Analysis of the methanol (CH3OH) and deuterated methanol (CH2DOH) emission around IRAS16293B from ALMA band 9 observations

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Résumé

The solar-mass protostar IRAS16293-2422 has been observed with ALMA during the Science Verification Phase. Here we used the observations performed in the submillimeter with ALMA band 9 (686.5-692.2 GHz and 702.2-705.1 GHz). The maps show a very complex structure around IRAS16293A, but a much simpler one around IRAS16293B, where the bulk of the continuum emission originates. This simple structure and the large number of CH3OH, 13CH3OH and CH2DOH lines present in this frequency range, covering a subsantially large range of Eup, allow to determine the colum-densities of these 3 species and to derive the 12C/13C isotopic ratio and the Deuterium fractionation of the gas infalling onto the source. A comparison with SMA observations in the millimeter range (_˜340 GHz) will also be presented.

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