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Title: Recently Discovered Exoplanetary System in Spin-Orbit Misalignment from Rossiter-McLaughlin Measurements  
Type: Poster  
Session: Characterizing Transiting Planets  
Abstract: The Rossiter-McLaughlin radial velocity anomaly occurs when a planet transits across its host star, and allows the measurement of the “spin-orbit alignment” between a planet's orbital plane and its host star's spin axis. This measurement provides critical insights into the processes involved in planetary formation and migration, which cannot be obtained from any other type of data. Our Exoplanetary Science at UNSW group is utilizing the new CYCLOPS2 fibre feed on the Anglo-Australian Telescope to carry out high precision Doppler observations of southern hemisphere transiting systems. CYCLOPS2 also delivers the capacity to obtain spin-orbit alignment data for these systems. We have carried out measurements of this anomaly for some recently discovered planetary systems, including WASP-79 and HATS-3, and found that WASP-79b is in a nearly polar orbit. I will discuss how these spin-orbit alignment measurements are set to become even more critical for exoplanetary science in the years ahead, as TESS discovers much large numbers of transit systems bright enough for Rossiter-McLaughlin observations on 4-m, 8-m and 30-m class telescopes – and enables this work to be done for planets in longer orbits. I will highlight the importance for carrying out additional spin-orbit measurements, in particular of the handful of bright Kepler objects, to help to elucidate the complex formation and evolution mechanisms of exoplanets.