

Abstract Submitted  
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**Automated parameter space searches for calibrating mix models in NIF ignition implosions**<sup>1</sup> NELSON HOFFMAN, LANL, BRUCE HAMMEL, OLEG SCHILLING, LLNL — Turbulent transport (“mix”) models typically have many adjustable coefficients, which must be calibrated against experimental or numerical simulation data. We calibrate mix models against high-resolution 2D simulations of NIF ignition capsules [Hammel *et al.*, *J. Phys.: Conf. Ser.* **112**, 022007 (2008)]. The time-varying radial profiles of species composition in the imploding capsule serve as the calibration reference. We perform one-dimensional implosion simulations using two mix models: one from Zhou, Zimmerman, and Burke [*Phys. Rev. E* **65**, 056303 (2002)] and a  $k - \varepsilon$  model by one of us (OS). We can calibrate so that one-dimensional composition profiles roughly match the simulation profiles for a Rev3 CH(Ge) ignition capsule at several times, although non-monotonic features of the profiles cannot be represented by the mix models. For fitting, we use automated scripts and fitting metrics, which allow parameter spaces of up to five dimensions to be searched rapidly. Besides identifying optimal coefficient sets, such searches reveal the sensitivity of model results to variations in inputs.

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