Explosive Ideas about Massive Stars - from Observations to Modeling

Herschel Detects a Massive Dust Reservoir in Supernova 1987A
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We report a surprising detection of the supernova 1987A at far-infrared and submillimetre (submm) wavelengths in 2010. As a part of the Herschel Large and Small Magellanic Cloud surveys (HERITAGE; principal investigator Margaret Meixner), the Herschel Space Observatory scanned the sky in the direction of SN 1987A, and found a faint but clear point source. The source was detected at four wavelength bands from 100 to 350 microns. The smooth spectral energy distribution shows a continuous shape peaking near 200 microns and we conclude that the far-infrared/submm signature is due to thermal dust emission. The estimated dust mass is between 0.5-0.7 solar mass, which is limited by the available elemental mass synthesised in the SN. This new detection by Herschel implies that supernovae can contribute to the overall dust-mass input in the interstellar medium of galaxies.

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