

Illuminating the Dark Universe with Euclid

Tuesday, 9 July 2024 09:00 (30 minutes)

Euclid is a space mission aimed at addressing the key questions of modern cosmology. After a long process started in 2007 in the framework of the ESA Cosmic Vision 2015-2025, it was successfully launched in 2023. Euclid will shed light on the nature of dark energy, the properties of dark matter and its relations with baryonic matter, the mass of neutrino and will test modified gravity on cosmological scales. The revolutionary power of Euclid relies on the combination of different, independent and complementary probes: weak gravitational lensing, baryonic acoustic oscillations, redshift-space distortions, galaxy clusters, strong lensing and cross-correlations with the cosmic microwave background. To achieve these ambitious goals, Euclid will observe about 1/3 of the sky (about 15,000 square degrees) with visible and near-infrared imaging, plus near-infrared spectroscopy, in order to collect data of huge volumes of the universe at different cosmic epochs spanning the last 10 billion years. Euclid data will include high-quality images and photometric redshifts for more than 2 billion galaxies, as well as spectroscopic redshifts and spectra for tens of million galaxies. The legacy value of the Euclid dataset will be immense also for a wide range of other science cases in astrophysics and cosmology. The presentation will illustrate Euclid in general and will focus on its role to constrain the properties of dark matter.

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Session Classification: Plenary