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Update on the Ruby Phosphorescence Senior Lab: Cr^{3+} ^2E Lifetime and ^4T Absorption Studies. S. DEMAY, R. SILWAL, A. CALAMAI, Appalachian State University — Our lab previously reported that many existing advanced laboratory experiences associated with the metastable ^2E term of Cr^{3+} in ruby, which gives rise to the R-lines at 692.7 and 694.3 nm, focus on a room-temperature measurement of the radiative lifetime of the ^2E term. We have since published [1] techniques for students to make a consistent Cr^{3+} ^2E lifetime measurement without systematic errors associated with the Cr concentration of the ruby samples. Our result for the room-temperature radiative-lifetime for the ^2E term is 3.3 0.1 ms [1]. This type of senior lab exercise typically uses commercially available ruby spheres for which the manufacturer(s) only state an approximately 2% Cr concentration. The uncertainty in Cr concentrations in commercially available ruby spheres has motivated our lab to begin a detailed study of the Cr^{3+} ^4T absorption bands near 410nm and 544nm, respectively, using commonly available advanced-physics lab equipment. We provide a status report on this aspect of our work to enhance this senior-level laboratory activity. [1] Z. Jones, J. Hinds, S. Woznichak, & A. Calamai, J. of Undergrad. Rept. in Phys. **30**, 100004 (2020), *and references therein*

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