

Abstract Submitted  
for the NWS09 Meeting of  
The American Physical Society

**An intuitive approach to broadband dispersion measurements in high finesse optical cavities** T.J. HAMMOND, ARTHUR K. MILLS, DAVID J. JONES, University of British Columbia, ULTRAFast GROUP TEAM — We present a simple method to determine group delay dispersion by measuring the resonance condition of a high finesse optical cavity across a broad bandwidth using a femtosecond laser frequency comb. More generally, our technique measures the complete wavelength dependence of the cavity dispersion including higher order dispersion. This intuitive method is simply analyzed, and it is a powerful tool that can be used to extend well-understood single frequency optical resonator concepts to the case of broadband excitation. Accurate measurement of the dispersion of high finesse cavities is key to designing passive enhancement cavities for use in extreme ultraviolet light generation using high harmonic generation and other applications of extreme nonlinear optics. In this talk we will present the background behind our technique and experimental results, including the accuracy in determining group delay dispersion properties of several well-characterized materials.

T.J. Hammond  
University of British Columbia

Date submitted: 13 Apr 2009

Electronic form version 1.4