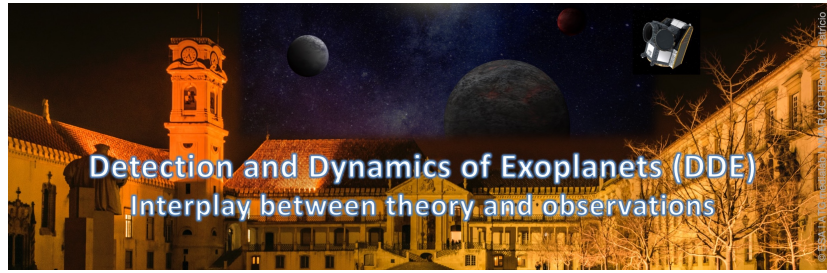


Detection and Dynamics of Exoplanets (DDE): Interplay between theory and observations



Contribution ID: 49

Type: **not specified**

Evidence for a polar circumbinary planet orbiting a pair of young brown dwarfs inferred from retrograde precession

Wednesday, July 9, 2025 11:15 AM (15 minutes)

Of the types of planets orbiting binary stars, one particularly interesting category is planets with a very large mutual inclination with the inner binary, on a “polar” orbit. While polar circumbinary planets have eluded detection so far, highly misaligned and polar circumbinary gas and debris discs have been observed. Should these discs form planets it can be assumed that the corresponding polar circumbinary planets do exist. One observational signature of such an orbit is that a polar planet would induce a retrograde apsidal precession of the inner binary. Analysis of the radial velocities of a 45 Myr old binary brown dwarf reveals just such a retrograde apsidal precession. I will present this system, the properties of the potential planet, paths towards confirming it independently, and discuss how to expand on this to detect more such polar circumbinary planets.

Presenter: BAYCROFT, Thomas (University of Birmingham)

Session Classification: Planets in binary systems