

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Microwave mode structure of superconducting metamaterial resonators** HAOZHI WANG, FRANCISCO ROUXINOL, MATTHEW LAHAYE, BRITTON PLOURDE, Syracuse University — Arrays of lumped circuit elements can be used to form metamaterial resonant structures that exhibit novel behavior compared to resonators made from conventional distributed transmission lines. By engineering the parameters and configurations of the lumped elements composing the unit cell of such a metamaterial resonator, one can generate spectra with wide stop-bands as well as pass-bands with dense microwave modes. If the metamaterials are fabricated from superconducting traces, the losses can be low enough to allow for these dense modes to be resolved and potentially coupled to quantum systems, such as superconducting qubits. We will present our low-temperature measurements of a variety of superconducting metamaterial resonators and we will compare these with numerical simulations of the microwave properties.

Haozhi Wang  
Syracuse Univ

Date submitted: 14 Nov 2014

Electronic form version 1.4