

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**Time-dependent neutron energy diagnostic** CINDY R. CHRISTENSEN, National Security Technologies — The NTOF diagnostic used in ICF experiments uses detectors placed far from the source to remove the influence of the neutron time history, and give only energy information, averaged over emission time. Unfortunately, this information is easily misinterpreted. The Gamma Reaction History diagnostic is not susceptible to thermal dispersion, but by that fact does not tell us anything about the source thermal energy distribution. A wealth of information is potentially available from an array of neutron detectors placed over a wide range of distances from the source, whose signals are combined mathematically to infer an arbitrary source energy distribution as a function of time. A Maxwellian plasma is not assumed. Simultaneously, the source time history (total neutrons per second) is obtained. Simulations using representative instrument response functions are used to show the effects of noise, and the quality of signal available as a function of yield and the number and spacing of detectors.

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Date submitted: 23 Jul 2015

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