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Infrared observation of Mira variables and their galactic distribution

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Abstract. Since November 2003, we have monitored AGB candidates in infrared wavelengths with the Kagoshima 1m telescope. We present the latest results based on the data until June 2011. For each of 400 monitored AGB stars, we estimate the periods, amplitudes, and mean apparent magnitudes in K band. Based on the two color diagram we choose 259 objects as Miras. We use the period−luminosity relation to obtain distances to them. As results we show the 3 dimensional distribution of 259 Mira variables.

Keywords. stars: AGB — stars: distances — Galaxy: structure

We obtained monitoring observations of AGB stars in J, H, and K bands with the Kagoshima 1m telescope. In the monitored targets, we chose 259 objects as Mira variables and obtain their 3 dimensional distribution using the period−luminosity relation calibrated with annual parallaxes as observed using VERA (Nakagawa *et al.* 2012).

In the Face-on distribution (Fig. 1A), there are some hints of concentration along the Orion and Sagittarius Arms. The Edge-on distribution (Fig. 1B) shows that 90% of Mira variables are confined within the 1kpc from the Galactic plane. The scale height was estimated to be 0.45 kpc which suggests that the Mira variables surely belong to the thick disk.

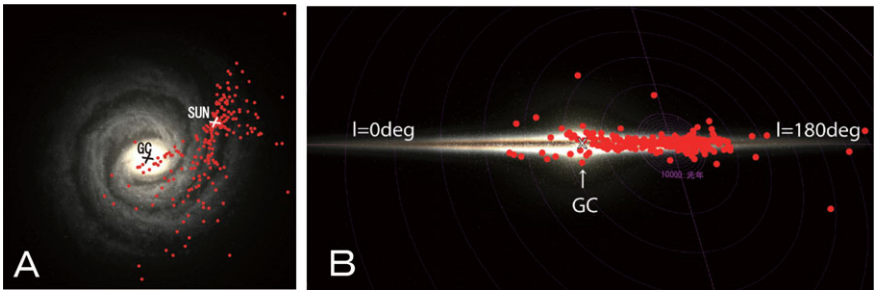

Figure 1. Galactic distribution of 259 Mira variables. Panel A is the face-on view. Panel B is the edge-on view.

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