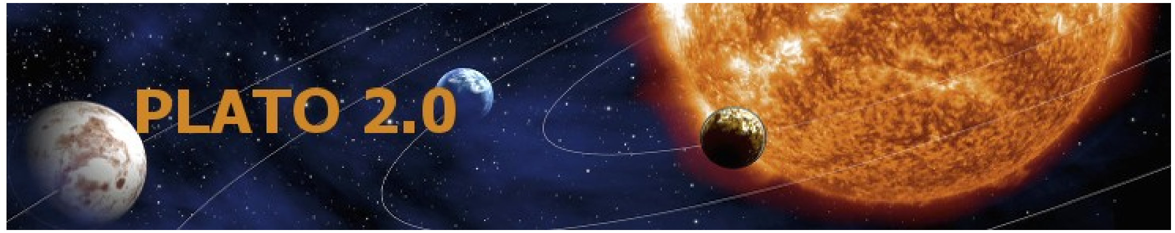
IAA Asteroseismology team:

How can we contribute to/benefit from an SRC

Ph. D. José Ramón Rodón



1. Asteroseismology Data
2. Goals
3. Challenges
4. What can we do for SKA–Link
5. What SKA-link can do for us
6. Opportunities to collaborate

Asteroseismology Data

Structure and Oscillation models

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ichier pour oscillations non adiabatiques:
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olaire_gn, lim_atm, edding, pertm_ext, pertw_0, diffm_mp, difft_nu, diffw_0
10  H1  He3  He4  C12  C13  N14  N15  O16  O17  S128
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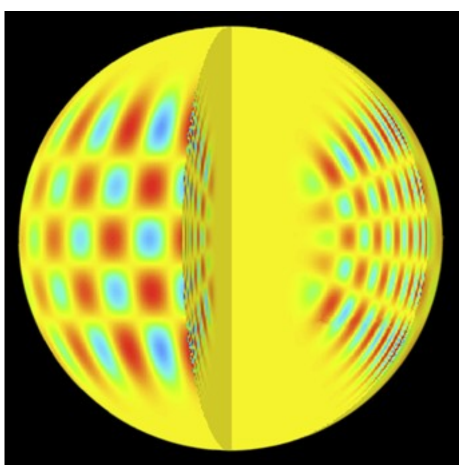
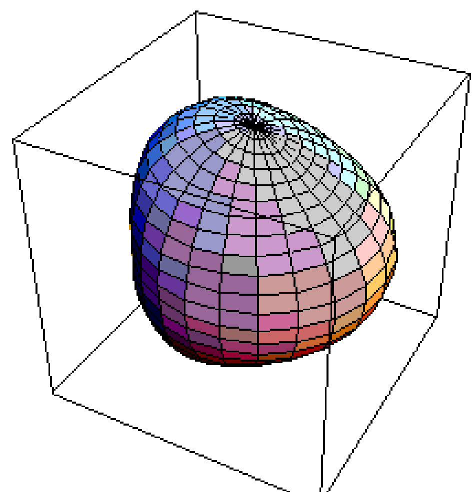
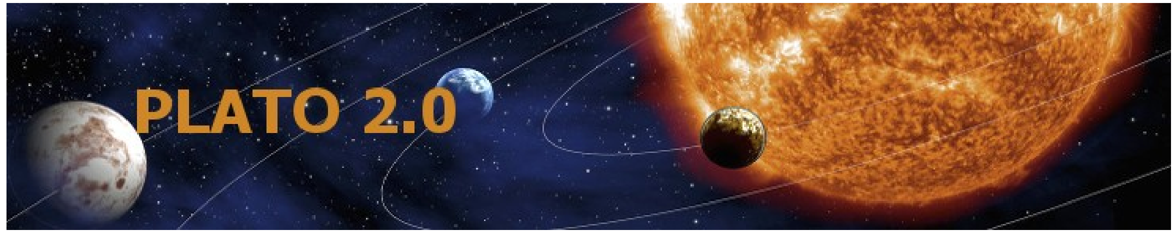
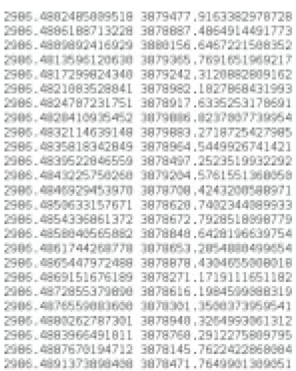


