

The Euclid Near Infrared Spectro-Photometer (NISP) instrument and science

Euclid is an ESA mission designed to explore the dark side of the Universe and to understand the nature of the dark energy responsible for the accelerated expansion of the Universe. Its objective is to map the geometry of the dark Universe by investigating the distance-redshift relationship and the evolution of cosmic structures. By measuring two cosmological probes simultaneously, the Weak Gravitational Lensing and the Galaxy Clustering (BAOs and Redshift-Space distortions), Euclid will constrain dark energy, general relativity, dark matter and the initial conditions of the Universe with unprecedented accuracy. Each probe has a dedicated instrument in the payload: an imager in the visible domain (VIS) and an imager-spectrometer (NISP) covering the near infrared. Here we present the NISP (Near Infrared Spectro-Photometer) instrument operating in the spectral region 0.9-2 μ m as a photometer and spectrometer, which will allow measuring the redshifts of galaxies with an accuracy better than 0.1%. The Euclid sensitivity to cosmological parameters as the ones characterising the dark energy equation of state and the sum of neutrino masses will be also presented.

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