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Simulation studies of the re-emit technique for foot tuning of the NIF ignition pulse[1] JOSE MILOVICH, EDWARD DEWALD, JOHN EDWARDS, DON MEEKER, LLNL — The re-emit technique has been proposed to tune the drive flux asymmetry within the first 2 ns of the ignition pulse. This technique measures the soft x-ray emission of a high-Z sphere (in place of a NIF capsule) using several frequency bands. We present numerical results designed to validate this method. Capsule-only simulations show a linear relationship between imposed and re-emitted flux asymmetry. 2D hohlraum simulations show similar plasma conditions for both ignition and re-emit capsules up to ∼4 ns. However, simulations predict that an inner-beam-driven heat conduction wave impacts the re-emit sphere limiting the applicability of this technique beyond 2 ns. The effect of diagnostic holes and beam removal is assessed by performing 3D simulations. They show a 4% offset in the measured asymmetry, largely time independent and consistent with view-factor calculations. These results combined with the experimental accuracy estimates, show that the re-emit is effective for tuning the first ∼2ns of the ignition pulse.

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