

P15a 低質量星形成領域 L1527 におけるラインサーベイ観測

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L1527 is a low-mass star forming region showing a peculiar chemistry called warm carbon-chain chemistry (WCCC). In this source, various carbon-chain molecules are abundant in the vicinity of the protostar. It is proposed that they are produced near the protostar, triggered by evaporation of CH_4 from grain mantles (Sakai et al. 2008). This is in contrast to the conventional carbon-chain chemistry in cold clouds (e.g. Suzuki et al. 1992). In order to characterize and explore the WCCC mechanism, the complete understanding of the chemical composition of L1527 by an unbiased spectral line survey is essential.

With this motivation, we are conducting spectral line surveys in the 3 mm band toward L1527 with the Nobeyama 45 m telescope, as one of the NRO projects. The frequency range so far observed is from 83 to 92 GHz with the rms noise level of less than 5 mK. Spectral lines of various carbon-chain molecules and their related species have been detected as well as number of unidentified species. In this frequency range, we detected more than 100 lines. On the other hand, spectral lines of saturated complex organic molecules such as HCOOCH_3 and CH_3OCH_3 which are seen in the hot corino sources are not found. The result shows a clear chemical difference between the WCCC and hot corino sources. This line survey data, combined with those toward other star forming regions, will be a fundamental base for exploring the chemical diversity of protostellar envelope. Completion of the survey for the whole frequency range is thus urgent.