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Characterizing the Input Sample for the POET Transiting Exoplanet Microsatellite Mission

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Earth-like exoplanets, defined to be rocky extrasolar planets in the habitable zone of their host stars, are of particular interest in the search for life in the universe. The Photometric Observations of Exoplanet Transits (POET) satellite is a microsatellite in development with a mission to discover Earth-like exoplanets around ultracool dwarfs (UCDs) through the transit method. UCDs are M7 or cooler stars and brown dwarfs. These UCDs are the best targets for detecting Earth-like exoplanets for numerous reasons. Here, we present the process of building a parent catalogue of all UCD candidates from Gaia Data Release 3 within 100 pc and brighter than a 2MASS J magnitude of 14. Ultimately, the goal is to choose approximately 100 UCDs with small radii and inclinations close to 90° to observe with POET to maximize the probability of detecting Earth-like exoplanets.

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