

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

S=2 quasi-one-dimensional spin waves in CrCl₂ MATTHEW STONE, GEORG EHLERS, GARRETT GRANROTH, Oak Ridge National Laboratory — We examine the magnetic excitation spectrum in the $S = 2$ Heisenberg antiferromagnet CrCl₂. Inelastic neutron scattering measurements on powder samples are able to determine the significant exchange interactions in this system. A large anisotropy gap is observed in the spectrum below the Néel temperature and the ratio of the two largest exchange constants is $J_c/J_b = 9.1 \pm 2.2$. However, no sign of a gapped quantum spin liquid excitation was found in the paramagnetic phase. The research was performed at Oak Ridge National Laboratory's Spallation Neutron Source and was sponsored by the Scientific User Facilities Division, Office of Basic Energy Sciences, US Department of Energy.

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Date submitted: 15 Nov 2013

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