Name: Alexandre Santerne
Email: alexandre.santerne@astro.up.pt
Institution: Centro de Astrofisica da Universidade do Porto
Title: Probing the nature and mass diversity of Kepler candidates with SOPHIE
Type: Contributed Talk
Session: Exoplanet Statistics, False Positives, and Completeness Corrections
Abstract: Exquisite photometry is not enough: many astrophysical false positive scenarios might mimic the photometric transit of a planet. Thus, to establish the planetary nature of a candidate, the traditional technique consists in measuring the mass of the transiting object through dedicated Doppler observations. Using nearly 80 nights on the SOPHIE spectrograph at Haute-Provence Observatory since 2010, we are conducting an intensive radial velocity follow-up program of the Kepler candidates. We observed 90 Kepler objects of interest that led us to characterize 18 new sub-stellar companions with a huge density diversity. We also identified numerous astrophysical false positives that permits us to measure, for the first time, the false positive rate of the Kepler mission within a range of candidates properties. In this talk, we will review the results obtained thanks to independent radial velocity follow-up of Kepler candidates, from the characterization of Kepler planets and brown dwarfs to the measurement of the Kepler false positive rate for giant and close-in planets. We will also present new results from our latest observing campaigns that explore the false positive rate of Kepler cool and giant candidates/planets.

Co-authors: the SOPHIE/Kepler team