Abstract Submitted
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Improving the accuracy of hohlraum simulations by calibrating the 'SNB' multigroup diffusion model for nonlocal heat transport against a VFP code[1] JONATHAN BRODRICK, CHRISTOPHER RIDGERS, BEN DUDSON, University of York, ROBERT KINGHAM, Imperial College London, MARTY MARINAK, MEHUL PATEL, MAXIM UMANSKY, Lawrence Livermore National Laboratory, ALEX CHANKIN, Max-Planck-Institute of Plasma Physics, Garching, JOHN OMOTANI, Chalmers University of Technology — Nonlocal heat transport, occurring when temperature gradients become steep on the scale of the electron mean free path (mfp), has proven critical in accurately predicting ignition-scale hohlraum energetics. A popular approach, and modern alternative to flux limiters, is the 'SNB' model[2]. This is implemented in both the HYDRA code used for simulating National Ignition Facility experiments and the CHIC code developed at the CELIA laboratory. We have performed extensive comparisons of the SNB heat flow predictions with two VFP codes, IMPACT[3] and KIPP[4] and found that calibrating the mfp to achieve agreement for a linear problem also improves nonlinear accuracy. Furthermore, we identify that using distinct electron-ion and electron-electron mfp's instead of a geometrically averaged one improves predictive capability when there are strong ionisation (Z) gradients.

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[2]Schurtz *et al.* **Phys. Plasmas** 7, 4238 (2000)
[3]Kingham & Bell **J. Comp. Phys.** 194 (2004)
[4]Chankin *et al.* **Contrib. Plasma Phys.** 52, 500 (2012)

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