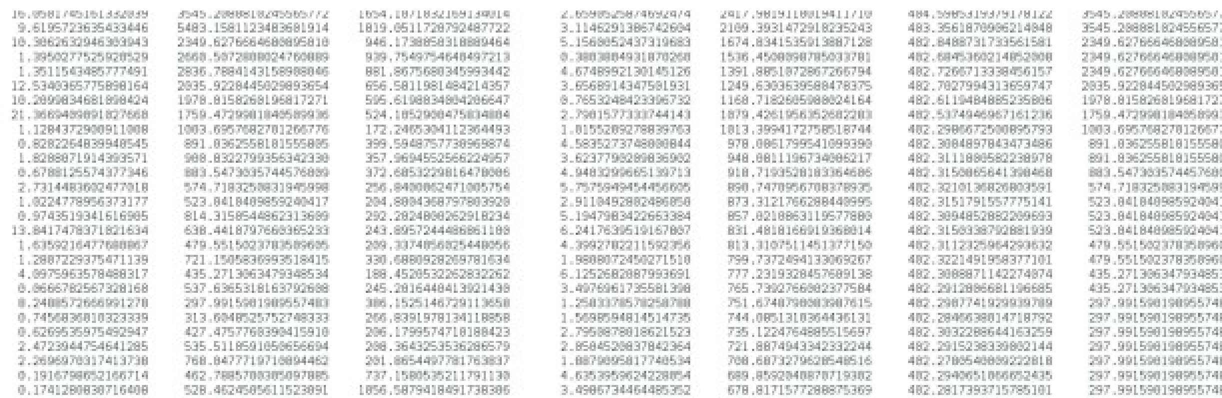


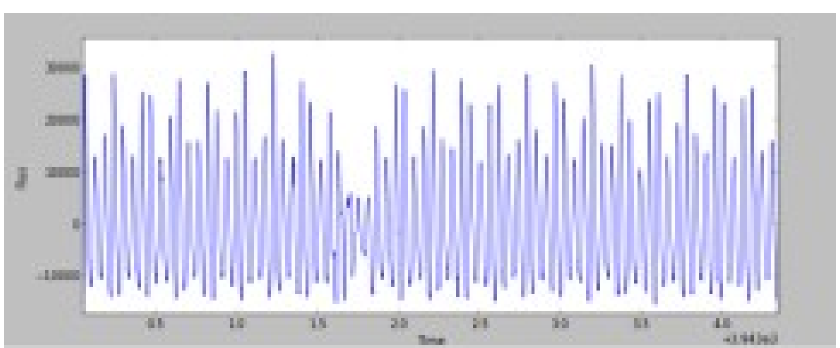


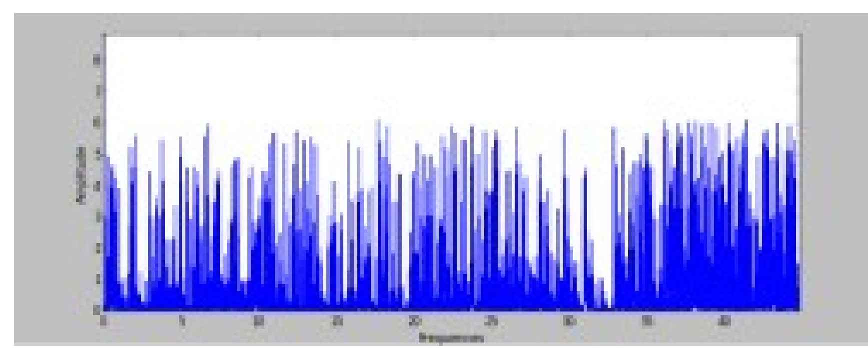
Asteroseismology Data

Observations of light curves

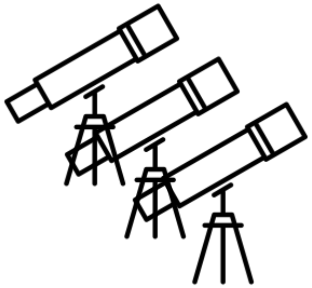




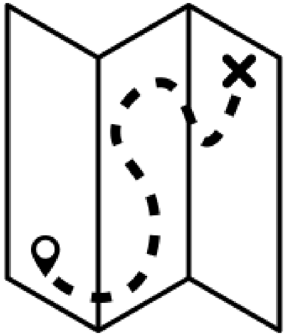




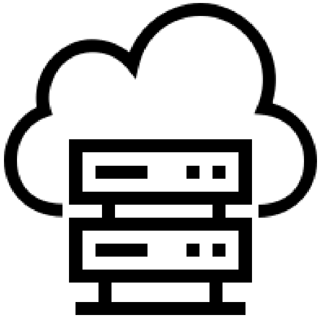
Goals (Best practices)



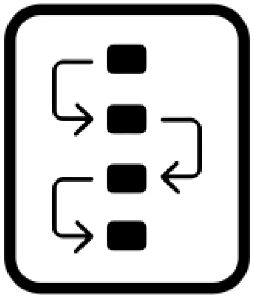
Reproducibility



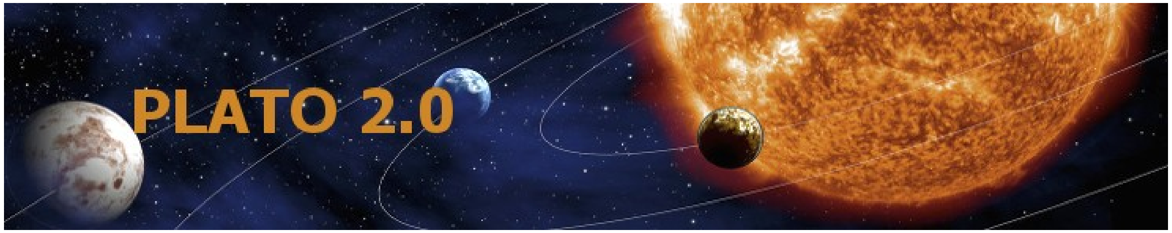
Traceability



Computation

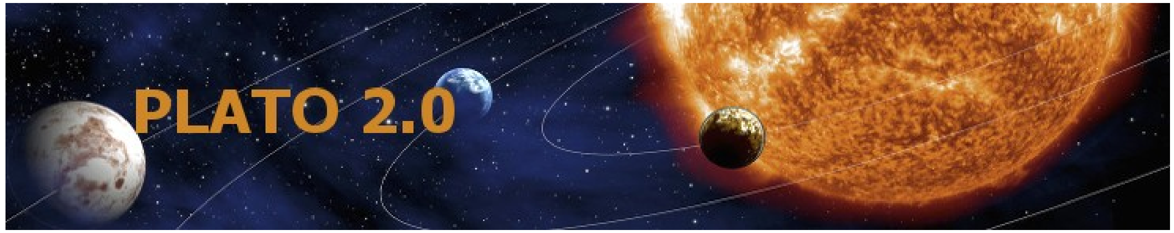


Workflows



Challenges

- Provide an automatic time series analysis system where the stellar frequencies are detected and analyzed.
