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Design of a diagnostic technique for timing the 4^{th} shock on NIF¹ H.F. ROBEY, D.H. MUNRO, B.K. SPEARS, LLNL — Ignition capsule implosions planned for the National Ignition Facility (NIF) require a pulse shape with a carefully designed series of steps, which launch a series of shocks through the ablator and DT ice shell. The relative timing of these shocks is critical for maintaining the DT fuel on a low adiabat. The current NIF specification requires that the timing of the first three shocks be determined to an accuracy of +/- 50ps and the 4^{th} shock be tuned to an accuracy of +/- 100ps. To meet these requirements, experiments are being planned to measure the shock timing on NIF. A reliable technique (VISAR) has been demonstrated [1] for timing the first three shocks. At the hohlraum conditions present during transit of the 4^{th} shock, however, the required VISAR window is expected to go opaque. A new technique using the Streaked Optical Pyrometer (SOP) to measure shock breakout through a diagnostic "inner" shell is proposed. The accuracy of this technique is presented.

[1] D. H. Munro *et al.*, *Phys. Plasmas* **8**(5), 1552 (2001).

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