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Diagnosing Large Simulations of Laser-Plasma Interaction for NIF ignition targets.[1] BRUCE LANGDON, DENISE HINKEL, STEVE LANGER, BERT STILL, ED WILLIAMS, Lawrence Livermore National Laboratory — We have deployed a variety of diagnostics for the pF3d laser-plasma interaction (LPI) simulation code, which includes paraxial wave optics, multi-species hydrodynamics, and models for stimulated scattering. We present a survey of the diagnostics we use to process the data from the simulations and the directions of their development for very large massively-parallel simulations in support of upcoming 96 beam experiments at NIF next year and ignition. Two examples: Now that we can simulate over the entire beam path in the complex interior of an indirect-drive ignition target, we need to be able to form the spatial distribution of the power absorption of the laser and backscattered light. Such post-processing is itself a parallel processing endeavor due to the large number of spatial cells involved. To compare with experimental near-field streak spectra of backscattered and transmitted light, obtained at the "full aperture backscatter stations", we form synthetic near field streak spectra. For forensic purposes we can also calculate spectra inside the target, which are experimentally inaccessible.

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