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

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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 A to about 1200 A 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 IUV and the hydrogen density nH of the observed components to be $-0.4 < \log IUV < 2.2$ and $0.8 < \log nH < 3.4$.

[포IM-06] An H_2 and CO absorption study of Taurus Molecular Cloud region

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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.