

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Reversible switching of magnetic transitions in Na_xCoO_2 ($x \approx 0.83$) by altering the Coulomb potential background J. KANTER, Laboratory for Solid State Physics, ETH Zurich, CH-8093 Zurich, Switzerland, CH. NIEDERMAYER, Laboratory for Neutron Scattering, PSI, CH-5232 Villigen, K. MATTENBERGER, B. BATLOGG, Laboratory for Solid State Physics, ETH Zurich, CH-8093 Zurich, Switzerland — In sodium cobaltate the electrons in the CoO_2 layers are subject to a complex Coulomb potential landscape produced by the adjacent sodium ions which, due to their partial mobility, form various ordering patterns. In recent studies we could reversibly switch between distinct magnetic transitions with a T_c of 8 K and 16 K. This was accomplished by preparing different sodium configurations connected to a sodium reordering transition around 280 K. The distinct magnetic phases are investigated by means of muon spin rotation, resistivity, specific heat and magnetization measurements with a focus on the magnetic moment orientation and the dependence of the transition temperatures on the magnetic field strength and orientation. Resistivity measurements under high pressure allow for comparison of the shifts in the transition temperature to the relative change in lattice parameters along the different crystal directions.

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Date submitted: 20 Nov 2009

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