Spin-fluctuation scattering in $Y(Co_{1-x}Al_x)_2$ compounds

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Abstract: $Y(Co_{1-x}Al_x)_2$ compounds with x up to 0.2 have been studied by means of magnetization, resistivity and magnetoresistance measurements in the temperature range from 4.2 to 280 K and in magnetic fields up to 38 T. The paramagnetic to ferromagnetic transitions are characterized by an enhancement of both the magnetization and the resistivity, whereas at the metamagnetic transitions, observed in some of the compounds, the discontinuous changes of the magnetization and the magnetoresistance are of opposite nature: the magnetization increases at the transition, whereas the magnetoresistance decreases. The results are discussed in terms of induced Co-magnetic moments and spin fluctuations. The absence of spin-fluctuation effects is pointed out for the weakly ferromagnetic compounds with 0.11 < x ?? 0.2. ?? 1995.
Index Keywords: Electrons; Magnetic field effects; Magnetic moments; Magnetic variables measurement; Magnetization; Magnetoresistance; Phase transitions; Thermal effects; Yttrium compounds; Ferromagnetic transition; Metamagnetic transition; Paramagnetic transition; Spin fluctuations; Ferromagnetic materials

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