

J- AND H-BAND OBSERVATIONS OF THE GALACTIC BULGE WITH PANIC

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1. Observations

Nine regions in the Galactic bulge were observed at J and H bands with a PtSi 1040×520 array camera which is named the PtSi Astronomical Near Infrared Camera (**PANIC**). These regions were centered at $l=(-5^\circ, 0^\circ, +5^\circ)$ $b=(-6^\circ, 0^\circ, +6^\circ)$ respectively. Each region was covered with nine frames each of which spanned 30' by 30' square arcmin. Observations were carried out at the South African Astronomical Observatory, Cape Town, from 1995 to 1997 using a 40cm f/5 Newtonian telescope. A bolometric correction (Frogel and Whitford 1987) was given to the observed stars by using J-H values of reference RGB stars (Frogel et al 1990).

2. Profiles

The observed stars were grouped into three magnitude ranges: A) $-4.0 \leq M_{bol} \leq -3.5$, B) $-3.5 \leq M_{bol} \leq -3.0$, and C) $-3.0 \leq M_{bol} \leq -2.5$. For each bolometric magnitude range the number densities were derived at 15 arcminutes intervals along the surveyed regions. In figure 1 the range A densities were scaled up by factor 1.61 while the range C densities were scaled down by

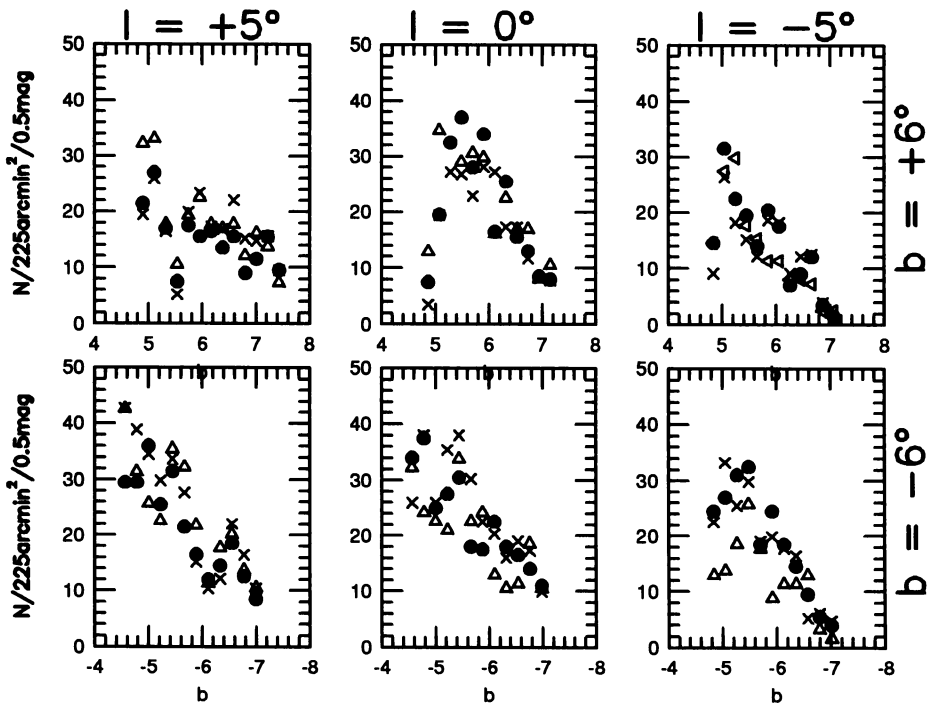


Figure 1. The Galactic Bulge Density Profiles. Symbols are Δ for $-4.0 \leq M_{bol} \leq -3.5$, \bullet for $-3.5 \leq M_{bol} \leq -3.0$, \times for $-3.0 \leq M_{bol} \leq -2.5$.

factor 0.86 in order to achieve a good overlap with the range B densities. It is easily seen that they are distributed in a narrow zone indicating that stars with different luminosities are well mixed throughout the bulge.

The most conspicuous feature in figure 1 is a rather flat density distribution of number density in the area $l=5^\circ$, $b=6^\circ$. This feature is expected when the elongated bulge inclines toward the eastern side. Also the density difference between the east ($l=5^\circ$) and the west ($l=-5^\circ$) side can be caused by the slanted direction of the bulge. Detailed examination of the number distribution is under way to determine the shape of the Galactic bulge from the number count of the infrared sources.

References

- Frogel J.A., Whitford A.E. (1987) *Ap.J.*, **320**, 199-237
 Frogel J.A., Terndrup D.M., Blanco V.M., Whitford A.E. (1990) *Ap.J.*, **353**, 494-523