Seismic and Rotational Characterisation of Stars in PLATO observation fields using Multi-Sector TESS data

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NASA's Transiting Exoplanet Survey Satellite (TESS) has been conducting high-precision photometric observations for the last seven years, covering more than 95% of the sky. By the end of Cycle 7, around 90% of this coverage includes multiple sector observation, which include the two main PLATO observation fields (LOPS2, LOPN1). In the PLATO fields, TESS has over 80 thousand SPOC light curves in short cadence (2 minutes), which could be used for precise seismic analysis. The TESS FFI QLP light curves contain 2.6 million sources with more than one sector of observations. These multi-sector light curves, with proper calibration, can be used to seismically characterise subgiants and giants outside the continuous viewing zone.

In this talk, I will present how TESS data analysis can support and enhance PLATO science. I will begin by showing preliminary seismic analyses of the brightest stars in the PLATO fields, which could serve as potential calibrators. I will then present a multi-campaign TESS analysis of subgiants and giants in the LOPS2 region. Although it is generally accepted that rotation periods longer than 8–10 days are difficult to measure outside the continuous viewing zones of TESS, I will share preliminary results indicating the detection of longer rotation periods using the pyTADACS tool. The PLATO field also includes 17 open clusters. In these clusters, we could measure rotation periods from TESS, which would be extremely valuable for establishing gyrochronological relations and for extending the baseline for magnetic activity studies when combined with PLATO data. This presentation will highlight how TESS data can be leveraged to support PLATO target selection and scientific objectives, both before and during the PLATO mission operations.