## Abstract Submitted for the MAR08 Meeting of The American Physical Society

Localization effects in ferromagnetic  $Ga_{1-x}Mn_xSb$  random alloys<sup>1</sup> M. EGINLIGIL, G. B. KIM, H. LUO, B. D. MCCOMBE, Dept. of Physics, University at Buffalo, SUNY, Y. S. YOON, J. P. BIRD, Dept. of Electrical Engineering, University at Buffalo, SUNY — We have investigated temperature and magnetic field dependence of resistance  $(R_{xx})$  in MBE-grown ferromagnetic  $Ga_{1-x}Mn_xSb$  films in which the ferromagnetism is mediated by holes [1]. Samples with higher carrier densities  $(6.7 \times 10^{19} \text{cm}^{-3} \text{ and } 1.3 \times 10^{20} \text{cm}^{-3}, \text{ with Curie temperatures, } T_c, \text{ of } 13$ K and 24 K respectively) show metal-like behavior in the temperature dependence of  $R_{xx}$ . These samples exhibit small positive magnetoresistance (MR) up to 0.5 T between 1.6 K and 20 K, followed by negative MR up to 10 and 11 T (at 2.4 K), respectively. Samples with lower carrier densities  $(2.9 \times 10^{19} \text{cm}^{-3} \text{ and } 3.9 \times 10^{19} \text{cm}^{-3})$ . with T<sub>c</sub>'s of 13 K and 24 K, respectively) show "weak" thermally activated behavior and negative MR between 1.6 K and 50K (but no positive MR at low fields). The latter samples exhibit low field positive MR between 35 mK and  $\sim 400$  mK, followed by negative MR up to 8 T.  $R_{xx}$  increases with decreasing temperature for both samples at zero field, and the magnitude of the change increases with applied magnetic field. These results will be discussed in terms of localization behavior in this system. [1] Eginligil et al., in press PhysicaE (2007)

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