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Characterization of enhancement-mode two-channel triple quantum dot device fabricated from an undoped Si/Si_{0.8}Ge_{0.2} quantum well hetero-structure. SERGEI STUDENIKIN, D. G. AUSTING, National Research Council of Canada, T. M. LU, E. R. LUHMAN, D. BETHKE, M. C. WANKE, M. P. LILLY, M. S. CARROLL, Sandia National Laboratories, USA, A. S. SACHRAJDA, National Research Council of Canada — Recently, single- and double-dot characteristics of an enhancement-mode quantum dot device fabricated from an undoped Si/Si_{0.8}Ge_{0.2} hetero-structure were reported in [1]. As compared to Si/SiGe hetero-structures with a Ge concentration of 30% typically encountered, a 20% Ge concentration offers high electron mobility, and the fabrication process flow is simplified to incorporate a single accumulation metal-gate layer. We report a number of new results for the device which consists of two channels (upper and lower) formed with two separate accumulation gates. With other gates, a double-dot (in upper channel) and single-dot (in lower channel) can be formed under the accumulation gates energized positively. We demonstrate charge sensing of the upper double-dot with the lower single-dot. We also discuss the formation of a triple-dot formed by coupling the single-dot in the lower channel when made non-conducting to the double-dot in the upper conducting channel. We will discuss technological issues, and describe an intriguing and reproducible phenomenon in the quantum dot behavior that occurs at a temperature ~ 1 K during the ³He cryostat refresh cycle. [1] T. M. Lu *et al.*, Appl. Phys. Lett. **109**, 093102 (2016).

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