pulse shaping for optical arbitrary waveform generation, and its various applications.

Wednesday, March 25, 2009
10:00 a.m.
Bryan Hall, Room 305

Host: Lan Yang

Short Bio: Zhi Jiang received the B.S. (highest honors) and M.S. degrees in electronics engineering from Tsinghua University, Beijing, China, in 1999 and 2002, respectively, and the Ph.D. degree in electrical and computer engineering from Purdue University, West Lafayette, IN, in 2006. He is currently a Beckman Institute Postdoctoral Fellow, University of Illinois at Urbana-Champaign (UIUC). His research interests include ultrafast optics, biomedical optics, fiber optics and optical communications. During his Ph.D. study, Dr. Jiang received the Ross and Mary I. Williams Fellowship from Purdue University and the 2005 IEEE/LEOS Graduate Student Fellowship. He was selected as a finalist for the 2005 OSA New Focus/Bookham Student Award and a finalist for the Purdue-Chorafas Best Thesis Award for his Ph.D. thesis work. In 2007, he was selected as one of the four recipients of the Beckman Postdoctoral Fellowship.