VVV WIN 1733–3349: a low extinction window to probe the far side of the Milky Way bulge

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ABSTRACT

Windows of low extinction in the Milky Way (MW) have been used along the past decades for the study of the Galactic structure and the stellar population across the inner bulge and disc. Here, we report the analysis of another low extinction near-IR window discovered by the VISTA Variables in the Vía Láctea Survey (VVV). VVV WIN 1733–3349 is about half a degree in size and is conveniently located right in the MW plane, at Galactic coordinates \((l, b) = (-5.2, -0.3)\). The mean extinction of VVV WIN 1733–3349 is \(A_{K_s} = 0.61 \pm 0.08\) mag, which is much smaller than the extinction in the surrounding area. The excess in the star counts is consistent with the reduced extinction and complemented by studying the distribution of red clump (RC) stars. Thanks to the strategic low-latitude location of VVV WIN 1733–3349, we are able to interpret their RC density fluctuations with the expected overdensities due to the presence of the spiral arms beyond the bulge. In addition, we find a clear excess in the number of microlensing events within the window, which corroborates our interpretation that VVV WIN 1733–3349 is revealing the far side of the MW bulge.