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Luminosity Curve Calculations and Applications in Radiation Hydrodynamics Codes JC CANRIGHT, New Mexico Institute of Mining and Technology, WESLEY EVEN, JOSHUA DOLENCE, Los Alamos National Laboratory — An algorithm is described by which calculations of the escaping luminosity from a laser-ionized plasma, supernova, atmospheric blast, or similar scenario may be performed using LANLs OPLIB database. This algorithm exists in the SPECTRUM code for computing supernova light curves; jaytrace, a robust, lightweight toolkit suitable for plasma experiments, atmospheric blast simulations, and similar scenarios is described herein. LANLs radiation hydrodynamics code xRAGE is often used for stellar and atmospheric blast simulations, wherein observed spectra are of paramount importance; due to the often exponential dependence of opacity on temperature and density, small numerical artifacts can significantly alter the observed spectra. jaytrace is used to determine the effects of numerical artifacts in the code, notably shock front dispersion, and inform methods by which to correct them. Further examples are examined in the area of laser-induced high-energy-density plasmas.

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