



PLATO2.0

PW#5

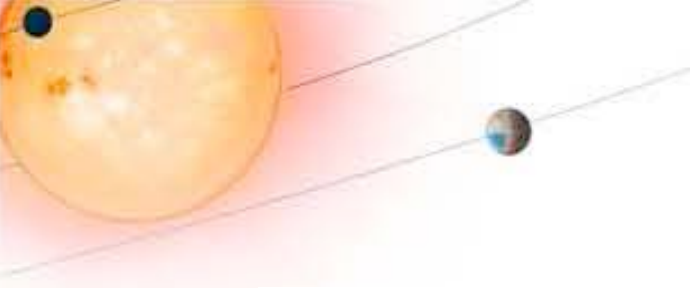
J.C. SUÁREZ

STATUS WP121.130

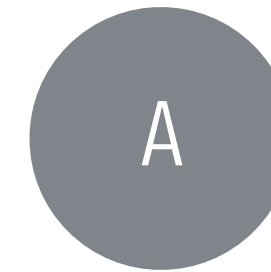
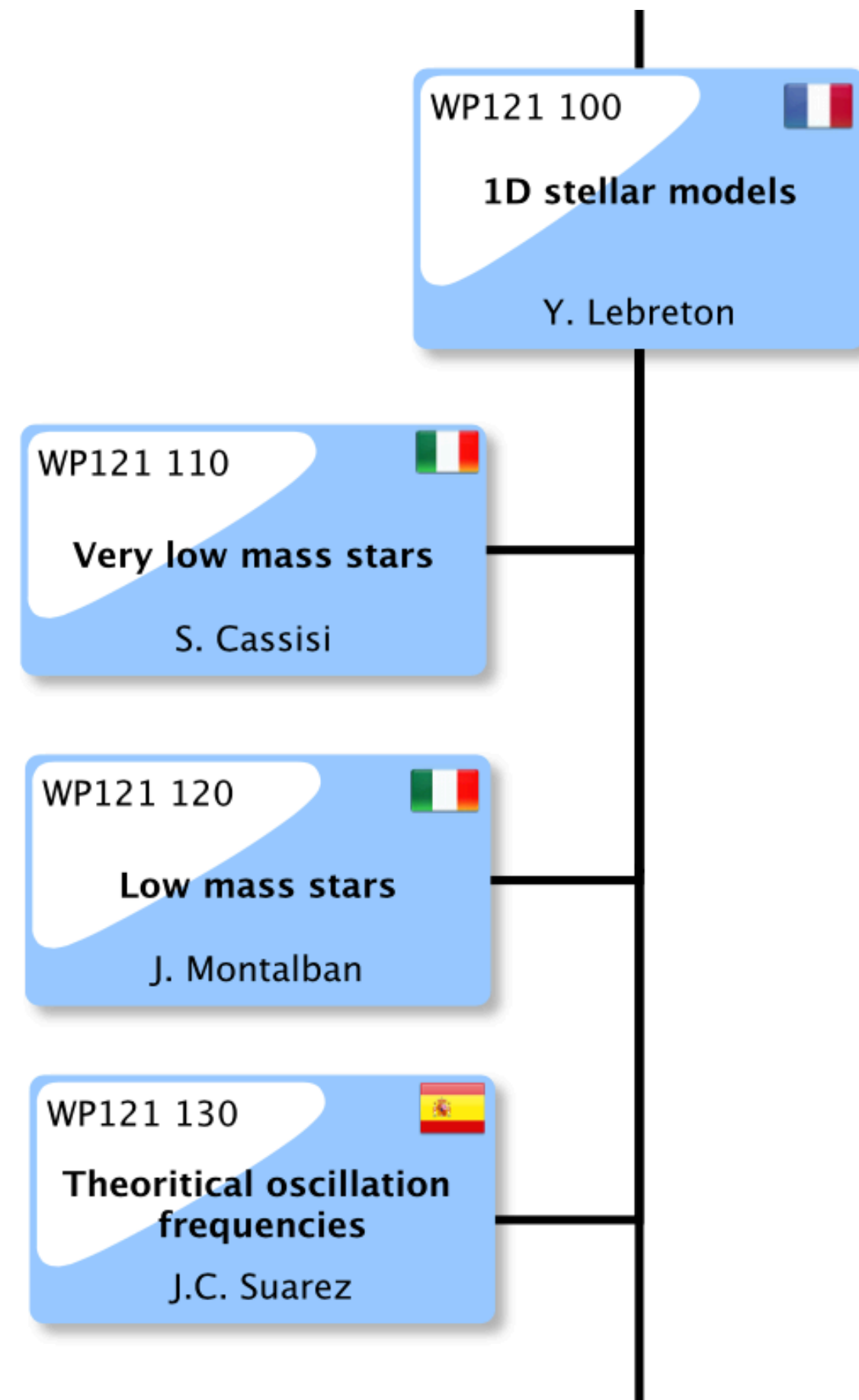
Theoretical frequencies computation



