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Magnetic field induced resonance and hysteresis effects in the current flowing through coupled vertical quantum dots at high source-drain bias DAVID AUSTING, CHRIS PAYETTE, National Research Council of Canada and McGill University, GUOLIN YU, JAMES GUPTA, National Research Council of Canada, NATIONAL RESEARCH COUNCIL OF CANADA AND MCGILL UNIVERSITY TEAM, NATIONAL RESEARCH COUNCIL OF CANADA TEAM
— We report on the basic properties, including the temperature, range of magnetic field, sweep rate and voltage dependence, of recently observed magnetic field induced resonance and hysteresis effects in the current flowing through two weakly coupled vertical quantum dots at high source-drain bias. Similar looking effects, attributed to electron spin - nuclear spin (hyperfine) coupling, have been seen in the low bias two- electron spin-blockade regime (K. Ono and S. Tarucha Phys. Rev. Lett. 2004), when the magnetic field is applied perpendicular to the flowing current, but the regime we study here is at much higher bias (up to a few 10's of mV) and for a magnetic field (0- 6T) applied parallel to the current. "Slow" current oscillations/fluctuations are also observed on the timescale of seconds to tens of seconds for certain conditions. Can nuclear spin related effects occur outside the N=2 spin-blockade region?

Sergei Studenikin
National Research Council of Canada

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