

Hydrogen and nitrogen isotope fractionation in star- and planet-forming regions

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Molecular isotope ratios are useful tools to investigate the molecular evolution in star- and planet-forming regions. Radio observations have revealed that molecules in star- and planet-forming regions are significantly enriched in deuterium. This can be, at least qualitatively, explained by low temperature (< several tens K) gas phase chemistry, which prefer transferring deuterium from HD (i.e., the main form of deuterium) to other molecules. On the other hand, it has been found that molecules in the cold gas of star-forming regions are not necessarily enriched in heavy nitrogen (^{15}N), rather they tend to be depleted in ^{15}N . The mechanism of ^{15}N fractionation in star-forming regions remains unclear. In this presentation, we discuss recent observational and theoretical findings on hydrogen and nitrogen fractionation in star- and planet forming regions.

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