- PLATO goal: Characterization of oscillations in the hosting planet stars.
- Handling massive data from observations and masive data from theoretical models.
- Treatment of very long time series of huge number objects at the same time. (137.000 L.C. every 600 seconds)
- Universal access to data and methods (TOUCAN project) within Virtual observatory framework.



What can we do for SKA–Link

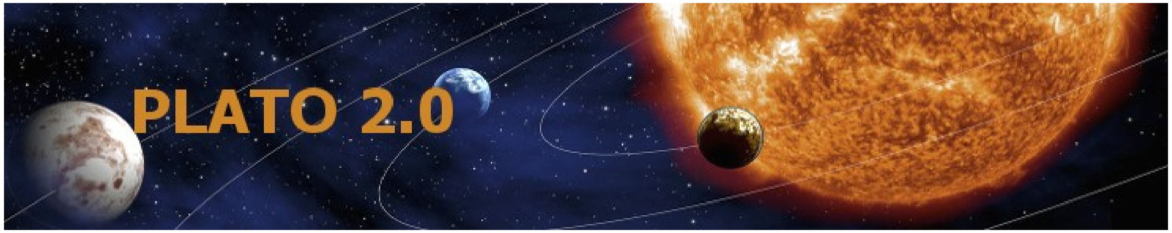
Original Team Activities

Scientific Developments

Non standard time series analysis. Numerical stellar interior models including rotation.

