Institute of Space Sciences

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Contribution ID : **3** Type : **Talk**

DNF Photometric Redshift perfomance for Euclid

Thursday, 18 April 2024 14:55 (10)

Understanding the nature of dark energy is one of the most important open questions in cosmology, and the large photometric survey of galaxies like Euclid will provide invaluable data on the Universe.

Accurate estimation of redshifts from photometric information is key to cosmological studies. This is often done using machine learning techniques. The selection of the spectroscopic training sample is crucial for the accurate estimation of the photometric redshift in machine learning approaches. Ideally, it should represent the entire target galaxy sample, covering the same colour-magnitude space. However, the spectroscopic studies used for training are often not as deep as the photometric data.

In this paper we present results obtained using the Directional Neighbourhood Fitting (DNF) algorithm to determine photometric redshifts in the Y3 DES Deep Fields catalogue. This field comprises four measured fields with eight bands (ugrizJHKs) covering approximately 5.88 deg^2, our analysis closely resembles the data we will have from the Euclid project. We examine the performance of the DNF algorithm, exploring its effectiveness in the context of Euclid-like data. In addition, we investigate the completeness of the training sample, selection strategies and confidence limits on photometric redshifts.

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Session Classification : Photo-Z