Using invariant manifolds to classify chaotic transport pathways in mixed phase space[1] KEVIN MITCHELL, University of California Merced — We describe how the topological structure of stable and unstable manifolds embedded within a chaotic phase space can be used to extract a symbolic classification of chaotic transport and escape pathways. We pay particular attention to phase spaces that contain a mixture of both chaos and regularity. For such systems, the dynamics in the vicinity of "stable islands" is known to be particularly troublesome to analyze. We describe a technique that utilizes the structure of invariant manifolds in the vicinity of such stable islands to extract a symbolic model for the islands' influence on the transport process. Though our analysis focuses on Hamiltonian systems of two degrees-of-freedom, we also discuss the extension of our technique to higher dimensional phase spaces.

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