

Abstract Submitted
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Design of a scanning gate microscope in a cryogen-free dilution refrigerator MATTHEW PELLICCIONE, ADAM SCIAMBI, DAVID GOLDHABER-GORDON, Stanford University — We report on our design of an ultra-low temperature scanning gate microscope housed in a system with no liquid helium bath. The recent increase in efficiency of pulse-tube cryocoolers and pending scarcity of liquid helium have made “cryogen-free” dewars popular in recent years. However, this new style of dewar presents challenges for performing scanning measurements, most notably the increased vibrations introduced by the cryocooler. We will highlight the tradeoffs made in choosing such a system to house a scanner, and describe our efforts to achieve a stability suitable for measurements on mesoscopic systems.

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