Trajectories and escape rates from a collapsing basin: dependence on the rate of collapse of the basin ANTONIO CADILHE, T-12 Group, MS B268, Los Alamos National Laboratory, Los Alamos, NM 87545, USA; GCEP-Centro de Fisica da Universidade do Minho, 4710 Braga, Portugal, A.F. VOTER, T-12 Group, MS B268, Los Alamos National Laboratory, Los Alamos, NM 87545 — It has been shown that trajectories with different initial conditions synchronize in harmonic basins during Langevin-thermostatted molecular dynamics under the same time-noise sequence. Synchronization leads to exponential trajectory coalescence onto a single master trajectory [1]. We present our preliminary results extending previous research to include time dependent harmonic potentials, of the form $V(x,t) = A(1 - e^{\alpha t})V_o$, where A, α, and V_o are constants, which are relevant for understanding the dynamics of driven systems. We present analytical results for the synchronization behavior in the various regimes arising in this context. We also complement the study with numerical estimates of the escape rates for basins with escape paths and compare them to static, conventional rates of escape. [1] Blas P. Uberuaga, Marian Anghel, and Arthur F. Voter, J. Chem. Phys. 14, 6363 (2004).

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