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Linking Type IIn Supernovae with Massive Progenitors LEAH HUK, CHAREE PETERS, JENNIFER HOFFMAN, University of Denver — Within the two major supernovae types, types I and II, several subcategories have arisen in recent years that mainly differ from each other in their spectral characteristics. However, it is unclear which types of massive stars give rise to each particular subcategory of supernovae. Studying the circumstellar material (CSM) surrounding IIn supernovae, the result of mass loss episodes prior to core collapse, allows us to constrain the properties of the progenitor stars. We use a three-dimensional Monte Carlo radiative transfer code called SLIP to model hydrogen-alpha emission line profiles of IIn supernovae. The code allows us to vary several parameters of the CSM including geometry, temperature, optical depth, and initial photon distribution. We present initial comparisons of our model results with observations of SN 1997eg from the Keck Telescope using chi-squared analysis to identify the best fit from a grid of 108 models. Future comparisons of additional IIn supernovae with our models will provide overall insight into common trends amongst CSM characteristics and thus properties of IIn progenitors. This research is supported by the National Science Foundation, the University of Denver, and Vanderbilt University.

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