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Cobalt micro-magnet integration on silicon MOS quantum dots JULIEN CAMIRAND LEMYRE, SOPHIE ROCHETTE, Institut quantique and Département de physique, Université de Sherbrooke, JOHN ANDERSON, RONALD P. MANGINELL, TAMMY PLUYM, DAN WARD, MALCOM S. CARROLL, Sandia National Laboratories, Albuquerque, MICHEL PIORO-LADRIÈRE, Institut quantique and Département de physique, Université de Sherbrooke & Candian Institut for Advanced Research, CIFAR — Integration of cobalt micro-magnets on silicon metal-oxide-semiconductor (MOS) quantum dot devices has been investigated. The micro-magnets are fabricated in a lift-off process with e-beam lithography and deposited directly on top of an etched poly-silicon gate stack. Among the five resist stacks tested, one is found to be compatible with our MOS specific materials (Si and SiO₂). Moreover, devices with and without additional Al₂O₃ insulating layer show no additional gate leakage after processing. Preliminary transport data indicates electrostatic stability of our devices with integrated magnets. This work was performed, in part, at the Center for Integrated Nanotechnologies, an Office of Science User Facility operated for the U.S. Department of Energy (DOE) Office of Science. Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a Lockheed-Martin Company, for the U. S. Department of Energy under Contract No. DE-AC04-94AL85000.

> Julien Camirand Lemyre Institut quantique, Université de Sherbrooke

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