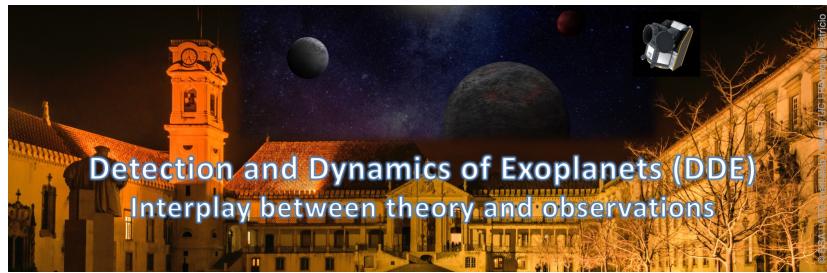


Detection and Dynamics of Exoplanets (DDE): Interplay between theory and observations



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Detection and characterization of planetary mass objects using a multi-technique approach

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Blind direct imaging (DI) surveys carried-on with state-of-the-art high-contrast imaging instruments allow to detect just a low number of new planetary mass companions due to the paucity of such objects at the typical separations explored by such instruments. The possibility to couple DI with other techniques (e.g., astrometry and RV) allows to select targets with an high probability to host a companion. Selecting young (few hundreds of Myr) and nearby (to explore the inner parts of such systems) objects, we can then improve our detection probability. Furthermore, coupling such techniques allows to better characterize both the mass and the orbital characteristics of the detected companions and to test the atmospheric models normally used to define the masses of DI companions. In some cases, this approach has yet allowed the detection of very interesting companions like, e.g., in the case of AF Lep. Finally, also in case of non-detection, the DI data acquired are able to give valuable informations on the mass and the separation of the companion causing the astrometric signal. These informations will help in designing observations with future ELT high-contrast instruments that will allow to explore the inner parts of the planetary systems even at larger distances from the Sun.

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