Towards a RMT Scattering-matrix with universal frequency correlations[1] RICHARD L. WEAVER, University of Illinois — We concern ourselves with the prediction of mesoscopic wave phenomena from statistical knowledge of classical trajectories. A diffusing particle picture for the flow of mean probability in chaotic systems is used to estimate dynamical features of mean square time-domain S-matrices for waves coupled in and out through one perfectly open channel. The additional constraint of unitarity and minimum phase, then leads to a unique and plausible S-matrix that exhibits familiar mesoscopic wave dynamics. These include enhanced backscatter, quantum echo, power law tails, level repulsion and spectral rigidity. We conjecture that a generalization to n x n S matrices would exhibit behavior identical to that of the GOE or GUE depending on its symmetries.

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