Abstract Submitted
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Polarization Control of Optical Bistability in Coupled Microdisks[1] B.B. BUCKLEY, D.D. AWSCHALOM, Center for Spintronics and Quantum Computation, University of California, Santa Barbara, CA 93106, S.N. GHOSH, C.G.L. FERRI, Y.K. VERMA, S. GHOSH, School of Natural Sciences, University of California, Merced, CA 95340, X. LI, N. SAMARTH, Materials Research Institute, Penn State University, University Park, Pennsylvania 16802 — Semiconductor microcavities are powerful systems both for the study of fundamental light-matter interactions and for applications in photonics. Microdisks composed of GaAs/(Al,GaAs) containing interface-fluctuation quantum dots for gain have been shown to offer low threshold lasing and cavity-induced electron spin coherence modulation[2]. More recently, the control of lasing emission bistability by means of pump polarization was measured to occur under non-uniform illumination in elliptical microdisk pairs coupled evanescently along their semi-major axis [3]. Hysteretic bistability is present when the pump light polarization is perpendicular to the evanescent coupling axis and disappears when the pump polarization is parallel to the coupling axis. This lasing bistability control is a unique functionality which may find use in optical logic devices.

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[2]S. Ghosh et al. Nature Materials 5, 261 (2006).
[3]S. N. Ghosh, et al., submitted (2009).

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