

High spectral resolution observations of the molecular hydrogen emission in the Orion molecular cloud

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Description: -

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P2 and D1 are parts of another associated cloud, the blue cloud, located in front of the H ii region. Reproduced with permission from Blake GA, Sutton EC, Masson CR, and Phillips TG 1987 Molecular abundances in OMC-1: The chemical composition of interstellar molecular clouds and the influence of massive star formation.

The ground state of molecular hydrogen

As the cloud core collapsed, most of its mass fell to the center to become a T Tauri star, while the remaining material formed a rotationally supported disk or protoplanetary nebula. The column density at P2 where the collision has not taken place is about half of that at P1; if we then assume D1 had a column density comparable to that of P2 prior to the collision, the collision increased the column density by a factor of two.

Synthetic [C ii] emission maps of a simulated molecular cloud in formation

The data were obtained with the Ultraviolet and Visual Echelle Spectrograph at the 8. The value of the excitation temperature and statistical error at a given position, x,y, is, respectively, the mean and dispersion of the T ex distribution.

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These two velocity components seem to be merged into a single velocity component. Previous calibrations of the 13CO abundance in cold, dark clouds may not apply to the more massive GMCs that contribute the bulk of the CO luminosity in galaxies.

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We found that the associated cloud consists of two independent velocity components. Second, at 118—117 the bright 1—0 Q-branch lines at 2.

Synthetic [C ii] emission maps of a simulated molecular cloud in formation

Most of them are suggested to be in the mass accretion phase by 10 μm observations Haisch et al. It is unlikely that the structure was created by chance in a process of the self-gravitational evolution of the blue cloud. Bally, on which the location of the GNIRS slit, oriented 28 72 west of north, is superimposed.

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Submaps were observed so that adjacent blocks overlap. Figures a and b are integrated intensity distributions of the blue and red clouds, respectively, using integration velocity ranges defined above. The transition of ^{13}CO abundances from the UV-illuminated envelope to the self-shielded interior is dependent on the physical conditions.

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