FEMTO-SECOND DEMODULATION AS A HIGH SPECTRAL PURITY SOURCE FOR THZ SPECTROSCOPY

J. R. DEMERS, *Department of Physics, The Ohio State University, 174 W. 18th Ave, Columbus, Ohio 43210-1106*; T. M. GOYETTE, *University of Massachusetts, Submillimeter Technology Lab, 175 Cabot Street, Lowell, Massachusetts, 01854*; B. D. GUENTHER, *Physics Department, Duke University, Durham, North Carolina, 27708-0305*; F. C. DE LUCIA, *Department of Physics, The Ohio State University, 174 W. 18th Ave, Columbus, Ohio 43210-1106*.

A Low Temperature Grown GaAs Photo-conductive Switch (LTG GaAs PCS) is employed to demodulate femtosecond pulses from a mode-locked Ti:sapphire laser. The resulting radiation contains all the high spectral purity Fourier components of the original pulse train. A specific model for the system noise and spectral purity will be presented. System dependence upon laser repetition rate will be discussed along with the results from passively increasing the repetition rate. Doppler limited, rotational spectra will be presented.