SPITZER OBSERVATIONS OF THE YOUNG STELLAR CLUSTER NGC 6193 IN THE ARA OB1 ASSOCIATION.

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The southern Ara OB1 association is undergoing triggered star formation that may have been initiated by a supernova event (Herbst & Havlen 1977, A&AS, 30, 279; Arnal et al. 1987, A&A, 174, 78). Lying near the center of Ara OB1 at a distance of 1.3 kpc is the young stellar cluster NGC 6193 (age $\sim$ 3 Myr). This cluster is dominated by a pair of massive O5 - O6 stars HD 150135 and HD 150136 lying 10$''$ apart. HD 150136 is quite remarkable, being a spectroscopic O5V + O6 binary with a short 2.66 day orbital period. HD 150135 and HD 150136 were detected as bright X-ray sources in a previous *Chandra* observation (Skinner et al. 2005, MNRAS, 361, 191). HD 150136 is one of the most luminous O-star X-ray sources known and a colliding wind shock between its two closely-spaced binary components likely contributes to its extrordinary X-ray emission.

We present results of the first mid-IR study of NGC 6193 using *Spitzer* IRAC and MIPS 24μm data. Our main objectives are to use *Spitzer* data along with existing near-IR and *Chandra* X-ray images to identify candidate cluster members and to determine if disk survival in the inner cluster region has been adversely affected by the harsh UV ionizing radiation field of the central O stars.

The IRAC data were obtained in all four channels (3.6, 4.5, 5.8, 8.0 μm) and consist of unsaturated subarray images covering the inner $1' \times 1'$ region around the bright O stars plus wide field images of the entire cluster obtained with the full IRAC array. Our analysis to date has focused mainly on the subarray field near the bright O stars.

At least 43 sources were detected in the IRAC subarray images in one or more channels. Both HD 150135 and HD 150136 were detected and clearly separated by IRAC (Fig. 1). The spectroscopic binary HD 150136 is much brighter in the mid-IR than HD 150135, and also brighter in the near-IR and X-rays. In addition, HD 150136 was detected at 24μm but HD 150135 was not. Approximately one-third of the IRAC subarray sources have X-ray counterparts (Fig. 1) in the *Chandra* image and are likely young cluster members. More than half of the IRAC subarray sources were detected at 8 μm and some were also detected by MIPS at 24μm. These objects are disk candidates and provide evidence that disks have survived around some stars lying within 30$''$ ($\approx$0.2 pc) of the central O stars.

The MIPS 24μm image shows spectacular structure including proplyd-like features with tails generally directed outward and away from the central O-stars. Such morphology is a clear indication that the disks and circumstellar envelopes of nearby young cluster members are being disrupted by the intense UV radiation and powerful winds of the central O stars.

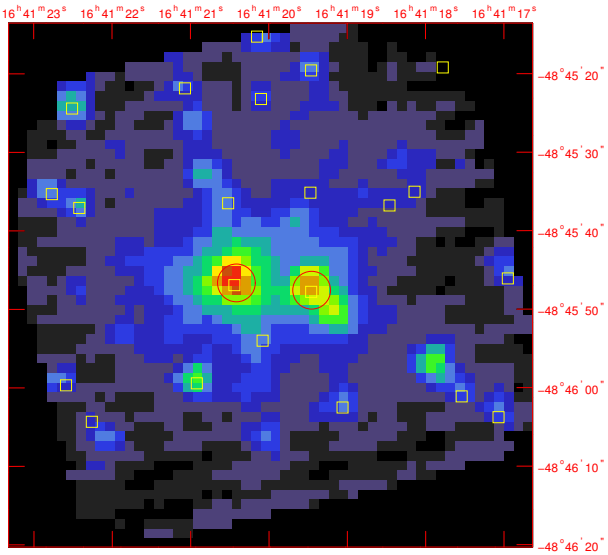

Figure 1: IRAC 3.6 μm subarray image of the central region of NGC 6193. Circles enclose the O stars HD 150135 (right) and HD 150136 (left). Squares mark positions of known X-ray sources.