A Decade of Radio and X-ray Observations of SN 1993J

I will review ten years of radio continuum and X-ray monitoring of the Type IIb SN 1993J in M81. The supernova (SN) has been observed continuously, since only a few days after explosion, by our group with the Very Large Array at a number of radio frequencies, as well as by other groups. As a result, it is the best-studied radio supernova. The observed synchrotron radio emission is thought to arise from the interaction of the SN shock with the pre-SN wind-established circumstellar medium around the progenitor star. I will describe the properties of the circumstellar interaction, based on the more fully-developed dataset, and compare this to our earlier characterization (flatter circumstellar density profile, a decrease in the pre-SN mass-loss rate, the presence of higher density 'clumps' or 'filaments' embedded in the stellar wind) made in 1994. I will place SN 1993J in context with other radio Type IIb SNe and, briefly, with other radio SNe. SN 1993J has also been a target of ROSAT, ASCA, and Chandra, and I will discuss the nature of the X-ray emission (also thought to arise in the reverse shock of the circumstellar interaction) and, together with the radio emission, describe the implications for the nature of the SN's progenitor.