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Singletrans a new tool for the search of mono transits in light curves

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The quest for exoplanet discoveries has been significantly advanced by searching stellar light curves from space missions like CoRoT, Kepler, K2, and TESS. Traditional detection pipelines, employing methods such as the Box Least Squares (BLS), search these light curves for periodic transits. However, these methods often overlook single transits, especially those with shallow depths of smaller planets. Addressing this challenge, we introduce SINGLETRANS, a novel wavelet-based algorithm developed to enhance the detection of these elusive single transits. Searching the archived data of space-missions, it enables the detection of potential candidates with single transits and extended orbital periods. Single transits candidates in the PLATO field detected in archival data can help in the preparation of the mission. After the launch of PLATO single transits detected in the first 'quarters' of the PLATO light curves can help to identify long period planets in the following 'quarters' of the mission. Additionally, SINGLETRANS is capable detecting quasi-periodic transits, which is crucial for identifying circumbinary planets and transits with strong transit timing variations (TTV). We will present results from our injection tests and findings from our search in CoRoT, Kepler, K2 and TESS data.

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Session Classification: Poster Presentations