ID de Contribution: **46** Type: **Oral presentation**

Jovian low-frequency radio-emissions, a laboratory for extrasolar systems.

mercredi 28 février 2024 15:00 (15 minutes)

Studying Jovian low-frequency magnetospheric radio-emissions (≤40 MHz) allows to remotely probe their generation mechanism (especially the electron Cyclotron Maser –ECM) and the acceleration processes of electrons that power it. Those emissions have different time scales : from milliseconds (fast drifting radio bursts) to hours, and are mainly polarized elliptically (both circular and linear polarization are present).
We have developed a new method, based on Fast Fourier and Radon transforms, that allows an automatic detection of fast drifting bursts in massive high time-frequency resolution data. Applied to Jupiter observations, it allowed us to detect new burst types.
Besides, while propagating through the plasmas between the source and the observer, those radio emissions are subject to Faraday rotation, producing spectral fringes in linear polarization. Studying these fringes allows to retrieve the Rotation Measure (RM) of the emission and remotely study the interplanetary medium, the terrestrial ionosphere and especially the Jovian magnetosphere in our case. In this work, we analyze the dependence of the measured RM to source-observer geometry and periodicities related to the Jovian magnetosphere.
Finally, it has been convincingly argued that radio emissions from exoplanets and star-planet interactions are expected to have deep similarities with Jupiter's. Recently, fast drifting radio bursts very similar to Jupiter-Io ones have been detected from the star AD Leo. Thus, we evaluate the application of these detection methods to exoplanets by conducting 'Jupiter as an exoplanet'studies with data from the NenuFAR radio telescope, similar to that conducted with LOFAR data.

Astrophysics Field

Not in the above

Day constraints

I teach on Thursday afternoon at Université Paris-Saclay so I won't be available at that time.

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Classification de Session: Session 3