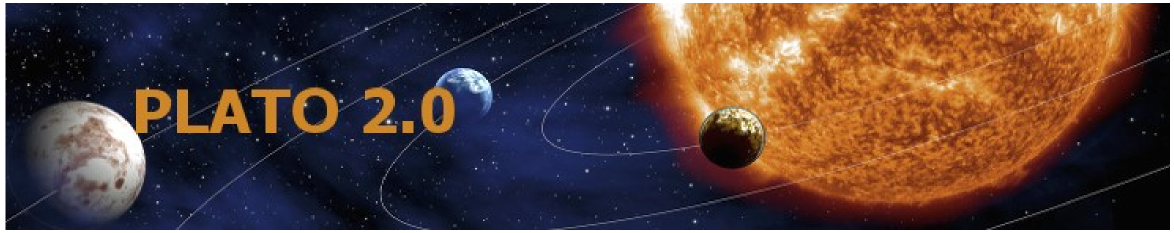
Technical items

Big Data. Depth learning Machine learning. Data mining Cloud computing.



What SKA-link can do for us

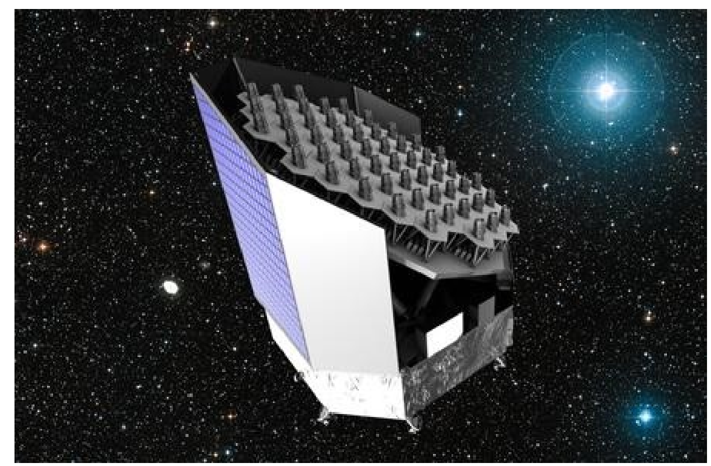
- Learning new e-Science techniques for a reliable and transparent work that can be applied to the study of stellar interiors through asteroseismology techniques.
- Knowing first hand what the SKA Regional Centres will be, and how this can be of interest beyond radioastronomers
- Exploring whether we can, on our side, contribute or support an SRC at the IAA

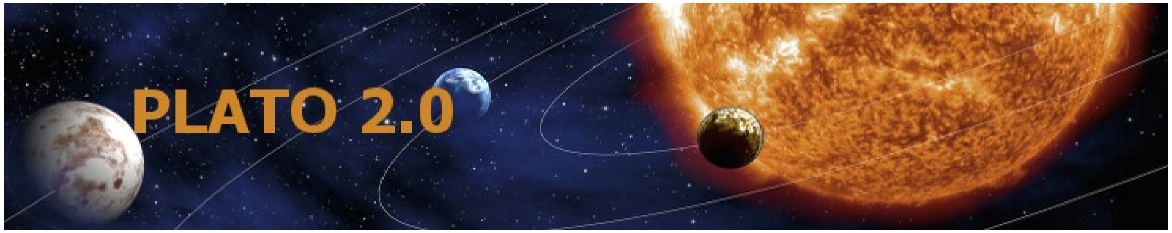


Opportunities to collaborate

SRC!!!

PLATO!!!





Ideas and proposals

Integration of theoretical models of stellar oscillations within the Virtual Observatory to do classifications using Machine Learning Algorithms.

Massive data analysis of PLATO (Using Data Mining techniques).
Which will lead to fulfill the main objective of the mission:
Characterization of the nearest hosting planets stars.