

2. Galactic Center Star Clusters

ISOCAM CVF OBSERVATIONS OF THE QUINTUPLET AND OBJECT #17 CLUSTERS NEAR THE GALACTIC CENTER. DIFFUSE COMPONENTS

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1. Introduction

There are two star clusters near the Galactic Center which might be similar to the central parsec cluster. One is the Quintuplet cluster at ($l = 0.16^\circ$, $b = -0.06^\circ$), and the other is the Object #17 cluster at ($l = 0.12^\circ$, $b = 0.02^\circ$). The Quintuplet, first found in a polarimetric survey by Kobayashi *et al.* (1983), includes five very bright stars whose color temperatures are in the range of 600–900K (Okuda *et al.* 1990; Nagata *et al.* 1990). Object #17 is a cluster of emission line stars (Nagata *et al.* 1993, 1995; Cotera *et al.* 1996; Morris & Serabyn 1996). Spectral features of these two objects observed with the ISOCAM (Kessler *et al.* 1996; Cesarsky *et al.* 1996) have been reported (Nagata *et al.*, 1996); absorption features due to O-H ($2.8\mu\text{m}$) CO₂ ($4.3\mu\text{m}$), and CO ($4.7\mu\text{m}$) are present. In this paper, we report diffuse emission components detected in these two fields.

2. Observations and Results

The Quintuplet was observed on February 24 and Object #17 on February 23, 1996, with the ISOCAM circular variable filters (CVFs). The details of the observations are found in Nagata *et al.* (1996).

The “pistol-shaped” H II region (G0.15-0.05) to the south of the five stars in the Quintuplet cluster is bright at $7.0\mu\text{m}$. We identify this to be the fine-structure [Ar II] line at $6.99\mu\text{m}$. The line intensity from the $21''(\alpha) \times 9''(\delta)$ region around the peak is $4.8 \times 10^{-14} \text{ W m}^{-2}$. This line is most prominent in the 4 to $8\mu\text{m}$ spectrum of Sgr A also (Willner *et al.* 1979). Moneti *et al.* (1994) found He I emission in the “ridge” source on the west of GCS 3 (eastern four stars) of the Quintuplet, and Br γ and He I emission in the “pistol” region. In addition, Figer *et al.* (1995) have recently observed an emission-line star near the “pistol” region (Star 3, which is #25 in Nagata *et al.* 1993 and the “serendipitous” source in Moneti *et al.* 1994), and concluded that this star is similar to luminous blue variables (LBVs). Thus, the radio continuum and the [Ar II] line fluxes from the “pistol” are probably consistent with the picture of optically thin H II region powered by the LBV candidate and/or the “ridge” source.

In the Object #17 cluster field, a region $\sim 40''$ north of the cluster center is bright at $7.0\mu\text{m}$ and $12.8\mu\text{m}$. We identify these to be the [Ar II] and [Ne II] lines. In addition, this region has the Unidentified Infrared Band (UIB) emission at 6.2, 7.7, 8.6, and $11.3\mu\text{m}$, which is attributed to carbon-rich particles in UV radiation fields. This region is bright at the 6mm continuum (Kobayashi *et al.* in preparation), and probably the site of interaction of the UV radiation from the Object #17 cluster with the ambient molecular cloud.

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