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PLATO: PLAnetary Transits and Oscillations of stars

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This decade is witnessing a rapid increase in our understanding of the nature of extra-solar planet systems and their host stars. Missions such as Corot and Kepler have confirmed that not only are extra-solar planets a common occurrence, but that multiple planetary systems are also the norm. Whilst there has been significant progress in discovery and to some extent understanding of extra solar planets and their host star(s), major questions remain as we seek to reveal the presence of extra-solar planets harbouring life.

PLATO is a proposed ESA M3 mission which will revolutionise our understanding of extra-solar planets, through its discovery of planets around hundreds of thousands of stars, orders of magnitudes more than previously known. Its exquisite sensitivity will ensure that it detects planets to Earth masses and within the 'habitable' zone. PLATO will probe the interiors of both the host star(s) and their orbiting planetary systems.

This presentation will describe the PLATO science yield: detecting Earth-sized planets in the habitable zone with known radii and masses, including planets orbiting solar-like stars; obtaining statistically significant numbers of characterized small planets at different orbits, around various star types; thus providing a set of well characterised small terrestrial planets around bright stars as constraints to planet formation theories and as targets for future atmosphere spectroscopy.