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Effects of Opacity Uncertainties on Simulations of Radiative Shock Experiments[1] BRUCE FRYXELL, ERIC MYRA, University of Michigan — It is straightforward to generate radiative shocks in the laboratory using high-energy lasers. In one such experiment, a thin Be disk is attached to a shock tube filled with Xe gas. The laser pulse accelerates the Be disk, which acts like a piston, driving a strong shock into the Xe. Radiation produced in the hot, post-shock Xe, heats the tube walls ahead of the shock. Material then ablates from the tube walls, and a "wall shock" is driven inward toward the center of the shock tube. This results in a complex shock structure in which the primary shock and the wall shock intersect at a triple point. To date, attempts to simulate this morphology have produced shock structures far more complex than what has been seen in the experiments. One possible explanation for this discrepancy is uncertainty in the opacities of Xe and polyimide, which is used for the shock tube walls. A series of simulations is discussed in which these opacities are varied in order to see what effects they have on the flow morphology. The goal is to determine what opacity values produce results that are the most consistent with the experimental data.

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