

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Femto-second real-time single-shot digitizer** JASON CHOU, OZDAL BOYRAZ, BAHRAM JALALI, Electrical Engineering Department, University of California, Los Angeles — We demonstrate a single-shot digitizer with a record 10 Tera Sample-per-Second sampling rate, an order of magnitude improvement over prior state-of-the-art. The feat is accomplished by using a photonic time stretch preprocessor which slows down the electrical waveform by a factor of 250 before it is captured by an electronic digitizer. To achieve this performance, distributed Raman optical amplification was realized in the dispersive medium that performs the time dilation. Experimentally, a 90 GHz electrical signal is digitized in real time at 100 femto-second intervals. To the best of our knowledge, this is the first femto-second real-time digitizer.

Jason Chou  
University of California, Los Angeles

Date submitted: 04 Dec 2005

Electronic form version 1.4