

NWS08-2008-020006

Abstract for an Invited Paper
for the NWS08 Meeting of
the American Physical Society

The Continuing Evolution of Femtosecond Frequency Combs

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Following their development in early 2000, femtosecond frequency combs found immediate application as reference rulers in optical frequency metrology. Stabilization of the frequency comb emitted by an ultrafast laser has also enabled production of carrier-envelope phase-stabilized femtosecond pulses, thereby spurring seminal work in attosecond metrology. As the comb technology itself has matured, new areas of application have emerged such as precise calibration of astronomical spectrographs, arbitrary optical waveform synthesis, and precision spectroscopy. In this talk, I will highlight these new developments and discuss related and current work at UBC on these topics.