

The Li-age relation: Calibration with open clusters and associations.

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Abstract

In this work we used a series of open clusters and associations observed by the *Gaia*-ESO Survey (GES) to study the use of lithium abundances (Li I spectral line at 6708 Å) as an age indicator for pre- and main-sequence FGKM late-type stars. Previous studies of open clusters have shown that lithium depletion is not only strongly age dependent, but also shows a complex pattern with several other parameters, such as rotation, chromospheric activity (H α) and metallicity. Using the available data from both GES iDR6 and *Gaia* EDR3, we performed a thorough membership analysis and obtained lists of candidate members for 42 open clusters, ranging in age from 1–3 Myr to 4.5 Gyr. We then conducted a comparative study that allowed us to quantify the observable lithium dispersion in each cluster and study the influence of rotation, activity and metallicity in the lithium dispersion of the selected candidates. All this allowed us to calibrate a Li-age relation and create empirical lithium envelopes for key ages in our sample, also constraining the LDB for those clusters in the 15–600 Myr age range.

My poster is available at <https://zenodo.org/record/7044661#.Y2158uTMI2z>