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Magnetic structure of frustrated Haldane chain compound $\mathbf{CaV_2O_4}$ B. LAKE, Hahn-Meitner Institut, O. PIEPER, A. DAOUD-ALADINE, M. REEHUIS, K. PROKES, M. ENDERLE, A. NIAZI, J.Q. YAN, D.C. JOHNSTON — While the Haldane chain, (Heisenberg spin-1 chain with nearest neighbor antiferromagnet interactions) has been much studied and shown to have gapped magnon excitations. The effect of frustrated and single ion-anisotropy has not been investigated experimentally. Theory suggests that frustration can enhance the multiparticle spectrum and the combination of frustration and anisotropy can drive the system into a gapless chiral phase. CaV_2O_4 is a candidate for such a system. This compound consists of two inequivalent one-dimensional chains consisting of spin-1 V^{3+} ions which have antiferromagnetic first and second neighour interactions. Interchain coupling gives rise to long-range order below T_N= 71K. Neutron diffraction measurements will be described. They reveal collinear spin order within the chains and canting between chains, with the average spin direction along the **b** axis. The ordered spin moment was also measured and found to be 1 μ_B per Vanadium; this reduction of 50% from full spin ordering suggests loss of moment due to quantum fluctuations. Finally, preliminary inelastic neutron scattering reveals a gap due to single-ion anisotropy. In addition a steep dispersion along the **c** (chain) direction and much weaker dispersions along **a** and **b** confirm the one-dimensional nature of CaV_2O_4.

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