Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Curie-Weiss metallic state in sodium cobaltates ILYA VEKHTER, Louisiana State University, CHRISTOPHER HOOLEY, University of St Andrews — One of the most intriguing properties of sodium cobaltates, Na$_x$CoO$_2$ is the so-called Curie-Weiss metallic phase appearing at relatively high doping, $x \sim 0.7$. It exhibits Curie-Weiss magnetic susceptibility in a metal not far from the onset of antiferromagnetic order. Surprisingly for a layered quasi-two-dimensional structure, the neutron scattering experiments in the ordered state yield comparable in-plane and interplane magnetic exchange constants. We consider a model layered system on the verge of transition to a type-A antiferromagnet. We investigate whether in such a system fluctuations of the in-plane magnetization may give the apparent Curie-Weiss behavior in analogy with the spin-fluctuation theory for itinerant ferromagnets. We consider the effect of the crossover from incoherent to coherent interplane transport on the magnetic susceptibility and discuss the effect of sodium doping.

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Date submitted: 20 Nov 2006