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KULL Simulations of OMEGA Radiation Flow Experiments[1] J. KALLMAN, S. MACLAREN, K. BAKER, T. BRUNNER, K. LEWIS, M. ZIKA, Lawrence Livermore National Laboratory — The problem of radiation flow in a right circular cylinder is of interest for the verification and validation of radiation codes since the flow is analytically analogous to diffusive free molecular flow in a similar geometry.[2] Experiments were conducted on the OMEGA laser utilizing a low-density heated-cylindrical-wall target. The targets consisted of a 1.6 mm diameter gold hohlraum containing an on-axis 700 μm diameter SiO_2 cylinder inside an 80 μm thick Ta_2O_5 aerogel tube. The FY13 targets also feature "light-pipe" diagnostics to measure the progression of the radiation front inside the foam. Simulations were run with the KULL multi-physics code, employing a new laser ray-tracing package. Comparisons of synthetic diagnostics derived from code results to x-ray measurements of drive temperature and heat front propagation provide a methodology to constrain simulation models.

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[2]E. Garelis and T.E. Wainwright. Phys. Fluids. **16**, 4 (1973)

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