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# Resistivity and magnetoresistance of laser-ablated La1-xSrxCoO3-δ films

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The resistivity ρ(T) and the magnetoresistance MR(T) of $La_{1-x}Sr_xCoO_{3-\delta}$ films, prepared by pulsed laser deposition, were studied in order to elucidate the transport properties around the metal-insulator transition. The metal-insulator transition was observed when the $Sr^{2+}$ doping was decreased ($x \leq 0.25$). The transport of carriers in the metallic state ($x > 0.25$) is governed by electron-electron scattering, taking into account the origin of a small energy gap in the spectrum of electron excitations. The MR(T) of the metallic state is provided by a change in the electron scattering rate with spin disorder, which is affected by magnetic field, and a small peak appears at the Curie temperature. In the insulating state ($x \leq 0.25$), the transport of carriers is based on Mott-like variable-range hopping rather than on the motion of lattice polarons. In the low temperature range below the temperature for the magnetic transition, the ρ(T) dependence was nicely fitted by using the two parallel-resistor model, where one resistance corresponded to a ferromagnetic metallic (FM) cluster network and the other to the insulating matrix. These results confirm the phase-sepharated state in the films, leading to a growth of the FM phase in an applied magnetic field. It was shown that the double-exchange mechanism cannot play a role in the MR of the insulating state.