Thesis Proposal for the Master's Degree in Physics

Title:
Study of Solar Radio Bursts through interplanetary spacecraft measurements

Abstract (max 10 lines):
Solar radio bursts are transient radio emissions produced by high-energy electrons accelerated in the higher layers of the solar atmosphere. Among the different types of solar radio bursts, the so called type II bursts are indicators of coronal mass ejections and the associated shock waves, while type III bursts are typically produced by solar flares. The investigation of these phenomena at frequencies below 10 MHz requires the use of interplanetary spacecraft to avoid the effects of the Earth's ionosphere in this frequency range. In this thesis, solar radio bursts will be studied through the analysis of radio emission measurements acquired by various spacecraft: Wind, STEREO A, and the more recent Parker Solar Probe and Solar Orbiter. The scope of this work is to contribute to the comprehension of emission and propagation physical mechanisms of type II and type III bursts.

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Laboratory where the thesis is carried out:
Plasma Astrophysics Lab

Any participating external structures:
Radboud University, Paesi Bassi
LIRA-Observatoire de Paris, Francia

Type of thesis:
research (data analysis)