Observations of Molecular Hydrogen in the Carina Nebula

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Observations of molecular hydrogen absorption lines in the continuum spectra of 3 early-type stars in the Carina Nebula, HD93129A, HD93250, and HD303308, were made with the Berkeley EUV/FUV spectrometer on the ORFEUS telescope in 1993 September. Using high-resolution optical observations of Na I absorption lines, with the constraint on the distribution and velocity of molecular clouds along each line of sight, we obtain column densities for each H_2 rotational level and derive excitation temperatures and UV radiation fields for the H_2 clouds towards each star. All three stars show strong H_2 absorption features, indicating that the Carina Nebula contains abundant hydrogen molecules. Also, the UV radiation field strength is found to be correlated with the distance between the target star and η Car. Based on these results, we examine the morphology of the Carina Nebula in association with the CO molecular clouds.