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Ultrafast Optical Spectroscopy of BiFeO3-BaTiO3 Based Structures[1] B.A. MAGILL, M.A. MEEKER, G.A. KHODAPARAST, S. PRIYA, Y. ZHOU, HYUN-CHEOL SONG, Virginia Tech, M. BISHOP, S. MCGILL, National High Magnetic Field Laboratory, Florida — Ultrafast optical spectroscopy can provide insight into fundamental microscopic interactions, dynamics and the coupling of several degrees of freedom. Pump/ probe studies can reveal the answer to questions like "What are the achievable switching speeds in multiferroics?" In this talk, we report on two color (400/800nm) pump-probe differential reflectance spectroscopy of BiFeO3-BaTiO3 based structures to probe the coupling between optical and acoustic phonons to spin waves, in these material systems. We present the results of several different time resolved transient reflectivity measurements to probe both the carrier and spin dynamics.

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