[IM09] SRAO CO J=1-0 Line Observation of the Supernova Remnant 3C434.1: A Molecular Cloud - Blocked Remnant

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We present CO J=1-0 line observation of Galactic supernova remnant 3C434.1 (G94.0+1.0) using the SRAO 6-m telescope. 3C434.1 is a ~30′-sized, shell-type supernova remnant with its western part much weaker than the eastern part in radio continuum. We have mapped the 37′X38′ (R.A.XDec.) area surrounding the source in 1′ resolution and discovered several distinct molecular clouds at LSR velocities between -95 and +35 km/s. The one at -13km/s is located in the western part of the remnant along the bright radio-continuum boundary of the remnant. But no broad CO lines expected from shocked molecular gas are found. We discuss the possibility that the molecular cloud is blocking the expansion of the supernova blast wave.

[IM10] Numerical Simulations on the Dynamical Evolutions of the Supernova Remnants near the Edges of the Molecular Clouds

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We have carried out 3-D numerical simulations on the dynamical evolution of supernova remnants near the edges of large dense clouds to understand the break-out morphology SNRs. We vary the depth of SN explosion within the cloud and also the density contrast between the cloud and the intercloud medium which are in the pressure equilibrium. We find a power-law relationship between the SNR radius and the age. The closer to the edge of the cloud the SN explodes and the bigger the density contrast is, the exponent converges to 3/4 toward the intercloud medium and to 3/5 in the opposite limit.
We carry out a higher (10243) resolution simulation for the case when the SN explodes at 2.5 pc from the cloud edge. We find a clumpy structure in the shell and colliminated gas flow toward the intercloud medium. We explore the origin of these structures.