

Photometric indicators of first superovae: radiation hydrodynamics simulations

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Nowadays in the nearby Universe astronomers detect about 10 supernovae (SNe) per day. All these SNe lead to the formation of metal-rich stars in billions of years after the explosion. In the coming years in the distant Universe or metal-free gas pockets we expect the detection of the first SNe. Their progenitors are zero-metal, compact stars and the explosion leads to the formation of metal-poor stars in next generation. The first SN explosions have strong dynamical, thermal, and chemical feedback on the formation of subsequent stars and evolution of galaxies. The question is how to identify first SNe? How do they explode? Using the observed abundance patterns of the metal poor stars we perform radiation hydrodynamics simulations to find the difference between the first and normal SNe. We find that first SNe are usually bluer, shorter and fainter. The peculiarities of the color evolution can be used as easy-to-use indicator of the first SNe by current and future surveys.

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Talk/Poster

Talk

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