**Colossal negative magnetoresistance and conductance bistability in magnetic semiconductors**

Tomasz Dietl and Cezary Śliwa

*Laboratory for Cryogenic and Spintronic Research, Institute of Physics, Polish Academy of Sciences, Warsaw; Institute of Theoretical Physics, University of Warsaw, Poland*
*e-mail:dietl@ifpan.edu.pl*

Despite that colossal negative magnetoresistance and critical scattering are the most prominent features of many magnetic semiconductors and dilute magnetic semiconductors [1,2], there is no consensus which of the models proposed over the last 50 years accounts for these phenomena. It will be argued that they originate from salient features of the Anderson-Mott localization, such as mesoscopic fluctuations in the local density of states (LDOS) and disorder-enhanced interference of carrier interaction amplitudes [1]. The existence of such localization signatures has been confirmed by a number of experiments on (Ga,Mn)As. The fluctuations in LDOS were seen in magnetic properties [3] as well as in the topography of spatially resolved tunneling currents [4]. The importance of disorder-modified carrier–carrier interactions was put into evidence by tunneling spectroscopy [4] and temperature dependence of resistance at subkelvin temperatures [5]. A qualitative model will be presented linking the presence of a resistance maximum at the Curie temperature and the associated negative magnetoresistance to the quantum localization phenomena [1]. Moreover, it will be shown how specific features of colossal negative magnetoresistance may lead to resistance bistability in the magnetic field and low temperatures [6]. It will be shown that a generic model of resistance bistabilities [7] describe subkelvin data for (In,Mn)As quantum wells [6].

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