



# Identification of the Lithium Depletion Boundary and Age of the Southern Open Cluster Blanco 1

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(Submitted on 28 Oct 2010)

We present results from a spectroscopic study of the very low mass members of the Southern open cluster Blanco 1 using the Gemini-N telescope. We obtained intermediate resolution ( $R \sim 4400$ ) GMOS spectra for 15 cluster candidate members with  $I \sim 14\text{--}20$  mag, and employed a series of membership criteria - proximity to the cluster's sequence in an  $I/I\text{-Ks}$  color-magnitude diagram (CMD), kinematics agreeing with the cluster systemic motion, magnetic activity as a youth indicator - to classify 10 of these objects as probable cluster members. For these objects, we searched for the presence of the Li I 6708 Å feature to identify the lithium depletion boundary (LDB) in Blanco 1. The  $I/I\text{-Ks}$  CMD shows a clear mass segregation in the Li distribution along the cluster sequence; namely, all higher mass stars are found to be Li-poor, while lower mass stars are found to be Li-rich. The division between Li-poor and Li-rich (i.e., the LDB) in Blanco 1 is found at  $I = 18.78 \pm 0.24$  and  $I\text{-Ks} = 3.05 \pm 0.10$ . Using current pre-main-sequence evolutionary models we determine an LDB age of  $132 \pm 24$  Myr. Comparing our derived LDB age to upper-main-sequence isochrone ages for Blanco 1, as well as for other open clusters with identified LDBs, we find good chronometric consistency when using stellar evolution models that incorporate a moderate degree of convective core overshoot.

Comments: 6 pages, 3 figures, Accepted for Publication in the Astrophysical Journal Letters

Subjects: **Solar and Stellar Astrophysics (astro-ph.SR)**

Cite as: [arXiv:1010.6100v1](https://arxiv.org/abs/1010.6100v1) [astro-ph.SR]

## Submission history

From: Phillip Cargile [[view email](#)]

[v1] Thu, 28 Oct 2010 22:05:33 GMT (98kb)

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