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TlaRA – a tool for predicting exoplanet discovery yields from transit surveys.

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We have developed the Transit Investigation and Recoverability Application (TlaRA) pipeline, a tool for making sensitivity maps for transit surveys based on the timestamps and precision of the photometry. We combine these with occurrence rates derived from Kepler to estimate yields for transit surveys. We apply TlaRA to the TESS Southern Ecliptic Hemisphere, and predict 2271(+241–138) detectable planets from the Year 1 and 3 SPOC FFI light-curves. By comparing our results to the TOI catalogue, we estimate (with a 3-sigma confidence level) that 75% of planets with periods over 25 days have yet to be discovered. We plan to apply TlaRA to simulated PLATO light-curves to calculate transiting exoplanet yields in a similar manner.

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