Kondo effect in carbon nanotube quantum dot in a magnetic field

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The out-of-equilibrium electron transport of carbon nanotube semiconducting quantum dot placed in a magnetic field is studied in the Kondo regime. The mean field finite U slave boson approach of Kotliar Ruckenstein and the equation of motion method are used. For parallel magnetic field the Kondo peak splits in four peaks, following the simultaneous splitting of the orbital and spin states. As a consequence the high conductance lines on bias voltage-field plane are observed. For orbitally nondegenerate states the field can recover orbital degeneracy and high spin polarization of conductance results. Finite direct or tunneling interorbital mixing prevents the full recovery of degeneracy and nomonotonic field dependence of conductance is observed.

9.7 cm

13.4 cm

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