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AC-transport measurements of ion beam irradiated GaMnAs semiconductors ELIS SINNECKER, MARCELO SANT'ANNA, TATIANA RAPPOPORT, JOAQUIM MENDES, MAURICIO PIRES, GERMANO PENELLO[1], DEIVID SOUZA, SERGIO MELLO, Instituto de Física, Universidade Federal do Rio de Janeiro, Rio de Janeiro 21941-909, RJ, Brazil, JACEK FURDYNA, XINYU LIU, Department of Physics, University of Notre Dame, Notre Dame, Indiana 46556, USA — GaMnAs is a diluted magnetic semiconductors in which lattice atoms have been partially substituted by magnetic atoms, thus inserting a local magnetic moment into the lattice. Recently it was shown that ion beam irradiation can be an effective tool to modify the magnetic and electronic properties of $Ga_{1-x}Mn_xAs$ thin films [1, 2]. We observed that an increase of the structural disorder by irradiation leads to a systematic decrease on the saturation magnetization. Here, we provide further information on the electronic properties of irradiated samples. Measurements of ac-resistivity, magnetoresistance and Hall resistance were performed from 5K to 300K applying a DC magnetic field up to 7T. The results show an interesting frequency dependence of the ac-transport of measured irradiated samples. For the sake of comparison, data on irradiated non-magnetic semiconductor, grown on the same conditions as Ga1-xMnxAs thin films, are provided.

[1] E. H. C. P. Sinnecker et al., Phys. Rev. B 81, 245203 (2010).
[2] Lin Li et al., J. Phys. D: Appl. Phys. 44, 045001 (2010).

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