Universal and non-universal properties of wave chaotic scattering systems JEN-HAO YEH, University of Maryland, JAMES HART, ELLIOTT BRADSHAW, THOMAS ANTONSEN, EDWARD OTT, STEVEN ANLAGE — The application of random matrix theory to scattering requires introduction of system-specific information. Here, we show that the average impedance matrix, which characterizes such system-specific properties, can be semiclassically calculated in terms of ray trajectories between ports [1]. We compare theoretical predictions with experimental results for a microwave billiard, demonstrating that the theory successfully uncovered universal statistics of wave-chaotic scattering systems [2]. These results should be broadly useful in nuclear scattering, atomic physics, quantum transport in condensed matter systems, electromagnetics, acoustics, geophysics, etc. [1] James A. Hart, T. M. Antonsen, E. Ott, "**The effect of short ray trajectories on the scattering statistics of wave chaotic systems**," Phys. Rev. E **80**, 041109 (2009). [2] Jen-Hao Yeh, *et al.*, arXiv:0909.2674.

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