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**Ultrafast Laser Spin Wave Measurement of Temperature Dependent Magnetic Anisotropy of Half-Metallic Chromium Dioxide** ANNE REILLY, College of William and Mary, HAILONG HUANG, College of William and Mary, KEOKI SEU, College of William and Mary — Recent work has shown that the all-optical ultrafast laser production and detection of spin waves can provide useful measurements of anisotropy in magnetic thin films[1,2]. A pump laser pulse momentarily affects the magnetic anisotropy, perturbing the magnetization, which relaxes towards a new equilibrium by means of coherent oscillation. The coherent oscillation is detected by the magnetoopitcal Kerr effect. We present a study of the temperature dependence of the magnetocrystalline anisotropy of half-metallic CrO2 thin films from temperatures 10 K to 363 K. At higher temperatures, the oscillations are approximately single frequency. The anisotropy constants obtained by analyzing the oscillation frequencies as a function of applied fields using the Landau Lifshitz Gilbert equation agrees with measurements made by other techniques, particularly ferromagnetic resonance. Interesting features of the temperature dependence, as compared to ferromagnetic metals such as Co, Ni and Fe, will be highlighted. 1. M. Van Kampen et al., Phys. Rev. Lett. 88, 227201 (2002) 2. D. Talbayev et al., Appl. Phys. Lett., 86, 182501 (2005)

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