The strongly interacting exoplanetary system WASP-148

G. Hébrard, J.M. Almerara, R.F. Dìaz et al.

WASP-148 is a particularly interesting exoplanetary system including at least two giant planets. Their eccentric orbits have periods of 8.80 and 34.5 days, thus near the 4:1 mean-motion resonance. This configuration induces dynamical interactions so that the orbits significantly differ from Kepler laws. In particular, as the inner planet transits its host star, this allows its orbital period variation to be clearly detected, with an amplitude of 22 minutes and a super-period of 450 days. Photodynamical and stability analyses allow constraints to be put on that system, in particular on its evolution or the possible mutual inclination of both planets. Those analyses fit radial velocities secured with SOPHIE and transit light curves secured from the ground and the TESS satellite. Amateur astronomers also contribute to those observations.