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Noise study of insulating films within superconducting LC resonators A.N. RAMANAYAKA, Laboratory of Physical Sciences, College Park, MD, B. SARABI, Department of Physics, University of Maryland, College Park, MD, K.D. OSBORN, Laboratory of Physical Sciences, College Park, MD — Two-level systems (TLS) in amorphous dielectrics, known to be a major source of decoherence in superconducting qubits, are also known to cause low-frequency phase noise in resonating superconducting circuits. Here we will report on an effort to characterize this noise using microwave LC resonators fabricated with a trilayer capacitor containing a deposited silicon nitride dielectric film containing TLS, sandwiched by superconducting electrodes. The resonators are probed at frequencies of approximately 6 GHz and at temperatures of 10-200 mK. The noise dependence on temperature, microwave power, and dielectric volume will be discussed in the context of standard tunneling model of two level systems and newer models.

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