

Abstract Submitted
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Frequency-tunable Conically-shaped Stub Cavities for Microwave Optomechanics JAY SHARPING, JACOB PARKER, JAKE PATE, University of California Merced — We report on our progress in constructing conical coaxial quarter-wave cavities having frequency tunability and optomechanical coupling. 3D optomechanical cavities have recently been exploited for macroscopic quantum mechanical experiments. We will discuss the response of quarter-wave cavities under two different frequency tuning conditions. One where a dielectric rod is inserted and a second where the conical central conductor is extended. We will also present results for the inclusion of an aluminum plane which simulates an optomechanical element. Based on our room-temperature results, we find that quarter-wave cavities of this design are attractive candidates for use as high quality factor superconducting radio-frequency systems for ultra-sensitive metrology and sensing.

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