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Early emission from supernova explosions through dense porous shells[1] SHANE COFFING, CAROLYN KURANZ, Univ of Michigan - Ann Arbor, CHRIS FRYER, Los Alamos National Laboratory — The emission from supernovae is produced as the energetic shock produced in a stellar core bursts out of its star, allowing the energy from the explosion to be emitted through photons. This initial shock breakout produces a burst of UV and X-ray photons that can be used to probe the stellar and explosion properties. But most calculations to date assume a smooth transition of the material surrounding the star. Radiatively-driven instabilities, mass eruptions, convective instabilities, and other mechanisms can produce large scale inhomogenous structures such as dense shells and clumps in the wind. Supernova explosions that propagate through such winds can produce widely varying emission. In this work, we present results of 1D and 2D multi-group radiation hydrodynamic simulations of supernova explosions through dense porous shells, in which the structure in the shell is clumpy, irregular, and optically porous.

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