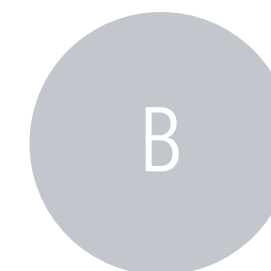
UNIVERSIDAD
DE GRANADA



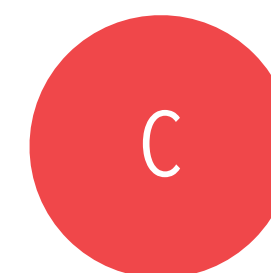
wp objectives



Support the automatic pipeline tasks related with theoretical oscillation frequencies

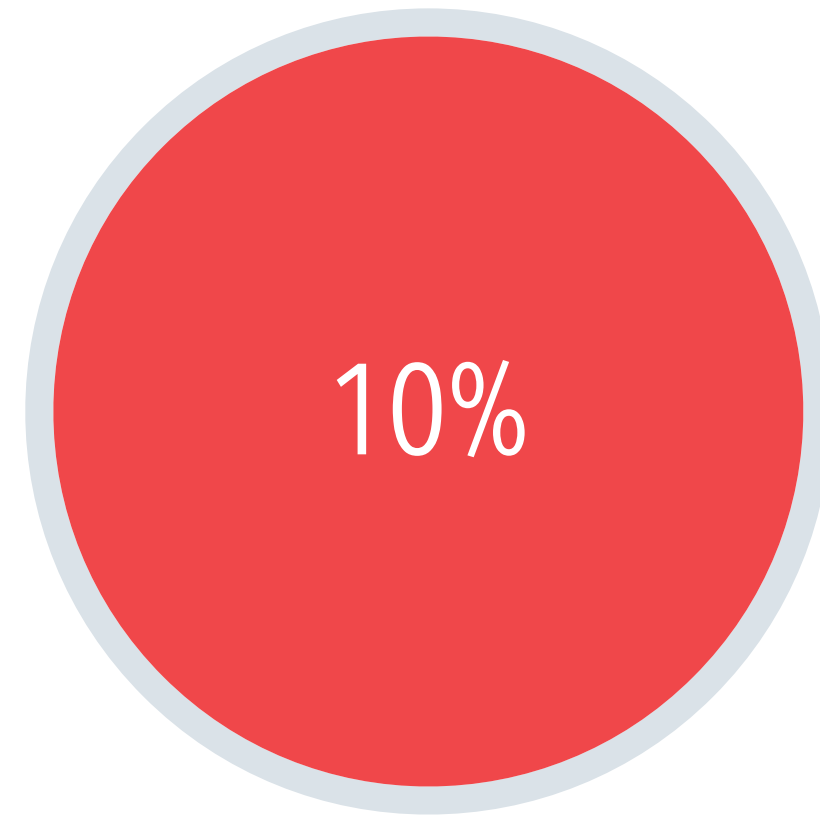


Improve/design new algorithms to obtain theoretical oscillation frequencies from PLATO observational evidences.



