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Symmetry and light coupling to magnetic excitations in SrCu2(BO3)2 ADRIAN GOZAR[1], Brookhaven National Laboratory, GIRSH BLUMBERG, BRIAN DENNIS, Bell Laboratories, HIROSHI KAGEYAMA, Kyoto University — We present a T = 3 K Raman scattering study in the spin-dimer compound $SrCu_2(BO_3)_2$. The symmetry of the elementary triplets and magnetic bound states in the 0 - 60 cm^{-1} energy range are experimentally determined. A 4-spin cluster approximation is able to reproduce the symmetry and the anisotropic dispersions in external magnetic fields of the spin gap modes. We propose a light coupling mechanism induced by intra-dimer antisymmetric interactions and discuss the observation of a distinct Raman resonance behavior of the elementary and composite magnetic modes.

[1]also at Bell Laboratories

Adrian Gozar
Brookhaven National Laboratory

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