

ExTrA

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Abstract

ExTrA is an ERC-funded project offering a novel method to dramatically improve on the precision of ground based photometry and more efficiently search for exo-Earths orbiting cool stars. The method makes use of a multi-object spectrograph to add the spectroscopic resolution to the traditional differential photometry method. We will discuss how this shall enable the fine correction of color-dependent systematics (atmospheric variations, instrument and detector errors) that would otherwise hinder ground-based observations. ExTrA aims to develop this method with a new facility composed of small telescopes (60cm in diameter) and a near-infrared spectrograph ($R < 500$, $\lambda = 0.8 - 1.6 \mu\text{m}$). Near-infrared observations will boost the efficiency of its cool-star observations, such that ExTrA might become the most sensitive survey for Earth-size planets transiting nearby planets. It shall yield dozens exo-Earths amenable to atmospheric characterization, including several habitable exo-Earths, which may provide our first peek into an exolife laboratory. In this talk, we shall discuss all aspects of ExTrA from its initial concept to the expected exoplanet yield, passing by its design and implementation.