SACRAMENTO STATE

Department of Physics & Astronomy Fall 2009

Physics Colloquium Series

"Predicting Amplitude and Phase Noise of Modelocked Lasers from the Pump Noise Power Spectrum"

Recent developments in the engineering of pulsed (modelocked) lasers have led to their successful use as extremely stable clocks. Pump amplitude fluctuations induce amplitude and timing fluctuations in these laser clocks. We have been studying this causal relationship and have a model that accurately describes the performance of the laser clock when analyzed in the frequency domain. The model takes into account population levels as well as electronic, thermal, and nonlinear optical effects. By characterizing their responses in the frequency domain we can predict the amplitude and phase noise power spectrum of the laser clock. In this talk, I will present the theoretical model that describes the coupling between pump laser fluctuation and the clock laser performance and show data validating the model.

Theresa Mulder

Doctoral Candidate, Department of Electrical & Computer Engineering, UC Davis

Thursday, November 5, 2009

4:00-5:15 PM - MND 1015

Open & Free to all Students, Faculty & Public