Seeding and Modeling Mix in High-Energy-Density Physics Experiments F. W. DOSS, C. A. DI STEFANO, A. M. RASMUS, K. A. FLIPPO, E. C. MERRITT, D. W. SCHMIDT, Los Alamos National Laboratory — How one should model the mixing of materials by chaotic or turbulent motions remains an open issue. Contributing to the problem is the open question of what information must be retained of the initial conditions in order to model the late-time state effectively, particularly since the mixing may depend on fine-scale structure many orders of magnitude smaller than the larger scales of an experiment. At OMEGA-EP, where spherical crystal x-ray optics have enabled effective resolutions below 10 μm, we have been able to prepare repeated surfaces with specified broadband modal content, and to observe the evolution of the modal content into nonlinearity, resolving spectrally the dynamics of the surface evolution. Surveying results from these campaigns, we demonstrate that focused HED experiments can make a broad contribution to the essential issues of mix modeling, by elucidating the role of interfaces and their evolution under various conditions. *This work was conducted by Los Alamos National Laboratory, managed by Triad National Security LLC under U.S. DOE contract 89233218CNA000001.

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