Abstract Submitted
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Gating a ferromagnetic semiconductor[1] A. BOVE[2], F. ALTOMARE[3], N. KUNDTZ, A.M. CHANG, Physics Department, Duke University, Durham, NC 27708, Y.J. CHO, X. LIU, J. FURDYNA, Physics Department, University of Notre Dame, Notre Dame, IN 46556 — Ferromagnetic semiconductors have the potential of revolutionizing the way current electronic devices work: more so, because they are compatible with current fabrication lines and can easily be integrated with today's technology. Particular interest lies in III-V Diluted Magnetic Semiconductor (DMS), where the ferromagnetism is hole-mediated and the Curie temperature can therefore be tuned by changing the concentration of free carriers[4]. In these systems, most of the effort is currently applied toward the fabrication of devices working at room-temperature: this implies high carrier density accompanied by low mobility and short mean free path. We will report our results for a ferromagnetic 2DHG system with low carrier density ($\sim 3.4E12$ cm^{-2}) and mobility ($\sim$ 1000 cm$^2/(Vs)$), and we will discuss the effects of local gating[5] in light of possible applications to the fabrication of ferromagnetic quantum dots.

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