EPSS 261 Homework

Data Analysis Methods in Space Physics

- Problem Set 1: Geomagnetic Indices, Galileo and Voyager : features retrieving and processing data from different remote sources (e.g. WDC-C in Kyoto, Kp index from GFZ Potsdam, Galileo data from Planetary Data System, and Voyager data from CDAWeb).
- Problem Set 2: Storm energy and field line resonances : features basic timeseries arithmetics, processing, and visualization and field aligned coordinate transformation using `Speasy.jl`.
- Problem Set 3: Minimum and Maximum Variance Analysis : features using minimum and maximum variance technique to analyze electromagnetic waves and shock crossings.
- Problem Set 4: Magnetopause crossing : features multi-spacecraft analysis (reciprocal vectors technique) to determine boundary normal and velocity, and estimate spatial gradients using Cluster spacecraft.
- Problem Set 5: A whistler mode chorus event : features Electric Field Instruments (EFI) data, wave polarization, time-frequency, and Poynting flux analysis using THEMIS spacecraft.
- Problem Set 6: Electron-scale measurements of magnetic reconnection : features plasma data, energy spectra analysis using Magnetospheric Multiscale Mission (MMS) spacecraft.

Note that `SpaceTools.jl` has been renamed to `SPEDAS.jl`: Julia-based Space Physics Environment Data Analysis Software.

Bibliography