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Yue Chen* (chenyue0715@uky.edu), University of Kentucky, 767 Patterson Office Tower,
Lexington, KY 40506, and **Robert Lipton**. *Double Negative Behavior in Metamaterials*.

A generic class of metamaterials is introduced and is shown to exhibit frequency dependent double negative effective properties. In this talk, we introduce a rigorous method for calculating the frequency intervals where either double negative or double positive effective properties appear and show how these intervals imply the existence of propagating Bloch waves inside sub-wavelength structures. (Received August 28, 2013)