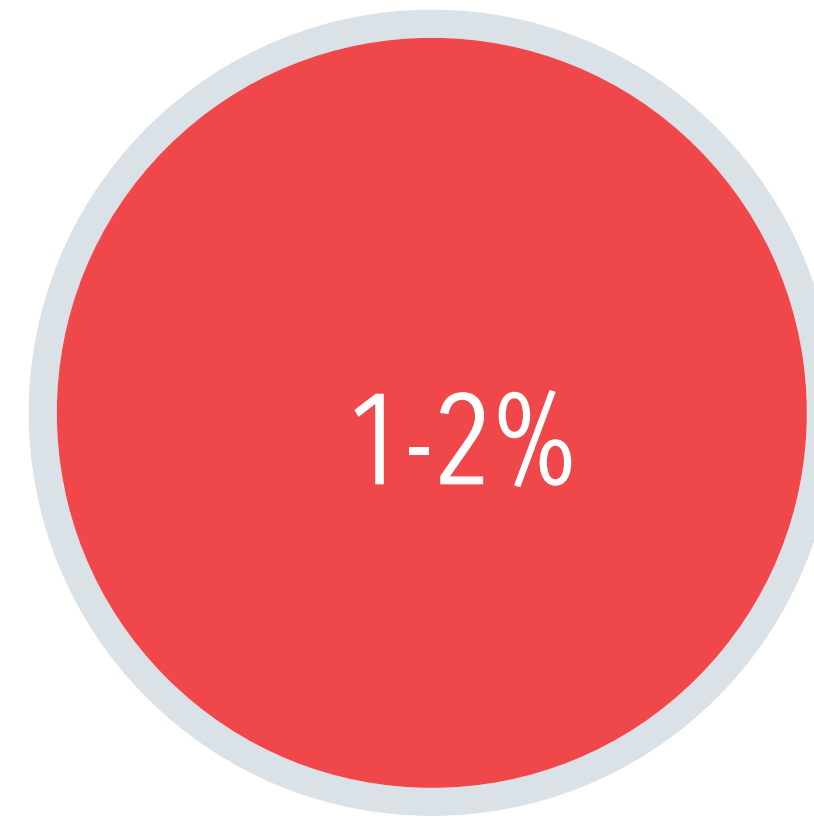
Calculate the theoretical oscillation frequencies.

Main Science Case Goals



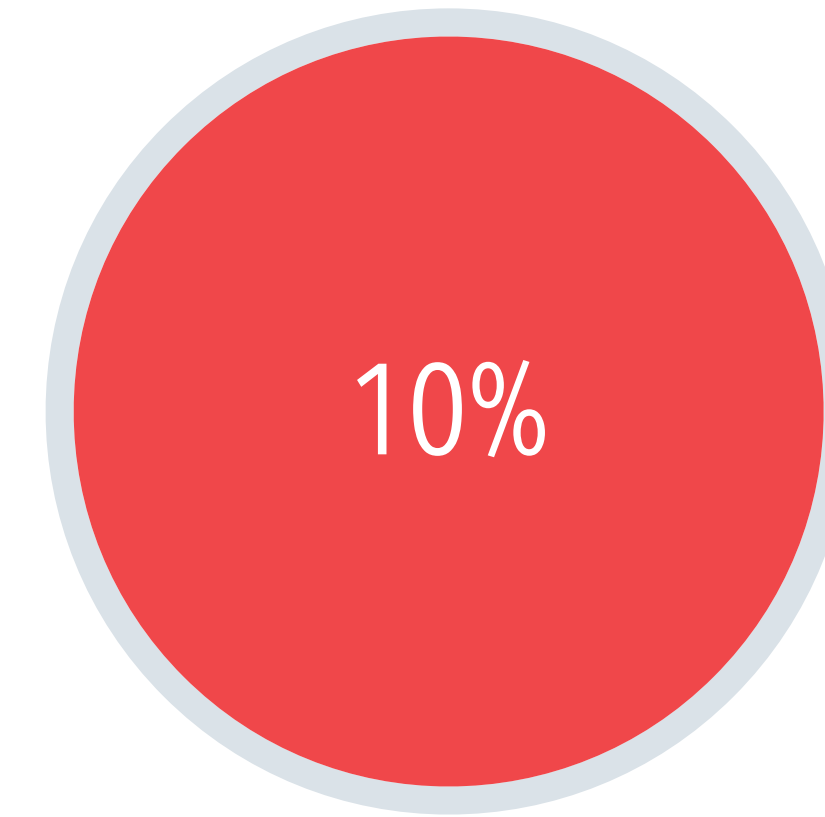
Mass

Asteroseismic inference (bulk density parameters) + Radius (GAIA)



Radius

Hires Spectroscop + GAIA



Age

Asteroseismic modelling.

