

## Physical Conditions of the Molecular Cloud toward HD 37903

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We analyze the H<sub>2</sub> and CO absorption transitions along the line of sight towards HD 37903 over the 1045–1060 and 1086–1102 Å wavelength regions, which is observed by Berkeley Extreme and Far-ultraviolet Spectrometer (BEFS) on the ORFEUS II telescope. HD 37903 is a bright UV emitting star embedded in the southern part of the Orion B molecular cloud, illuminating the reflection nebula NGC 2023. Based on the theory of formation and dissociation of molecular hydrogen in the Far-UV spectral range (Jura 1975), we address the physical conditions of the foreground gas toward HD 37903, such as the density  $n$ , temperature  $T$ , and the UV intensity  $I_{UV}$ , by analyzing the H<sub>2</sub> absorption lines of  $J = 0-5$  rotational levels. The observed gas is shown to surround the photodissociation region of the NGC 2023. We identify the CO absorption line at 1088 Å and calculate the direct abundance ratio  $[CO]/[H_2]$  to be  $[CO]/[H_2] = 4.6 \times 10^{-7}$ , which is consistent with the survey study made by Federman et al. (1980).