

# High Resolution HC<sub>3</sub>N Observations toward the Central Region of Sagittarius B2

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## Abstract

We have observed the emission of HC<sub>3</sub>N J= 4-3, 5-4, 10-9 and 12-11 transitions toward the Sgr B2 central region in an area of 150"×150" with resolutions of 16"-48". The intensities and central velocities of line profiles show significant variations with positions. In contrast to the intensities of the low J-level transitions which gradually increase from the central source toward the outside region, the HC<sub>3</sub>N emission of the high J-level transition become stronger toward the central radio continuum source MD5. Systematic change in the radial velocity of each line profile occurs along north-south direction. There are a few peaks in most line profiles, and these indicate that there are multiple velocity components along the line of sight. Distributions of excitation temperature and column density which were estimated from the excitation calculations show the existence of a small(1×2pc), hot(T<sub>ex</sub>> 50K) core which contains two temperature peaks at -15" east and north of MD5. The column density of HC<sub>3</sub>N is (1-3)×10<sup>14</sup>cm<sup>-2</sup>. Column density at distant position from MD5 is larger than that in the central region. We have deduced that this 'hot-core' has a mass of 10<sup>5</sup>M<sub>⊙</sub>, which is about an order of magnitude larger those obtained by previous studies.