Performance referred to the Sun at $V=10$

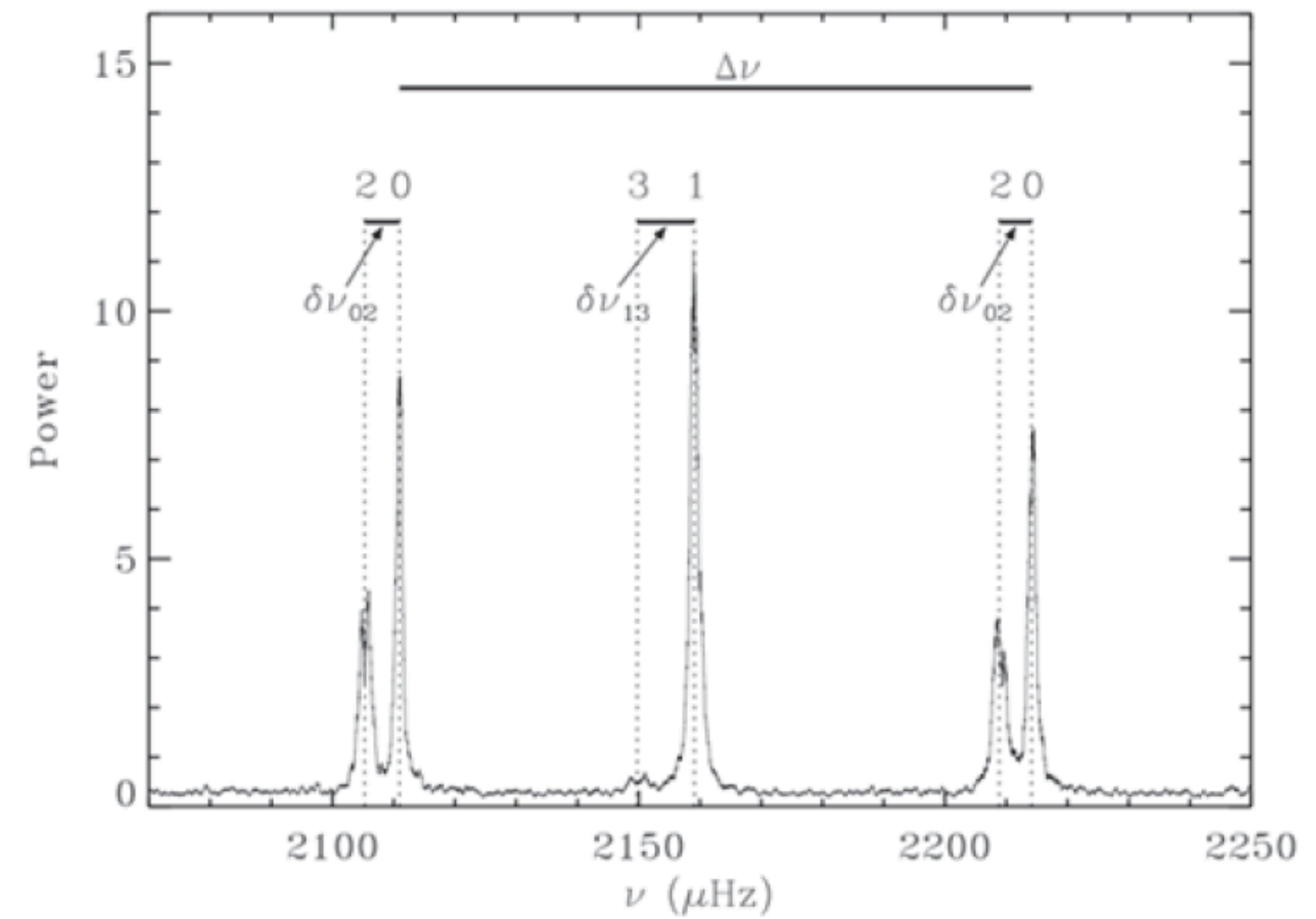
