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Title: Magnetic characterization of planet-host stars: unveiling star-planet interactions?

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Session: Characterizing Transiting Planets

Abstract: co-authors: Rim Fares (St Andrews, UK), Jean-François Donati (OMP, Toulouse,

F)

An important ingredient to understand the formation and evolution of planetary systems is the magnetic field of the parent star, especially when the planet orbits at a very short distance. Observational characterization of the magnetic field topology and strength is therefore an important input for model constraints. It also allows understanding the environment where the planet evolves and the different ways it may interact with the star: direct magnetic interactions and energy exchange, or tidal interactions with more indirect effects on the star and planet. Such studies are specially significant on transiting systems since the orbit inclination is measured as well as the planet real mass, and its radius.

We will review past studies on a dozen Hot-Jupiter systems done with the use of the spectropolarimeters TBL/NARVAL and CFHT/ESPaDOnS. We will then discuss the potential prospects on Kepler planet-

host targets, both with these instruments and the next generation ones, like SPIRou.