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Pressure effect on magnetic and structural phase transitions in Na_xCoO_2 ($x=0.75, 0.80$)¹ O.B. KORNETA, S.O. LEONTSEV, Y.V. SUSHKO, University of Kentucky, R. JIN, B.C. SALES, D. MANDRUS, Oak Ridge National Laboratory — The sodium-rich metallic compounds of Na_xCoO_2 family with $x \sim 3/4$ are known to exhibit an order-disorder structural transition at $\sim 340\text{K}$ and a magnetic transition at $\sim 22\text{K}$. We have performed the magnetization and resistivity measurements under hydrostatic pressure to study both phase transitions in compounds with $x = 0.75$, $x = 0.80$. The data established positive pressure dependence of both the structural and magnetic transitions. Positive pressure effect on the Neel temperature suggests that superexchange interactions of localized moments may play an important role in magnetic properties of these materials. Such a conjecture is further supported by the observation of the metal-insulator transition (and its pressure evolution) in interplane resistivity of the $x = 0.80$ compound.

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