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Absolute x-ray and neutron calibration of CVD-diamond-based time-of-flight detectors for the National Ignition Facility[1] A. ROSENTHAL, N. V. KABADI, H. SIO, H. RINDERKNECHT[2], M. GATU JOHNSON, J. A. FRENJE, F. H. SEGUIN, R. D. PETRASSO, MIT, V. GLEBOV, C. FORREST, J. KNAUER, LLE — The particle-time-of-flight (pTOF) detector at the National Ignition Facility routinely measures proton and neutron nuclear bang-times in inertial confinement fusion (ICF) implosions. The active detector medium in pTOF is a chemical vapor deposition (CVD) diamond biased to 250 – 1500 V. This work discusses an absolute measurement of CVD diamond sensitivity to continuous neutrons and x-rays. Although the impulse response of the detector is regularly measured on a diagnostic timing shot, absolute sensitivity of the detector's response to neutrons and x-rays has not been fully established. X-ray, DD-n, and DT-n sources at the MIT HEDP Accelerator Facility provide continuous sources for testing. CVD diamond detectors are also fielded on OMEGA experiments to measure sensitivity to impulse DT-n. Implications for absolute neutron yield measurements at the NIF using pTOF detectors will be discussed.

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