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J-PLUS: A first glimpse at spectrophotometry of asteroids – The MOOJa catalog

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The Javalambre Photometric Local Universe Survey (J-PLUS) is an observational campaign that aims to obtain photometry in 12 ultraviolet-visible filters (0.3–1 μm) of $\approx 8\,500\text{ deg}^2$ of the sky observable from Javalambre (Teruel, Spain). Due to its characteristics and strategy of observation, this survey will let us analyze a great number of Solar System small bodies, with improved spectrophotometric resolution with respect to previous large-area photometric surveys in optical wavelengths.

The main goal of this work is to present here the first catalog of magnitudes and colors of minor bodies of the Solar System compiled using the first data release (DR1) of the J-PLUS observational campaign: the Moving Objects Observed from Javalambre (MOOJa) catalog.

Using the compiled photometric data we obtained very-low-resolution reflectance (photospectra) spectra of the asteroids. We first used a σ -clipping algorithm in order to remove outliers and clean the data. We then devised a method to select the optimal solar colors in the J-PLUS photometric system. These solar colors were computed using two different approaches: on one hand, we used different spectra of the Sun, convolved with the filter transmissions of the J-PLUS system, and on the other, we selected a group of solar-type stars in the J-PLUS DR1, according to their computed stellar parameters. Finally, we used the solar colors to obtain the reflectance spectra of the asteroids.

We present photometric data in the J-PLUS filters for a total of 3 122 minor bodies (3 666 before outlier removal), and we discuss the main issues of the data, as well as some guidelines to solve them.