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Modeling of Multiple-Ion Heat Transport in ICF Implosion D. LI, V.N. GONCHAROV, A.V. MAXIMOV, S. SKUPSKY, I.V. IGUMENSHCHEV, Laboratory for Laser Energetics, U. of Rochester — Both the fuel and ablator material in target designs for direct- and indirect-drive ICF implosions consist of a mixture of different elements (D and T, H and C, etc.). In calculating the thermal conduction in both hot plasma corona and in the compressed fuel core, the hydrodynamic codes typically approximate the multi-ion plasma with an average single-ion model. Such an approximation, as pointed out earlier,[1] could give large errors in calculating ion thermal flux and the electron-ion energy exchange rate, especially when the mass or charge ratio between different species is large. To assess the accuracy of the average-ion model in modeling ICF-related experiments, a full multi-species transport model was implemented in the 1-D hydrocode *LILAC*. This talk will present results of simulations with the new ion-thermal conduction model applied to room temperature, as well as cryogenic, implosions on OMEGA. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]E.M. Epperlein, R.W. Short, and A. Simon, Phys. Rev. E **49**, 2480 (1994).

Valeri Goncharov
Laboratory for Laser Energetics, U. of Rochester

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