

**GLIMPSE II: Imaging the Central ± 10 Degrees
of the Galactic Plane with IRAC**

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Science Category: Galactic Survey; Star formation/Galactic Structure/Galactic Center Region

Hours Requested: 144.3

Abstract:

We propose to image longitudes $\pm 10^\circ$ of the central region of the Galaxy in all 4 IRAC bands. The latitude coverage will be $\pm 1^\circ$ from $l=10^\circ$ to 5° , $\pm 1.5^\circ$ from $l=5^\circ$ to 2° , and $\pm 2^\circ$ from $l=2^\circ$ to 0° . From these observations we seek to: 1) determine the stellar population, stellar mass, and extent of the in-plane central bar of our Galaxy; 2) explore the large-scale, bipolar, mid-infrared bubble at the Galactic center (Bland-Hawthorn & Cohen 2003) and its relationship to the more extended bubble seen at radio and X-ray wavelengths both to better understand its energetics and the nuclear winds of other

galaxies; 3) search for new, as yet, undetected clusters and massive star formation regions within ± 10 degrees of the galactic center, especially those associated with the central bar; 4) determine the distribution of AGB stars, RGB stars, carbon stars, planetary nebulae, and other stellar bulge tracers that can be identified in IR color-magnitude or color-color plots or images in the central region of the Galaxy; 5) complete the coverage of the inner $\pm 10^\circ$ of Galactic longitude that were not imaged by the initial GLIMPSE survey, and make the results available as soon as possible to the GLIMPSE user community; 6) identify variable stars in the Galactic center region; 7) determine the rate at which the stellar surface density continues to increase with decreasing longitude at $l < 10^\circ$; 8) determine the stellar scale length within longitudes $l = 0^\circ - 65^\circ$; and, 9) determine the NIR-MIR interstellar extinction law toward the galactic center region.