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An Implosion-Velocity Survey for Shock Ignition at the National Ignition Facility K.S. ANDERSON, P.W. MCKENTY, T.J.B. COLLINS, J.A. MAROZAS, Laboratory for Laser Energetics, U. of Rochester, M. LAFON, R. BETTI, Laboratory for Laser Energetics and Fusion Science Center, U. of Rochester — Shock ignition (SI) is a low-energy, high-gain alternative path to ignition at the National Ignition Facility (NIF). In SI, a high-intensity laser spike added at the end of the compression pulse launches a strong shock into the precompressed capsule, raising the hot-spot pressure and temperature. This spike pulse allows SI targets to achieve ignition temperatures at lower shell velocities than standard hot-spot implosions. Optimizing the ignition margin in SI implosions requires finding an implosion velocity that balances 1-D target performance with multidimensional stability characteristics. Polar-drive SI designs for the NIF at 700 kJ will be reviewed and compared for stability and margin in 1-D and 2-D simulations at implosion velocities varying from 260 to 300 km/s. Stability studies will include both polar-drive beam geometry and beam repointing as well as laser-imprinted nonuniformities from laser speckle. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and the Office of Fusion Energy Sciences Number DE-FG02-04ER54786.

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