

Abstract Submitted
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Neutron Time-of-Flight Detectors Based on Vacuum Photodiodes for the NIF and LMJ V.YU. GLEBOV, T.C. SANGSTER, C. STOECKL, S. ROBERTS, Laboratory for Laser Energetics, U. of Rochester, M.J. MORAN, LLNL, B. DAVIS, Bectel — A traditional neutron time-of-flight (nTOF) detector uses a scintillator coupled with a fast photomultiplier tube with gains from 10^3 to 10^6 . The high neutron yields that will be produced at the NIF and LMJ make the use of vacuum photodiodes with a gain of 1 in the nTOF detectors possible. The advantages of vacuum photodiodes are that they are insensitive to hard x-ray and gamma-ray backgrounds and that they have a very large dynamic range. The sensitivities and time responses of PDD-99 and PD040 vacuum photodiodes were measured in DT and DD implosions on the 60-beam OMEGA Laser System. The sensitivities of the detectors to hard x rays, gammas, and EMP noise were studied. The implementation of the nTOF detectors based on vacuum photodiodes on the NIF will be discussed. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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