

# MAGNETIC EXCITATIONS IN THE $S=1/2$ ALTERNATING CHAIN COMPOUND $(VO)_2P_2O_7$ (Ref. 1)

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Magnetic excitations in an array of  $(VO)_2P_2O_7$  single crystals have been measured using inelastic neutron scattering. Until now,  $(VO)_2P_2O_7$  has been thought of as a two-leg antiferromagnetic Heisenberg spin ladder with chains running in the  $a$  direction. The present results show unequivocally that  $(VO)_2P_2O_7$  is best described as an alternating spin chain directed along the crystallographic  $b$  direction. In addition to the expected magnon with magnetic zone-center energy gap  $\Delta = 3.1$  meV, a second excitation is observed at an energy just below  $2\Delta$ . The higher mode may be a triplet two-magnon bound state.

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