THE THICK DISC POPULATION OF THE GALAXY

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The availability of photometric and astrometric star counts on large fields well distributed in the Galaxy allows us to measure the characteristics of the thick disc population. We use a total of 19 data sets in UBV towards a dozen directions in order to measure the scale height, scale length, local density and metallicity of the intermediate population.

The Besançon model of population synthesis (Robin & Crézé (1986), Bienaymé et al. (1987), Haywood (1994)) is used to simulate catalogues. A grid of models is computed with varying thick disc parameters (scale height, scale length, local density, metallicity) and compared with data sets via a maximum likelihood test.

The derived characteristics of the thick disc show that it is a population distinct from the disc and from the halo. It has a scale height of 780 pc $\pm$ 50 pc, a scale length of 2500 $^{+400}_{-200}$ pc and a local density of 5.6 % of the disc. Its mean metallicity is -0.8 $\pm$ 0.1 dex. There is no evidence for any vertical metallicity gradient, while a radial gradient may be present (in the range 0 to -0.15 dex/kpc). The implications for the thick disc formation are discussed in Robin et al. (1995, preprint).

References

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