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The TROY Project: Exploring Data for Orbital Indicators and Dynamics of Exotrojans

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New computational capabilities allow now to squeeze existing data to explore other parameter spaces of the exoplanet population. Despite the extensive amount of Kepler data available, systematic searches for co-orbital exoplanets (exotrojans) remain unexplored. In this work, as part of the TROY project, we present a new detection method based on the dynamical properties of these systems. We have developed a dedicated algorithm that enhances the identification of co-orbital configurations by orbital dynamics rather than traditional transit detection techniques. This approach not only offers a new paradigm for the detection of exotrojans but also maximizes the scientific potential of large datasets such as Kepler's, with future applications for missions like PLATO. We will present the first results obtained with this method, highlighting its potential to uncover previously undetected co-orbital exoplanets.

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