

Drawing the treasure map: disentangling the structure of the magnetic field of the system BD+20 1790

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Abstract

In this contribution we present the preliminary results of the study of the surface of the magnetic field of the system BD+20 1790 and its close-in giant planet. Previous results show a high level of stellar activity, with the presence of prominence-like structures, spots on the surface and strong flare events, despite the moderate rotational velocity of the star. The presence of the planet could be an interpretation for these, in terms of stellar-planet interactions (SPI) theory. To study the stellar activity we have carried out both echelle spectroscopic and photometric monitoring over the past few years. The aim of this work is to map the active regions at different atmospheric levels. The simultaneous study of photospheric and chromospheric active regions is a powerful tool that allows us to trace, reconstruct and model the puzzle of the magnetic field topology since the structure of magnetic flux tube breaking into the stellar atmosphere is traced by the configuration of these active regions at the different levels. In short, studying and drawing the map of the magnetic field of this system will enlarge our understanding of SPI, as well as magnetism and activity.