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# The Euclid mission NISP instrument: performances and data simulations

*Thursday 25 August 2022 16:30 (20 minutes)*

The Euclid space-based survey will observe and map the distribution of galaxies with unprecedented accuracy, allowing us to improve the knowledge of the Universe and its dynamics as well as the nature of the so-called dark matter that contributes up to a quarter of the total energy density of the Universe. Furthermore, key research will involve the measurements of the subtle features produced by neutrinos on the cosmological observables, providing new constraints on the sum of the neutrino masses with a precision better than 0.03 eV at 1-sigma level. Observations will be taken by two instruments located inside the payload of the satellite, one taking data from light in the visual spectrum (VIS) and the second one in the near-infrared spectrum (NISP). NISP will allow two observing modes: photometric and spectroscopic imaging, the latter via slit-less spectroscopy. In the presentation, we will focus on the status and the perspectives of the first period of the NISP instrument.
Padua is responsible for all the activities related to the NISP warm electronics assembly, software integration and validation. Currently, we are in the latest phase of the hardware tests, just before the launch of the satellite. Ground tests were performed using both a telescope simulator and the Euclid telescope. They provide emulations of point-like sources at different wavelengths, dark reference exposures and flat-field illumination. All the results from these tests will be shown during the presentation, focusing on the performance of the NISP instrument and its observation strategy. Finally, we will present the comparison of data to simulations, currently used to calibrate and validate the algorithms developed within the Euclid consortium to extract galaxy redshifts from image data.

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