

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Magnetic properties driven by local structure in quasi-1D Ising chain system cobaltate system BONGJAE KIM, BEOM HYUN KIM, KYOO KIM, HONG CHUL CHOI, SANG-YEON PARK, Y.-H JEONG, B. I. MIN, Department of Physics, POSTECH, Pohang, 790-784, Korea — Using *ab-initio* band structure method and the microscopic model calculation, the origins of the large orbital magnetic moment and unique magnetic anisotropy in the quasi-1D magnetic cobaltate, α -CoV₂O₆, is investigated. Unique crystal electric field effect in α -CoV₂O₆ is combined with the strong spin-orbit coupling, results in intriguing magnetic properties of the system. Based on the estimated strengths of the intra- and the inter-chain exchange interaction, experimentally found 1/3 magnetization plateau in the MH curve can be attributed to spin-flop mechanism. Origin of the reduced magnetic entropy behavior is found to be the strong uniaxial magnetic anisotropy in the quasi-1D Ising chain system.

Bongjae Kim
Department of Physics, POSTECH, Pohang, 790-784, Korea

Date submitted: 11 Nov 2011

Electronic form version 1.4