

Abstract Submitted  
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**Infrared studies of a quantum magnet  $\text{SrCu}_2(\text{BO}_3)_2$**  T. RÕÕM, D. HÜVONEN, U. NAGEL, Natl. Inst. of Chem. Phys. & Biophysics, Akadeemia tee 23, EE12618 Tallinn, Estonia, S.V. DORDEVIC, C.C. HOMES, Brookhaven National Laboratory, A. GOZAR, G. BLUMBERG, Bell Laboratories, N. DRICHKO, M.M. DRESSEL, Universitat Stuttgart, H. KAGEYAMA, Kyoto University — We will report results of our infrared studies of  $\text{SrCu}_2(\text{BO}_3)_2$ , a two-dimensional spin system with a disordered ground state even at very low temperatures, and a spin gap of about  $24 \text{ cm}^{-1}$  (3 meV). This material has recently attracted attention because of a possibility that doping may lead to a superconductivity mediated by antiferromagnetic fluctuations, possibly similar to high- $T_c$  cuprates. Using polarized light we have probed both crystallographic directions over a broad range of frequencies (from about  $30 \text{ cm}^{-1}$  to  $20,000 \text{ cm}^{-1}$ ) and temperatures (from 4.2 K to 300 K). The results reveal significant differences between the ab-plane and c-axis directions. We will discuss these findings in relation with the resonance effects observed in inelastic light scattering experiments from collective magnetic excitations.

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