

# Overall and Specific Goals of the Research Proposal

## Overall Goal

To apply complex networks and fractal/multifractal approaches to various issues related to plasma physics in space and astrophysical systems.

## Specific Goals

- 1)** To study, using a complex network approach, the evolution of magnetic structures in the Earth's magnetosphere and the solar photosphere, in order to determine to what extent the topology of the resulting networks conveys information on solar or geomagnetic activity.
- 2)** To analyze time series related to space and astrophysical systems using the visibility graph approach, in order to take advantage of its capabilities to discriminate the statistical properties of time series, previously reported for simulated data.
- 3)** To use fractal and multifractal methods to study the temporal evolution of complexity in plasma systems, in geomagnetic and solar environments, relating it to the existence of energy dissipation events, and the characterization of structures in magnetic configurations.