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**Gate Induced Strain in Silicon MOS-based Tunnel Junction Devices** RYAN STEIN, Joint Quantum Institute, University of Maryland, NEIL M. ZIMMERMAN, M.D. STEWART, National Institute of Standards and Technology — The coefficient of thermal expansion mismatch between typical MOS gate materials, such as Aluminum, and the underlying silicon substrate is capable of inducing strain that modifies the local silicon conduction band. For quantum dot devices measured at low temperatures, the induced strain is strong enough to lead to the formation of unintentional quantum dots and affect the tunnel coupling between dots. We investigate the role of gate-induced strain in quantum dot devices by measuring the I-V characteristics of tunnel barriers at cryogenic temperatures fabricated with a variety of gate materials. We will discuss our results in the context of exploiting these affects to simplify gate layouts or mitigating them in quantum dot devices.

Ryan Stein  
Joint Quantum Institute, University of Maryland

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