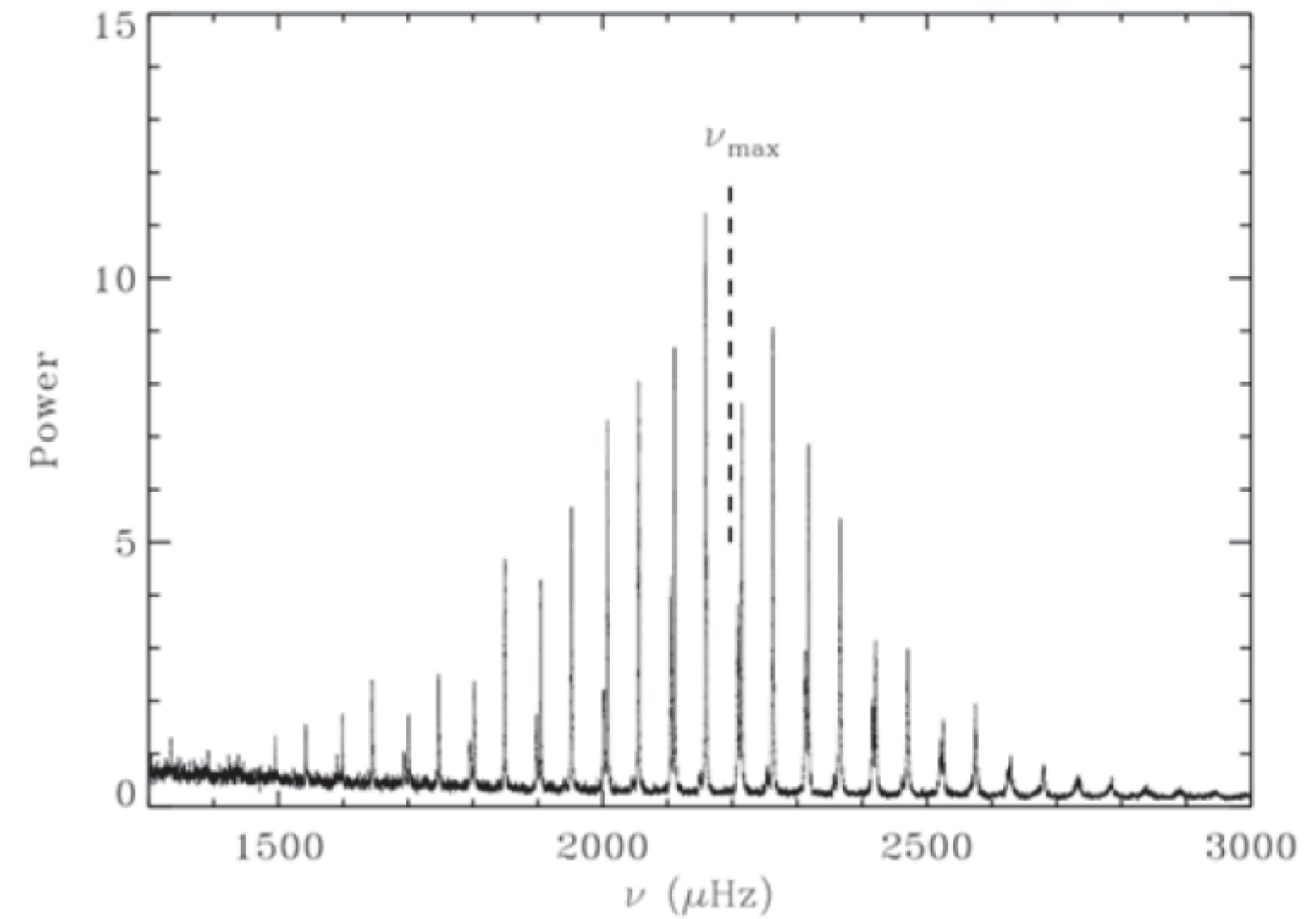
Cf. Red Book (2016)

