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PETS: A pure expansion model for type Ia supernovae standardization

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We present a light curve fitter for type Ia Supernovae dubbed Pure Expansion Template for Supernovae (PETS). The model consists of an expansion of its rest-frame flux based on the well-known Spectral Adaptive Light Curve Template 2 (SALT2). We generate the expansion components by performing Principal Component Analysis (PCA) and Factor Analysis (FA) onto a representative training set. Then, we derive a Tripp-like expression for the distance modulus and fit the ΛCDM cosmological model on the Pantheon sample. Next, we evaluate the constraining power of the model in comparison with SALT2 and verify linear correlations with color and stretch parameters.

Presenter: Ms NASCIMENTO, Cassia (UFRJ)

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