Neutron Detection with Bubble Chambers M.C. GHILEA, D.D. MEYERHOFER, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester, R.A. LERCHE, LLNL, L. DISDIER, CEA — To improve neutron imaging resolution, we have developed a general imaging design tool for inertial confinement fusion facilities that can simulate aperture errors, generate arbitrary neutron source distributions, simulate arbitrary aperture shapes, calculate point-spread functions using ray tracing, and reconstruct source images using a variety of filter functions. Predicted system performance can be compared to various concepts before construction. This software design tool is being developed for the UR/LLE OMEGA laser and the NIF as part of a process to design and build an imaging system based on a bubble chamber detector[1] for the UR/LLE OMEGA laser. This talk will present the latest results on aperture contributions to system performance and review the conceptual design of the bubble chamber-based imaging system, its conceptual design being reviewed in the second part of the presentation. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

[1]R. A. Lerche *et al.*, Rev. Sci. Instrum. **74**, 1709 (2003).

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