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The star formation history of the Milky Way through J-PLUS filters

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Abstract

The Javalambre-Photometric Local Universe Survey (JPLUS) has measured the photometric magnitudes of millions of Milky Way stars. Combined with Gaia astrometry, these northern sky data help date the formation of stellar components like the Galactic disk and halo. By comparing photometry in five broad and seven narrow filters with population models from stellar evolution codes, we developed a Bayesian method to fit isochrones and model parameters such as binarity. Using the posterior distribution, we estimated uncertainties and inferred the star formation history (SFH) of Milky Way components, examining stars up to 5 kpcs from the Sun. Our results reveal multiple star formation enhancements at intermediate ages, likely linked to interactions with external systems. We also found an age-metallicity relation with two main populations: an older one ($\geq$10 Gyr) with [M/H] between -0.3 and -0.7 dex, and a younger one (1-10 Gyr) with [M/H] between -0.2 and 0.2 dex, likely representing the outer thin disk and thick disk regions.

My poster in zenodo.org can be found here