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J-PLUS and the galaxy star formation rate in the local universe

G. Vilella[1], K. Viironen[1], C. López-Sanjuan[1], J. Varela[1], A. J. Cenarro[1], and the J-PAS team

[1] Centro de Estudios de Física del Cosmos de Aragón (CEFCA)

Abstract

The Javalambre Physics of the Local Universe Survey (J-PLUS) is a large photometric survey that will cover $\sim 8000\,\mathrm{deg}^2$ with a set of 5 broad filters (SDSS filter set) and 7 narrow ones. It will be carried out from the Observatorio Astrofísico de Javalambre (OAJ) at the Pico del Buitre, Teruel, Spain. In addition to its main goal, which is the photometric calibration of the J-PAS survey, it has been designed to acquire the Hα flux of the galaxies in the nearby Universe ($z \leq 0.015$) up to $r \sim 23$ (AB). In this poster we present a first approach to the methodology that will be used to obtain Hα fluxes from photometric data. We first explain different methodologies to recover this flux. To test these methodologies, we simulate observations of real star forming galaxies from SDSS spectra. We show that using the information of one or two broad filters and a narrow one would bias our results. To cope with that, we fit the whole observed spectral energy distribution to a simple stellar population template and isolate the excess of flux inside the Hα filter. This allows us to recover the desired flux with accuracy and without biases. With this information, the J-PLUS survey will allow us to reproduce the Hα luminosity function and derive the star formation rate of thousands of galaxies in the local universe.

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