

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

A hybrid coupling model for radiating two-resonator structures with both near-field and far-field interactions WEI TAN, Beijing Computational Science Research Center, Beijing 100084, China, YONG SUN, ZHI-GUO WANG, HONG CHEN, Pohl Institute of Solid State Physics, Tongji University, Shanghai, 200092, China — Recently increased attention is paid to optical analogue of electromagnetically induced transparency (EIT). Various classical EIT configurations have been proposed in different optical platforms, showing a great potential for such applications as compact slow-light devices and low-loss metamaterials. In previous studies, only near-field coupling is considered. In fact, for more general two-resonator models, both near-field coupling and radiative interaction make contributions. We develop a hybrid coupling model that includes complex interactions to provide new insight into the coupling between two radiating resonators. It is shown that the previous classical EIT models are special cases of the hybrid coupling model. By introducing near-field and far-field coupling simultaneously, one can achieve novel electromagnetic responses. Microwave experiments are performed to realize this theoretical model, and various lineshapes are achieved by delicately tailoring the hybrid coupling.

Wei Tan
Beijing Computational Science Research Center, Beijing 100084, China

Date submitted: 14 Nov 2013

Electronic form version 1.4