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## 6.27 Testing a Cherenkov Neutron Time-of-Flight Detector on OMEGA

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A Cherenkov neutron time-of-flight (nTOF) detector developed and constructed at LLNL was tested on OMEGA 13 m from the target in a collimated line of sight and at 5.3 m from the target in the open space inside the OMEGA Target Bay. The neutrons interacting with the quartz rod generate gammas, which, through Compton scattering, produce relativistic electrons that give rise to Cherenkov light. The Cherenkov nTOF detector consists of 8-mm-diam, 25-cm quartz hexagonal prism coupled with Hamamatsu gated microchannel plate photomultiplier tube R5916U-52. The tests were performed in DT direct-drive implosions with cryogenic and room-temperature targets with a wide range of neutron yields and ion temperatures. The results of the tests and comparison with other nTOF detectors on OMEGA will be presented. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

Primary author(s) : GLEBOV, Vladimir (Laboratory for Laser Energetics, University of Rochester)

Co-author(s) : ECKART, Mark Joseph (LLNL); FORREST, Chad (LLE); GRIM, Gary Patrick (LLNL); HARTOUNI, Edward (LLNL); HATARIK, Robert (LLNL); KNAUER, James (LLE); MOORE, Alastair (LLNL); REGAN, Sean (LLE); SANGSTER, Thomas Craig (LLE); SCHLOSSBERG, David (LLNL); STOECKL, Christian (LLE)

Presenter(s) : GLEBOV, Vladimir (Laboratory for Laser Energetics, University of Rochester); ECKART, Mark Joseph (LLNL); FORREST, Chad (LLE); GRIM, Gary Patrick (LLNL); HARTOUNI, Edward (LLNL); HATARIK, Robert (LLNL); KNAUER, James (LLE); MOORE, Alastair (LLNL); REGAN, Sean (LLE); SANGSTER, Thomas Craig (LLE); SCHLOSSBERG, David (LLNL); STOECKL, Christian (LLE)

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