

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Towards random matrix model of breaking the time-reversal invariance of elastic waves in chaotic cavities by feedback OLEG ANTONIUK, RUDOLF SPRIK, Van der Waals-Zeeman Institute for experimental physics, University of Amsterdam, Amsterdam, The Netherlands — We developed a random matrix model to describe the statistics of resonances in an acoustic cavity with broken time-reversal invariance. Time-reversal invariance breaking is achieved by connecting an amplified feedback loop between two transducers on the surface of the cavity. The model is based on approach [1] that describes time-reversal properties of the cavity without a feedback loop. Statistics of eigenvalues (nearest neighbor resonance spacing distributions and spectral rigidity) has been calculated and compared to the statistics obtained from our experimental data. Experiments have been performed on aluminum block of chaotic shape confining ultrasound waves. [1] Carsten Draeger and Mathias Fink, One-channel time-reversal in chaotic cavities: Theoretical limits, Journal of Acoustical Society of America, vol. 105, Nr. 2, pp. 611-617 (1999)

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Date submitted: 30 Nov 2009

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