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Metallicity determination in open star clusters by exploring Gaia–J-PLUS synergy (poster pitch, online)

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Under various initial conditions, open star clusters serve as valuable laboratories for studying stellar evolution and its outcomes. The Gaia mission has significantly advanced our understanding of the Milky Way through precise astrometric data, while the Javalambre-Photometric Local Universe Survey (J-PLUS) offers extensive multiband photometric information. In this study, we investigate a list of 24 open star clusters, including 13 recently discovered ones, by combining the precise astrometric measurements from Gaia with data from J-PLUS. By utilizing machine learning algorithms, we trained models using Gaia and J-PLUS data to determine atmospheric parameters for members individually, in particular yielding metallicities estimates for these clusters. Importantly, this methodology can be readily extended to other multiband photometric surveys, providing a direct pathway to explore the metallicity properties of other various clusters.

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