

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Interpretation of Fano lineshape reversal in quantum waveguides¹

H.R. SADEGHPOUR, Harvard-Smithsonian CfA, Cambridge, MA 02138, N. MOISEYEV, S. KLAIMAN, Dept of Chemistry - Technion Institute of Technology, Haifa, Israel — Fano lineshape parameter (q) reversal is a proxy for interaction beyond the usual interference of indistinguishable quantum pathways. Reversal of the Fano parameter has been observed recently in quantum dots (QD). We show that such a profile reversal may come about from the interaction of interlopping over-the-top states (shape resonances) in the “non-resonant” channel with the QD bound states, interacting with the continuum channel (Feshbach resonances). Using this mechanism we show that with minimal modifications of the QD parameters, we can affect the presence or absence of interlopping resonances and hence lineshape profile reversal, as a way of coherence engineering.

¹National Science Foundation

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Date submitted: 14 Nov 2006

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