

THE INTERACTION OF THE GALACTIC CENTER ARCHES CLUSTER AND THE THERMAL FILAMENTS

Angela S. Cotera^{1,2}, Sean W. J. Colgan³, Janet P. Simpson³

¹*Steward Observatory*

²*SETI Institute*

³*NASA Ames Research Center*

We present ISO spectroscopic data obtained from the vicinity of the Galactic Center Thermal ("Arched") Filaments. Using FIR lines which originate from the ionized gas, we estimate the excitation temperature and electron density as a function of distance from the recently discovered Arches Cluster of hot young stars. The FIR line observations clearly show a decrease in excitation with increasing distance from the cluster. These measurements suggest that the Arches cluster is responsible for the excitation of the filaments.

Observations were also made of transitions diagnostic of photodissociated regions and high resolution SWS07 and LWS04 spectra were obtained at three of the five observed locations for selected lines. The derived v_{LSR} are compared with velocities determined from radio observations. A particularly interesting preliminary result is the detection of two velocity components in the SIII ($33 \mu\text{m}$) emission at the position of the Arches Cluster, but only a single feature elsewhere. In the OI and CII spectra there is often more than one feature, indicating a more complex velocity structure.