Amaury Triaud: 2020 Fowler Award (A)

The 2020 Fowler Award (A) is awarded to Dr Amaury Triaud.

Dr Amaury Triaud, Birmingham Fellow and Lecturer at the University of Birmingham, has pioneered observational studies into the dynamical origins of gas-giant planets in close orbits about their host stars. Dr Triaud carried out the first comprehensive survey of spin-orbit misalignments in these “hot-Jupiter” systems, revealing two likely evolutionary pathways to their present orbits.

Between 2007 and 2017, Dr Triaud led the radial-velocity follow-up of planet candidates south of declination -10 degrees from the Wide-Angle Search for Planets (WASP). His programme led to the discovery of over 130 planets from some 1000 candidates, making WASP the most successful of all ground-based transit searches. He followed up many of these discoveries with a series of high-cadence radial-velocity studies with the HARPS instrument on the ESO 3.6-m telescope, of the Rossiter-McLaughlin distortion of the radial-velocity signal produced as a planet traverses the host star’s surface pattern of rotational Doppler shifts.

Dr Triaud’s analysis of these distortions revealed that the orbital axes of one-third of all hot Jupiters are strongly misaligned with the stellar spin, and that indeed half of these are retrograde. His results support theoretical predictions that three-body interactions between pairs of planets, or a planet and a more distant low-mass stellar companion, could place a gas-giant planet on a highly-eccentric transfer orbit to a tidally-circularised, tightly-bound state, providing an alternative evolutionary pathway to viscous migration through a gaseous protoplanetary disc.

For these reasons, Dr Amaury Triaud is awarded the Fowler Award for Astronomy.