Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Magnetic field dependence of the order parameter in weakly ordered quasi-1D antiferromagnets** IGOR ZALIZNYAK, ANDREI SAVICI, Brookhaven National Laboratory, BEATRICE GRENIER, LOUIS-PIERRE REGNAULT, SERGEI PETROV — We report neutron diffraction study of the antiferomagnetic order in two isostructural quasi-one-dimensional S=1 Heisenberg antiferromagnets, CsNiCl3 and RbNiCl3, in magnetic fields up to 15 T. These materials present model systems of Haldane spin chains with very similar in-chain exchange interaction, but coupled by the inter-chain exchange of different strengths. In both cases the inter-chain coupling is super-critical, so that the Haldane gap is suppressed and weak antiferromagnetic order appears below 4.84 K in CsNiCl3 and 11.1 K in RbNiCl3. In zero field the ordered magnetic moments in CsNiCl3 and RbNiCl3 are approximately 0.9 and 1.2 Bohr magnetons, respectively. We find that the antiferromagnetic order is enhanced by application of the magnetic field, as it is expected both for coupled Haldane chains and from the spin-wave theory arguments. However, we show that the spin-wave theory can not reproduce the observed behavior quantitatively.

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Date submitted: 28 Nov 2005 Electronic form version 1.4