

[☞IM-05] A Survey of Diffuse Interstellar Molecular Hydrogen with the Berkeley Extreme and Far-Ultraviolet Spectrometer

이대희
한국천문연구원,

We present measurements of diffuse interstellar H₂ absorption lines in the continuum spectra of 10 early-type stars that were observed with the Berkeley Extreme and Far-ultraviolet Spectrometer (BEFS) on the ORFEUS telescope, which flew on the ORFEUS-SPAS I and II space-shuttle missions in 1993 and 1996, respectively. The spectra extend from the interstellar cutoff at 912 Å to about 1200 Å with a resolution of ~ 3000 and statistical signal-to-noise ratios between 10 and 65. Assuming a Doppler broadening velocity from high-resolution optical observations, we obtained the column densities of rotational levels $J'' = 0$ through 5 for each line of sight. The excitation temperatures derived by $J'' = 0$ and 1 states show a small variation around the mean value of 83 K, except the component toward HD 219188, which has higher excitation temperature (211 K). We have found that the column density ratio, $N(4)/N(0)$, which is known to be proportional to the incident UV intensity, decreases with the magnitude of the galactic latitude for our target stars and the 7 cited high-latitude FUSE targets, indicating dilution of the FUV intensity in the higher latitude space, although there are some limitations. Based on a synthetic interstellar cloud model described in our previous work, we derive the incident UV intensity I_{UV} and the hydrogen density n_H of the observed components to be $-0.4 < \log I_{UV} < 2.2$ and $0.8 < \log n_H < 3.4$.

[☞IM-06] An H₂ and CO absorption study of Taurus Molecular Cloud region

¹T. H. Lim, ¹K. W. Min, ¹J. W. Park, ¹I. J. Kim, ¹S. J. Park, ¹Y. M. Lim
²K. I. Seon, ²D. H. Lee
¹*Korea Advanced Institute of Science and Technology,*
²*Korea Astronomy and Space Science Institute*

We present the result of H₂ and CO absorption study of Taurus Molecular Cloud (TMC) inspired by emission study. Using H₂ absorption spectra obtained by FUSE and IUE toward one O type and three B type stars, the column density of two molecules are obtained by Voigt profile fits. The other physical parameters of CO/H₂ conversion factor and kinetic temperature of cloud are also calculated. We also see the clear correlation between CO and dust emission map through TMC. H₂ Fluorescent emission map, which taken from the FIMS, also presented in this analysis to see the spatial variation and correlation of these molecules.