

THE CO TRANSITION FROM DIFFUSE MOLECULAR GAS TO DENSE CLOUDS: PRELIMINARY RESULTS

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The atomic to molecular transitions occurring in diffuse interstellar gas surrounding molecular clouds are affected by the local physical conditions (density and temperature) and the radiation field penetrating the material. The material is closely connected to CO-dark gas, which is not associated with emission from H I at 21 cm or from CO at 2.6 mm. Using optical observations of CH, CH⁺ and CN absorption from McDonald Observatory and the European Southern Observatory in conjunction with UV observations of CO and H₂ absorption from FUSE, we explore the changing environment between diffuse and dense gas, emphasizing trends in column density, excitation temperature, gas density, and velocity structure. This presentation will focus on the completed analysis involving H₂ and on the preliminary results of CO for our sample.