[IM03] [Fe II] and H2 filaments in the Young Supernova Remnant G11.2-0.3

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We report the discovery of [Fe II] 1.644 um and H2 2.12 um filaments in the young Galactic supernova remnant G11.2-0.3. Two long [Fe II] filaments are discovered along the radio shell together with some faint, knotty [Fe II]-emission features inside the remnant. Two separate, small H2 filaments are discovered in the outer parts of the radio shell. We have detected several [Fe II] lines and a H Br gamma line toward the [Fe II] peak position, and H2 (2-1) S(3) line toward the H2 peak position. We derive extinction and electron density from [Fe II] line ratios and an excitation temperature from H2 line ratios. We suggest that the H2 filaments are dense clumps in presupernova wind swept up by ambient shock. Our result provides a strong evidence for an ambient shock beyond the radio shell, and supports that G11.2-0.3 is the remnant of SNIIL/b interacting with dense red supergiant wind. We discuss the dynamical evolution of the remnant.

[IM04] HI 21cm and 1420 MHz radio continuum study of IC443 usgin VLA and Arecibo telescope

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We report 21cm radio continuum and HI line observation of Galactic supernova remnant IC443 using VLA and Arecibo radio telescope. By merging the VLA and Arecibo data, which covers full area of IC443, and analyzing together, we achieved unprecedented combination of sensitivity and angular resolution with short-spacing information correctly incorporated. IC443 is consist of two nearly concentric shells. Rradio continuum intensity profile of the southwestern shell radially decreases, supporting that this is a breakout portion of the remnant into a rarefied medium. The eastern boundary of the remnant shows interesting features not found in other parts of the shell, such as faint radio continuum halo and spurs. They are mainly found along the overlapping region of IC443 with another remnant G189.6+3.3. We utilize HCO+(1-0) spectra, which is free from the contamination of general Galactic medium, as a template spectrum and estimate a total HI mass (490+-60 solarmass) and that of individual filaments and clumps. Our high resolution data enables us to resolve the shocked HI in northeastern region into two filamentary structures, which are well correlated with radiative filaments, both in position and velocity. The large HI mass of these filaments is not well explained by a shock propagating into clumpy medium, and a model with a radiative shell is preferred. This leads to an remnant age of 2x10^4 yrs.