Specjalne Seminarium Astrofizyczne

czwartek 20.10.2016 godz. 12:00

Hoża 69 pawilon sala **22**

prof David Valls-Gabaud

(CNRS, Observatoire de Paris)

MESSIER orbiter: lifting the veil on the ultra-low surface brightness universe.

The S-class MESSIER satellite has been designed to explore the extremely low surface brightness universe at UV and optical wavelengths. The two driving science cases target the mildly- and highly non-linear regimes of structure formation to test two key predictions of the LCDM scenario: (1) the detection of the putative large number of galaxy satellites, and (2) the identification of the filaments of the cosmic web. The satellite will drift scan the entire sky in 6 bands covering the 200-1000 nm wavelength range to reach the unprecedented surface brightness levels of 34 mag/arcsec^2 in the optical and 37 mag/arcsec^2 in the UV. Many important secondary science cases will result as free by-products and will be discussed in some detail, such as the luminosity function of galaxies, the contribution and role of intracluster light, the cosmological background radiation at UV and optical wavelengths, the molecular hydrogen content of galaxies at z=0.25, time domain studies of supernovae, GRBs and tidal disruption events, the chemical enrichment of the interstellar medium through mass loss of red giant stars and the accurate measure of the BAO scale at z=0.7 with over 30 million galaxies detected in Lyman-alpha at this redshift. It will provide the astronomical community the first space-based reference UV-optical photometric catalogue of the entire sky, and synergies with GAIA, EUCLID and WFIRST will also be discussed. Technical issues will likewise be addressed for possible improvements on the current design.