ID de Contribution: **75** Type: **Oral presentation**

Non-transiting exoplanets as a means to understand star-planet interactions in close-in systems

mercredi 9 avril 2025 15:00 (15 minutes)

Since 1995, more than 5,000 exoplanets have been discovered, largely thanks to the transit detection method. However, most exoplanetary systems do not exhibit transits, limiting this method to detecting only about 10% of existing exoplanets. To gain a more comprehensive understanding of exoplanet populations, alternative detection approaches are needed.
One particularly intriguing trend in the exoplanetary population is the dearth of close-in exoplanets around fast-rotating stars. This depletion zone results from the combined effects of intense tidal and magnetic interactions between the planet and its host star, acting on short timescales. Detecting more exoplanets undergoing such interactions is therefore crucial for refining our understanding of the underlying physical mechanisms. Fortunately, some non-transiting close-in exoplanets can be detected in photometry thanks to the signature of their phase curve.
In this talk, I will present a new search for non-transiting exoplanets in the Kepler data, focusing on very short orbital periods (below 2.3 days). Through the analysis of photometric variations in host star light curves, I identified 91 new objects whose signatures are consistent with the presence of a non-transiting exoplanet. I will also show that this sample lies within the depleted region associated with short-timescale orbital evolution around fast rotators. This new sample, if confirmed, could provide valuable insights into star-planet interactions in close-in systems.

Astrophysics Field

Planets and satellites: detection. Star-Planet Interactions. Stars: solar-type

Author: GOURVÈS, Clémence (AIM-CEA Saclay)

Co-auteurs: DYREK, Achrène (CEA Saclay); BRETON, Sylvain N. (INAF –Osservatorio Astrofisico di Catania, Italy)

Orateur: GOURVÈS, Clémence (AIM-CEA Saclay)

Classification de Session: Session 3

Classification de thématique: Astrophysics