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REDDENING AND AGE DETERMINATION FOR LARGE MAGELLANIC CLOUD STAR CLUSTERS FROM INTEGRATED SPECTROSCOPY

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We present flux-calibrated integrated spectra in the optical range (3700-6800 Å) obtained at Complejo Astronómico El Leoncito (CASLEO, Argentina) for a sample of concentrated star clusters belonging to the Large Magellanic Cloud (LMC). Most of the observed clusters have been poorly studied up to now. We derive simultaneously foreground E(B-V) reddening values and ages for the clusters by comparing their integrated spectra with template LMC cluster spectra and with different sets of simple stellar population (SSP) models. For the studied cluster sample, we derive ages between 1 Myr and 150 Myr, and metal abundances typical of the more metal-rich LMC clusters. We explore the potentiality of each method by comparing their results as well as the choice of the templates and SSPs used. In an effort to create a spectral library at the LMC metallicity level with several clusters per age range, the cluster sample here presented stands out as a useful complement to previous ones.

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CHEMICAL COMPOSITIONS OF YOUNG STARS IN THE LEADING ARM OF THE MAGELLANIC SYSTEM

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Seven element abundances (He, C, N, O, Mg, Si, and S) and kinematics were determined for eight O-/B- type stars, based on high resolution spectra taken with the MIKE instrument on the Magellan 6.5m Clay telescope (program ID: CN2014A-057). The sample is selected from 42 candidates Casetti-Dinescu et al.(2014, ApJL, 784, L37) of membership in the Leading Arm (LA) of the Magellanic System.

After investigating the relationship between abundances and kinematics parameters, we found that five stars have kinematics compatible with LA membership, i.e. RV $>$ 100 km s^{-1}. For the five possible LA member stars, Mg abundance is significantly lower than that of the remaining two that are kinematical members of the Galactic disk, and is more close to the LMC values. Distances to the LA members indicate that they are at the edge of the Galactic disk, while ages are of the order of $\sim 50-70$ Myr, lower than the dynamical age of the LA, suggesting a single star-forming episode in the LA. V_{LSR} of the LA members decreases with decreasing Magellanic longitude, confirming the results of previous LA gas studies (McClure-Griffiths et al.2008, ApJ, 673, L143). Our abundance and kinematic results for the LA member stars demonstrate that parts of the LA are hydrodynamically interacting with the gaseous Galactic disk, forming young stars that are chemically distinct from those in the Galactic disk. These results can provide constraints to future models for the Magellanic leading material.

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