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### **Dephasing in (Ga,Mn)As Nanowires & Rings<sup>1</sup>**

DIETER WEISS, Experimentelle und Angewandte Physik, University of Regensburg, D-93040 Regensburg, Germany

Quantum correction to the conductivity of ferromagnetic semiconductors are thus far largely unexplored. But to understand quantum mechanical transport the knowledge of basic material properties like phase coherence length and corresponding dephasing mechanism are indispensable ingredients. The lack of observable quantum phenomena prevented experimental access to these quantities so far. Here we report on the observation of universal conductance fluctuations in ferromagnetic (Ga,Mn)As. The analysis of the length and temperature dependence of the fluctuations in one-dimensional wires reveals a  $1/T$  dependence of the dephasing time. The measurement of the Aharonov-Bohm effect in nanorings as well as a weak localization correction to the conductivity, observed in arrays of wires, are in good agreement with the results obtained from the conductance fluctuations.

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