Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Development of superconducting transmission-line metamaterials

HAOZHI WANG, FRANCISCO ROUXINOL, B.L.T. PLOURDE, Syracuse University — In recent years, various metamaterials have received substantial attention for their ability to exhibit simultaneous negative permittivity and permeability. Such systems are commonly referred to as left-handed materials and display a variety of counterintuitive properties. We are investigating one-dimensional metamaterials consisting of superconducting circuit elements that operate in the microwave regime. In this talk, we will discuss our efforts to develop a superconducting left-handed transmission line (LHTL) coupled to a coplanar waveguide resonator (right-handed line –RHTL) to create a composite transmission line. Such a structure is predicted to exhibit an intriguing mode structure and we will discuss possible schemes for coupling superconducting qubits to these metamaterials.

Francisco Rouxinol
Syracuse University

Date submitted: 09 Nov 2012 Electronic form version 1.4