

Abstract Submitted
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Fano Resonance in Photonic Crystals and Quantum Mechanics

SOLOMON DUKI, FRANCESC FERRER, H. MATHUR, Case Western Reserve University — We study the resonant transmission through a photonic crystal channel drop device. The frequency dependence of the resonant transmission is shown to have an asymmetric Fano line shape. In contrast to previous work [1] we find the symmetric Lorentzian line shape results only under special conditions of high device symmetry. We also study quantum systems in which the resonant scattering cross section has an asymmetric Fano line shape as a function of energy. Surprisingly the associated long-lived quasi-bound state under goes simple exponential decay, just as it would in the symmetric Lorentzian case.

[1] Shanhui Fan, Pierre R. Villeneuve, and J. D. Joannopoulos PRB 59, 15882 (1999)

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