PLATO2.0. Science objectives

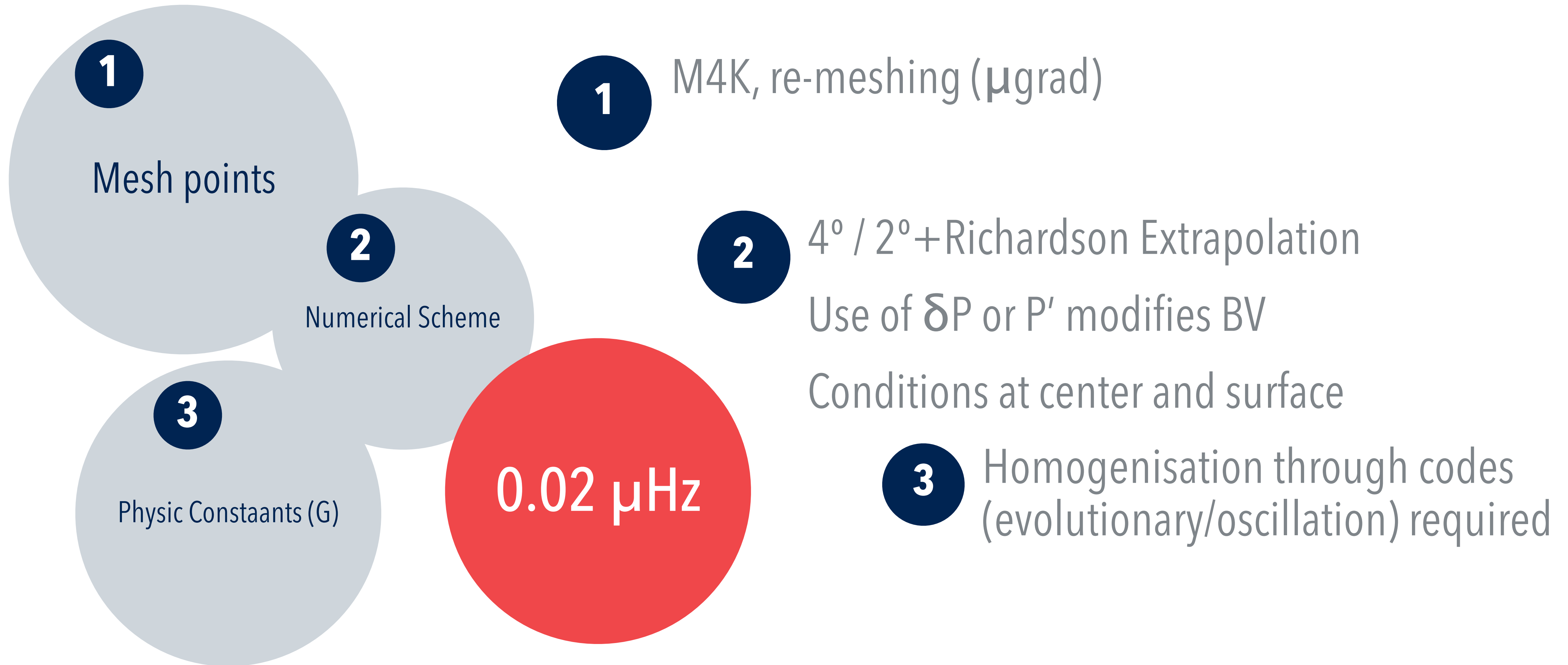
Starting point



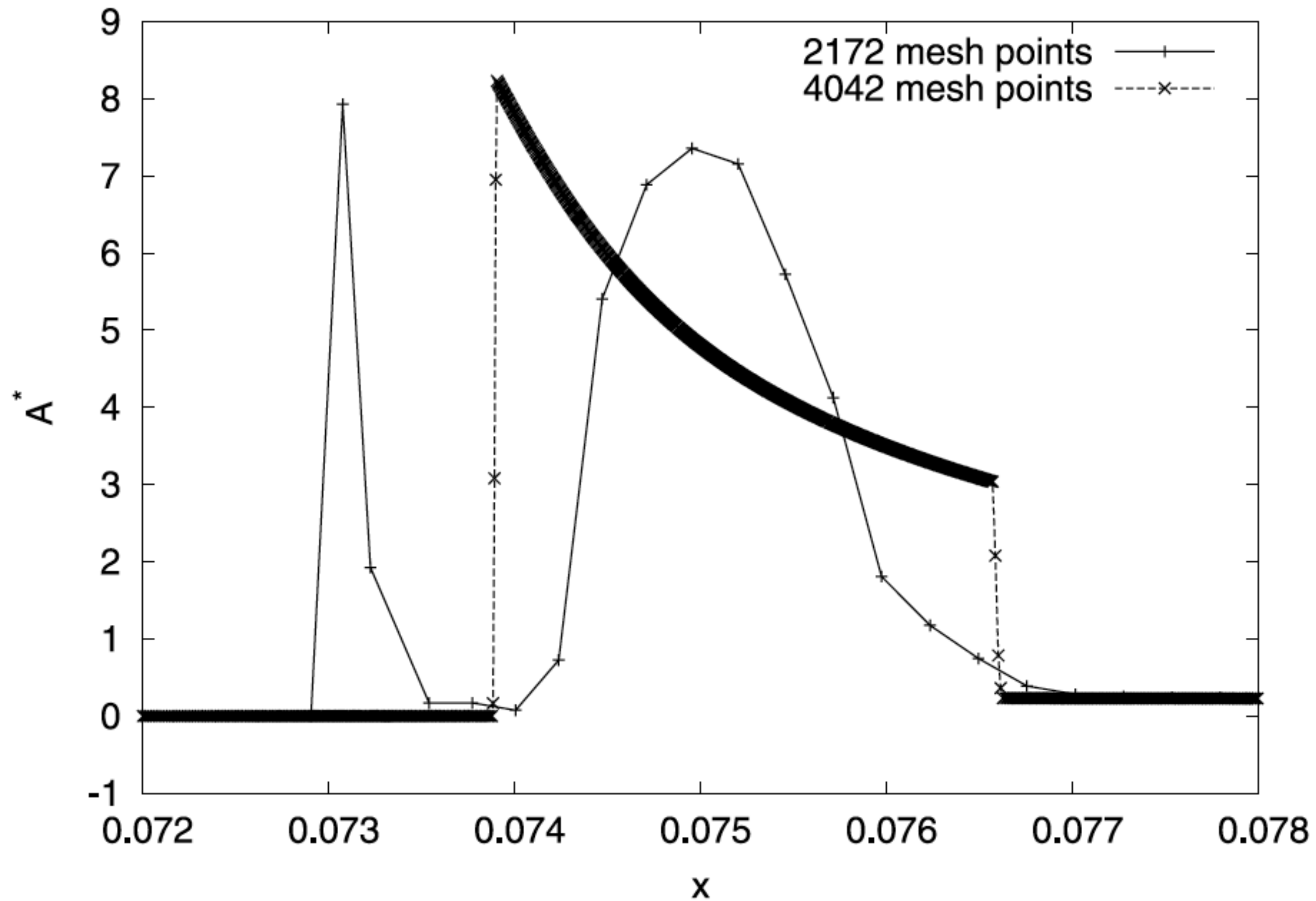
0.1 - 0.3 μHz



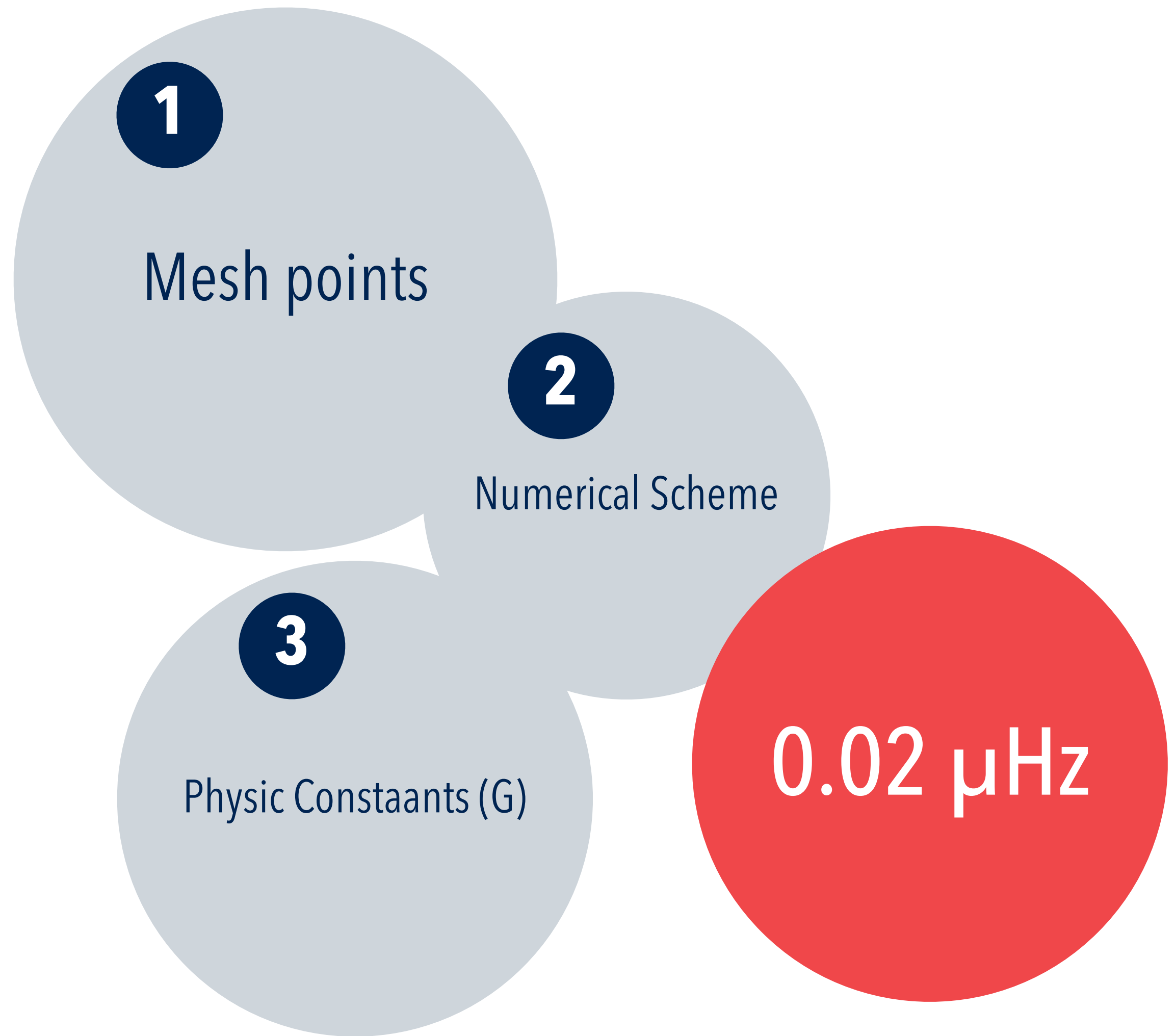
Lessons form ESTA/CoRoT exercises



Lessons form ESTA/CoRoT exercises



Lessons form ESTA/CoRoT exercises

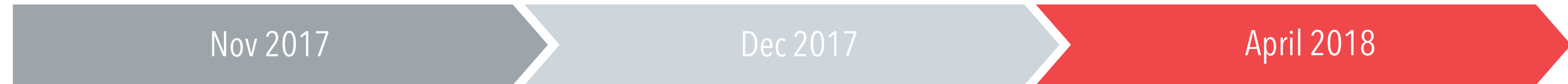


- 1 M4K, re-meshing (μgrad)
- 2 $4^\circ / 2^\circ$ + Richardson Extrapolation
Use of δP or P' modifies BV
- 3 Homogenisation through codes
(evolutionary/oscillation) required

