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Examining the radiation field in a star forming region MATTHEW BELLARDINI, LUKE KELLER, Ithaca College — We examined the propagation of photoionizing radiation in a star forming region within the Orion nebula (M42), across the barrier between ionized hydrogen and a molecular hydrogen cloud, by using infrared emissions of polycyclic aromatic hydrocarbons (PAHs). Photoionizing radiation affects the structure of the interstellar medium, how gas is heated, and how gas is ionized; this affects the physical environment and chemical structure for future star formation in the cloud. We have gathered both slit spectroscopic data and narrowband imaging data of the boundary using the FORCAST instrument on SOFIA. The spectroscopic data were taken over a wavelength range which covered three features. The imaging data were taken using three filters corresponding to the peak wavelengths of the features examined. We created and analyzed flux profiles of the features to show that the emissions peak within the boundary and decay at different rates with progression into the molecular hydrogen cloud. Our examination of the emission intensity ratio of the different features shows how photoionizing radiation propagates with spatial progression from the region of ionized hydrogen into the dense molecular cloud where gravitational collapse will eventually form new stars.

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