

## **Advances in Diagnostic Capabilities at the National Ignition Facility**

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Experiments at the National Ignition Facility utilize a comprehensive suite of x-ray, optical and nuclear diagnostics. These instruments play a key role in characterizing the performance of the hohlraum, measuring the symmetry of the drive and the velocity imparted to the capsule, and the shape of the hot-spot and cold fuel layer during the hydro assembly of the fuel.

The fast timescales and the harsh environment of these implosions impose tight constraints on the performance of these instruments, both in terms of temporal and spatial resolution and their survivability. Several existing diagnostics have undergone upgrades to significantly improve their performance. An overview of the diagnostic capability at the NIF will be presented, and the design and improved performance of new and upgraded diagnostics will be discussed..

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