Potential codes available

Code	E.F.	I.S.	Rich.	I.V.	G [10^{-8} cgs]	Reference
ADIPLS	P'	2	y, n	r	6.67232	Christensen-Dalsgaard (2007a)
FILOU	P'	2	n	r	6.67232	Suarez and Goupil (2007)
GRACO	$P', \delta P$	2	y, n	$r, r/P$	6.6716823	Moya and Garrido (2007)
LOSC	δP	4	n	r	6.67232	Scuflaire et al. (2007)
NOSC	$P', \delta P$	2	y, n	$r, r/P$	6.67259	Provost (2007)
OSCROX	P'	4	n	r	6.6716823	Roxburgh (2007)
POSC	P'	2	y, n	r	6.6716823	Monteiro (2008)
PULSE	P'	4	n	r/P	6.6716823	Brassard and Charpinet (2007)
LNAWENR	P'	2	n	r	6.67232	Suran (2007)

WP 121.130 Tentative Action Plan



Contacts & WT constitution

Gathering all the interested people (mainly oscillation code developers, but not exclusively)

WT first meeting

Discussion of current performances of codes.

Comparison from ESTA/CoRoT results as baseline + PLATO URD.

Coordination with other relevant Was

Selection of Best Preliminary Code

Exercise first results

First results of comparison exercises.

Get ready for H&H exercises

Preliminary Results by PW#6