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Rare Transits Observed by ASTEP from Antarctica

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The Transiting Exoplanet Survey Satellite was launched in 2018 to search the sky for planetary candidates. Of the 870+ southern planetary candidates from TESS currently awaiting confirmation, roughly 10% have transit durations longer than five hours; a further third of these have orbital periods longer than 20 days. Systems like these could fall into the sparsely populated parameter space of long-period gas giants; but long transits that happen infrequently present an observational challenge from the ground. Not so for ASTEP, a 40cm telescope installed at Dome C in Antarctica. ASTEP's proximity to the South Pole means that it enjoys outstanding photometric conditions, as well exceptional phase coverage due to uninterrupted observing during the Austral Winter. In this talk I will share some results from ASTEP's first seasons of SG1 observing, including uninterrupted 10 hour-long transits, TTV monitoring, and the first ever ground-based transit of a circumbinary planet. I will also show that ASTEP has the potential to make a significant contribution to ephemeris refinement for upcoming missions such as JWST and Ariel.

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