

Further developments in multidimensional simulations of PISN

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According to theoretical models, massive stars with masses within the 100–250 M_{\odot} range should explode as pair-instability supernovae (PISNe). Since the first stars of the Universe are believed to be very massive, these supernovae should play a significant role in the early stages of its history. But these stars represent the last unobserved population, owing to detection limits of current telescopes. In this work we analyze pair-instability supernovae explosions using various numerical codes. We evolve series of the configurations of oxygen cores to establish a range of masses and initial conditions where this type of explosion is possible. We also study the role of possible instabilities in the propagation of shockwaves during the last stage of the explosion. This investigation could help us to predict the observational properties of PISNe for future space and ground telescopes.

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