Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Nonuniversal Deviations From Predictions of the Random Matrix Theory of Wave Chaotic Scattering: Theory and Experiment[1] STEVEN ANLAGE, JAMES HART, ELLIOTT BRADSHAW, THOMAS ANTONSEN, EDWARD OTT, Physics Department, University of Maryland — The eigenfunctions and spectra of chaotic billiards are notoriously sensitive to small perturbations. Thus statistical approaches have been developed to model such systems. In recent work, we used random matrix theory to develop statistical models for the impedance of a chaotic microwave cavity coupled to a small number of antennas, with the only parameters being the radiation impedance of the antennas, the area of the cavity and a uniform loss parameter Q [S. Hemmady, *et al.*, Phys. Rev. Lett. **94**, 014102 (2005); X. Zheng, *et al.*, Electromagnetics **26**, 3 (2006)]. The theory generally agrees well with experiment, but under some circumstances the experimental and numerical results deviate significantly from the Random Matrix Theory predictions. We have derived a method of accounting for these deviations and have experimental and numerical results which agree well with our new, non-universal, predictions.

[1]Work supported by ONR MURI and AFOSR.

Steven Anlage
Physics Department, University of Maryland

Date submitted: 27 Nov 2007 Electronic form version 1.4