

Name: Stéphane Udry
Email: Stephane.Udry@unige.ch
Institution: University of Geneva
Title: The PLATO 2.0 mission: On the shoulders of giants... and dwarfs
Type: Contributed Talk
Session: Future Exoplanet Telescopes and Instrumentation
Abstract: PLATO2.0 is expected to revolutionise our understanding of extra-solar planets through the discovery and bulk characterisation of planets around hundreds of thousands of stars, especially exploding the number of known transiting very small-mass planets orbiting bright stars. PLATO 2.0 will carry out high-precision, long-term photometric and astroseismic monitoring of up to a million of stars covering over 50% of the sky. In the presentation, we will describe the PLATO2.0 science yield: detecting Earth-sized planets in the habitable zone with known radii, masses, and ages, including planets orbiting solar-like stars; obtaining statistically significant numbers of characterized small planets at different orbits, around various star types; thus providing us with a set of well characterized small terrestrial planets around bright stars as constraints to planet formation theories and as targets for future atmosphere spectroscopy. PLATO2.0 precise lightcurves will also enable the detection of exomoons, exo-rings, and circum-binary planets in bright systems.

In addition, the precise stellar parameters obtained by astroseismic studies will open new doors to better understand stellar interiors and allow us to constrain poorly-understood physical processes, like convection, improve our understanding of stellar evolution, and determine precise age of stars and planetary systems.

PLATO 2.0 is a mission in competition for the ESA M3 mission slot. With a launch foreseen in the 2022/24 time frame, it will build upon the expertise gained with the very successful CoRoT and Kepler satellites, as well as with CHEOPS, the planned ESA's first small mission, and NASA's TESS mission. Synergies between this ensemble of coherent missions will be discussed as well.