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Optical spectroscopy of the Triangular Lattice Antiferromagnets $CuCrO_2$ and α-$CaCr_2O_4$ MICHAEL SCHMIDT, ZHE WANG, F. MAYR, Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, D-86135 Augsburg, Germany, S. TOTH, B. LAKE, A.T.M.N. ISLAM, Helmholtz-Zentrum Berlin fuer Materialien und Energie, D-14109 Berlin, Germany, V. TSURKAN, A. LOIDL, J. DEISENHOFER, Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, D-86135 Augsburg, Germany — We will compare and discuss our results obtained by optical spectroscopy on $CuCrO_2$ and α-$CaCr_2O_4$. While $CuCrO_2$ is famous for its multiferroicity [1], in α-$CaCr_2O_4$ a polarization can only be observed under the application of electric or magnetic field, despite having a closely related structure [2]. At near infrared and visible light frequencies we observe Cr^{3+} crystal field absorptions and below T_N excitons and exciton-magnon-transitions appear. The width of these exciton-magnon transitions is analyzed with respect to the existence of Z_2 vortices as proposed by Kojima et al. [3].

[1] S. Seki et al., Phys. Rev. Lett. 101, 067240 (2008)
[2] K. Singh et al., Phys. Rev. B 84, 064129 (2011)
[3] N. Kojima et al., J. Phys. Soc. Jpn. 62, 4137 (1993)

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