

The Evolution of the Central Component in Supernova 1986J

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A new, bright radio component was recently discovered near the center of the expanding shell of supernova 1986J. The new component was first seen as an inversion in the integrated spectrum above 5 GHz. Subsequent multi-frequency VLBI measurements showed that this inversion was related to a new component in the center of the projected shell, rather than to a known hot spot in the shell. Neither such a spectral inversion nor a central component has been seen in any other supernova. The new component is likely energetic output from accretion onto a black hole, like jets or lobes, or the nebula formed around an energetic young neutron star in the center of SN 1986J, which, for the first time, would directly link a black hole or a neutron star to a modern supernova. We report on our latest results: the central component has brightened at low frequencies, and is now prominent at 5 GHz. We discuss the evolution of the radio spectrum of SN 1986J and present a resolved image of the central component at 22 GHz.