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# Chaotic hypothesis and anomalous diffusion in coupled symplectic maps

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We investigate the high dimensional Hamiltonian chaotic dynamics in $N$ coupled area-preserving maps. We show the existence of an enhanced trapping regime caused by trajectories performing a random walk *inside* the area corresponding to regular islands of the uncoupled maps. As a consequence, we observe long intermediate regimes of power-law decay of the recurrence time statistics (with exponent $\gamma = 0.5$) and of ballistic motion. The same transient behavior is observed in an efective model that consist of a noise perturbed area-preserving map. The asymptotic decay of correlations and anomalous diffusion is normal in the noise-perturbed case and depend on the stickiness of the $N$-dimensional invariant tori in the full deterministic model. Detailed numerical simulations show weaker stickiness for increasing $N$ suggesting that high-dimensional Hamiltonian systems asymptotically fulfill the demands of the usual chaotic hypotheses.