Near-IR imaging of Galactic massive clusters: Westerlund 2

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% context heading (optional)
{Most stars in the Galaxy were formed in massive clusters. To understand nature's favorite mode of star formation and the initial stages of the life of most stars one needs to characterize the youngest and resolved massive clusters in the Milky Way. Unfortunately young massive clusters are challenging observational targets as they are rare, hence found at large distances, are still embedded in their parental molecular cloud, and are swamped by relatively bright nebulae.}

% aims heading (mandatory)
{In this paper we propose to use deep subarcsec resolution NIR data to derive the basic parameters of the unstudied population of massive cluster Westerlund~2.}

% methods heading (mandatory)
{We present deep JHK_{s} images ($sim0.6"$ seeing) and photometry of Westerlund~2. This is the most complete photometric census of the cluster's population to date.}

% results heading (mandatory)
{We detect a total of 4701, 5724, and 5397 sources in the J, H, and K_{s} bands respectively. By comparison with main-sequence and pre-main-sequence model tracks, we determine an average visual extinction toward the cluster of 5.8~mag, a likely distance of 2.8~kpc, and an age of $2.0 pm 0.3$~Myr for the core of the cluster. Although we have the sensitivity to reach beyond the hydrogen burning limit in the cluster, we are only complete to about 1 M$_odot$ due to source confusion. We find no evidence for a top-heavy MF, and the slope of the derived mass function is -1.20 pm 0.16. Based on the extrapolation of a field IMF, we roughly estimate the total mass of the cluster to be about 10^4~M$_odot$. We find compelling evidence for mass segregation in this cluster. }

Reference: A&A, in press
Status: Manuscript has been accepted

Weblink: http://www.astro.up.pt/investigacao/ficheiros/175.pdf

Comments:

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