

RMOSA

Rocky Mountain Section of the Optical Society of America

Joint RMOSA/IEEE-LEOS Seminar & Meeting

Thursday, February 19, 2009

Refreshments: 7:00 p.m. :: Seminar: 7:30 p.m.

[Room 340 Leeds Business \(KOB 340\), University of Colorado, Boulder](#)

“Mode locked lasers: From combs to dark pulses” Dr. Steven Cundiff, JILA/NIST/University of Colorado



Abstract: Mode-locked lasers were developed shortly after the first demonstration of lasers. They generate ultrashort pulses of light and have typically been used based on the time resolution provided by the pulses. About 10 years ago, femtosecond comb techniques were developed based on the fact that mode-locked lasers actually emit not single pulses, but trains of pulses that are highly coherent. Femtosecond combs have been applied to many problems that were originally the domain of highly stable continuous wave lasers. Indeed they are so good that we have recently turned to the question of where the fundamental, quantum mechanical, limits to their performance. In a different direction, we have recently developed a mode-locked laser that produces dark pulses, rather than bright pulses. This represents a new operating regime for mode-locked lasers and may lead to novel applications.

Dr. Cundiff is a JILA Fellow; JILA is a joint institute between the National Institute of Standards and Technology (NIST) and the University of Colorado in Boulder, Colorado. He is also Chief of the NIST Quantum Physics Division and an Adjunct Professor in the Physics and Electrical and Computer Engineering Departments at the University of Colorado. His research includes femtosecond comb technology and ultrafast spectroscopy of semiconductors and dense atomic vapors.

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