

Exploring the Chemistry of the Milky Way with J-PLUS through the Colour-Colour and Colour-Magnitude Diagrams

A. Hidalgo¹, A. del Pino¹, C. López-Sanjuan¹, J. Alzate¹

¹ Centro de Estudios de Física del Cosmos de Aragón, Unidad Asociada al CSIC, Plaza San Juan 1, 44001 Teruel, Spain

Abstract

In this study, we investigate the chemical composition of the Milky Way (MW) by examining the Colour-Magnitude Diagrams (CMDs) and Colour-Colour Diagrams of its stellar populations. We use data from the Javalambre Photometric Local Universe Survey (J-PLUS), the Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST 1), and Gaia. The Colour-Colour Diagrams are designed to be sensitive to key stellar parameters: metallicity ($[Fe/H]$), effective temperature (T_{eff}), and surface gravity ($\log(g)$), with these parameters derived from LAMOST data. Through the Colour-Colour Diagrams, we explore the distribution of stars based on metallicity, effective temperature, and surface gravity. The CMD, constructed using Gaia's parallax measurements and J-PLUS's photometric bands, helps us identify distinct regions and trace stars to specific evolutionary phases. Future work will integrate stellar dynamics, such as proper motion, into the photometric analysis to identify dynamically distinct structures and unravel the history of our galaxy.

My poster in zenodo.org can be found here