

## THE MAGELLANIC BRIDGE CLUSTER NGC 796

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Star formation and stellar evolution are a strong function of metallicity. NGC 796 is a young open cluster in the Magellanic Bridge ( $\sim 1/10 Z_{\odot}$ ), containing early B type candidates, and possibly on-going star formation. Evidencing an unique region where stellar population studies may place empirical constraints on star and cluster formation, and stellar evolution theories at lower metallicities.

As molecular clouds collapse, gravitational energy is converted into thermal. Metal line and dust cooling allows dissipation of the thermal energy, furthering fragmentation. The low gas-to-dust ratio, and lack of metals at lower metallicities hinders fragmentation and is thought to lead to characteristically higher stellar masses (Bromm et al. 1999). Mass-loss rates of the radiatively driven winds of massive stars scale proportionally to their metal content. Meaning less angular momenta is carried away in the winds of metal-poor stars. This speeds up their rotation, and leads to rotationally-induced mixing and surface enrichment (Vink et al. 2001), allowing a potential evolutionary explanation for high-redshift exotica.

The Magellanic Bridge, is at a distance of  $\sim 61$  kpc and a metallicity ( $Z$ ) approximately  $1/10$  solar (Rolleston et al. 1999). It contains stellar populations that can be resolved with large ground, and space telescopes. NGC 796 is one of the brightest cluster in the Magellanic Bridge, found  $\sim 4^{\circ}$  east of the Small Magellanic Cloud. We obtained deep  $JHKs$  photometry using the ISAAC (Infrared spectrometer and array camera) imager mounted on 8m UT3-Very Large Telescope (VLT) in Paranal, Chile. The resulting three-colour image is shown in Fig. 1.

The decontaminated colour-magnitude diagram of candidate members is shown in Fig. 2. Correcting for extinction ( $A_V=0.15$ ) and assuming a distance of 61 kpc, we find main sequence early B candidate stars. Previously, near-infrared excess Herbig Ae/Be candidates were found by Nishiyama et al. (2007), suggestive of on-going star formation. The presence of both main-sequence candidate members, and possibly active star formation makes this cluster an ex-



Fig. 1. Three colour image of NGC 796 where red= $Ks$ /green= $H$ /blue= $J$ , spanning  $\sim 1' \times 0.8'$ . North is up and east is to the left.

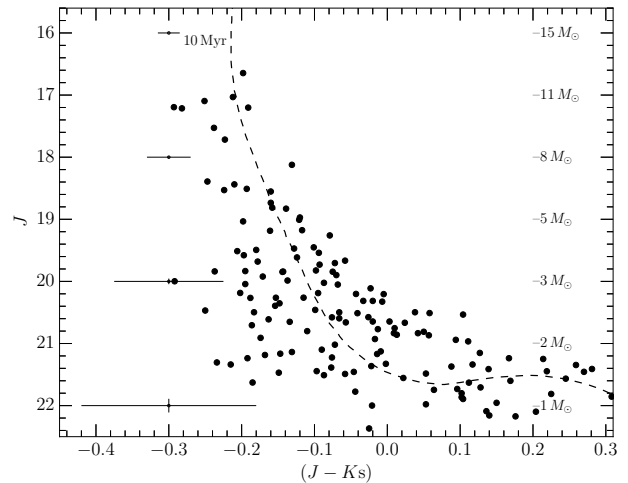


Fig. 2.  $(J - Ks)$  vs.  $J$  colour-magnitude diagram of candidate members. A 10 Myr  $0.1 Z_{\odot}$  isochrone is overplotted. Median errors, and approximate mass at different magnitudes are marked.

tremely interesting region for resolved stellar population studies at  $\sim 1/10 Z_{\odot}$ .

### REFERENCES

- Bromm, V. et al., 1999, ApJL, 527, L5  
 Nishiyama, S. et al. 2007, ApJ, 658, 358  
 Rolleston, W. et al., 1999, A&A348, 728  
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