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Analytic Expressions for Cocktail Hohlraum Wall Losses¹ MORDECAI ROSEN, OGDEN JONES, LAURANCE SUTER, LLNL — We apply recent analytic solutions [1] to the radiation diffusion equation to problems of interest for ICF hohlraums. The solutions provide quantitative values for absorbed energy which are of use for generating a desired radiation temperature vs. time within the hohlraum. In particular we use analytic fits to the rosseland mean opacity and to the specific heat of combinations of materials ("cocktails") designed to maximize the former while minimizing the latter. By doing so we find good agreement with numerical simulations. In particular we find that the wall loss savings of cocktails vs. the standard gold walled hohlraums have both pulse-length and temperature dependencies. Due to those dependencies we predict that NIF cocktail hohlraums will perform better than present day cocktail experiments.

[1] J.H. Hammer and M. D. Rosen, pop 10, 1829 (2003).

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