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Spin Structure Factor of the Frustrated Quantum Magnet Cs_2CuCl_4. DENIS DALIDOVICH, RASTKO SKNEPNEK, JUNHUA ZHANG, CATHERINE KALLIN, JOHN BERLINSKY, Department of Physics and Astronomy, McMaster University, Hamilton, Ontario, Canada L8S 4M1. — We present the results of a calculation of the spin structure factor for the two-dimensional antiferromagnet on the triangular lattice, with strong directional anisotropy in the nearest-neighbour exchange couplings. The corresponding Heisenberg Hamiltonian describes the physics following from neutron scattering measurements in the frustrated quantum magnet Cs_2CuCl_4, [R. Coldea, et. al., Phys. Rev. B, **68**, 134424, (2003)]. Since the experimental data reveal the presence of a small but finite on-site magnetic moment S_z, the calculations are performed using the Holstein-Primakoff representation for spins. The results for the structure factor, computed up to the order in $1/S$ that takes into account interactions between magnons, are compared with experiment.

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