

The properties of the hidden regions of the Milky Way disk as traced by classical Cepheids

We are currently experiencing an era where distances are precisely being measured for about one billion stars in our Galaxy by the Gaia mission. However, the Milky Way innermost regions, and those lying beyond them, at the far side disk, have remained largely unexplored. The difficulty to unveil these regions mainly arises from our location in the disk mid-plane and the large distances involved. Classical Cepheids can help us to improve this situation, since they are young, luminous, and - relatively - easy identifiable standard candles, which makes them ideal tracers of the disk properties. Their location at the Milky Way disk complicates their identification, mainly due to the substantial reddening they are subject to. This is particularly true when studying them at the far side of the Galactic disk, but it can be surpassed with the use of infrared (IR) photometry. We will show how the use of additional observable properties aids in the near-IR light-curve based classification process, providing a pure sample. We will present our results on the properties of the far side of the Galactic disk using these young tracers. In particular, our determination of the metallicity gradient will be discussed, together with the prospects on the use of classical Cepheids to unveil the present-day abundance gradients of this poorly characterized region of our Galaxy.