Title : Characterization of Dark Energy with Subaru and HST

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The Nature of Dark Energy, the mysterious component driving the acceleration of cosmic expansion, is still unknown. The main approach to constraint its equation of state is to construct a Hubble diagram, the evolution of luminosity or angular distance with respect to the redshift. Type Ia Supernovae (SN Ia) used as luminosity distance indicators, allowed to create a Hubble diagram allowed the historical discovery, that the expansion of the Universe is now accelerating.
As of today, the state of the art is the Joint Light Curve Analysis (Betoule & al. 2014), a Hubble diagram made of 740 spectroscopically-confirmed SN Ia with redshifts between 0.05 and 1. To improve this results one of the way, followed by the Subaru Strategic Program (SSP), is to get more high redshift SN Ia ($0.8 < z < 1.5$). The Subaru telescope will discover and follow up , about 300 very high redshift SN Ia. For the moment, ~150 have been already found.
As the Universe is expanding, the light sent by a SN is redshifted. A key aspect of the study, is, having the flux of the light measured in the observer frame, to reconstruct this flux in the supernova frame. For that, we use an empirical model of the spectrophotometric evolution of those objects. The model currently in use in the community is called Spectral Adaptive Lightcurve Template (SALT2), develop between 2007 and 2010. During my phD, I will develop the new generation of this model, , relying on a much larger training set. I will present on this poster, the first part of the creation of the model, considering an simplified model of the supernova flux.