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First measurements of charge carrier density and mobility of in-situ enriched ^{28}Si. A. N. RAMANAYAKA, Joint Quantum Institute, National Institute of Standards and Technology, K. J. DWYER, HYUN-SOO KIM, University of Maryland, M. D. STEWART, JR., J. M. POMEROY, National Institute of Standards and Technology — Magnetotransport in top gated Hall bar devices is investigated to characterize the electrical properties of in-situ enriched ^{28}Si. Isotopically enriched ^{28}Si is an ideal candidate for quantum information processing devices as the elimination of unpaired nuclear spins improves the fidelity of the quantum information. Using mass filtered ion beam deposition we, in-situ, enrich and deposit epitaxial ^{28}Si, achieving several orders of magnitude better enrichment compared to other techniques. In order to explore the electrical properties and optimize the growth conditions of in-situ enriched ^{28}Si we perform magnetotransport measurements on top gated Hall bar devices at temperatures ranging from 300 K to cryogenic temperatures and at moderate magnetic fields. Here, we report on the charge carrier density and mobility extracted from such experiments, and will be compared among different growth conditions of in-situ enriched ^{28}Si.

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