

WP121



Minutes of WP121 Meeting Barcelona January 30th 2019

PLATO-XXXXX-PSPM-MOM-XXX
Issue 1 Revision 0

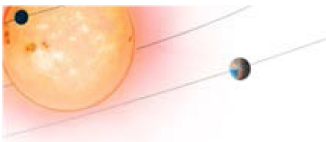
Mandatory Cover Page Attributes:

Document Title: Minutes - BCN meeting 30/01/19

Origin Name: WP121

WBS code: N/A

Package code: N/A



Distribution List

Public	<input type="checkbox"/>
PLATO (Through Project Manager)	<input checked="" type="checkbox"/>
Industry: specify in detail (Company Name, point of contact)	<input type="checkbox"/>

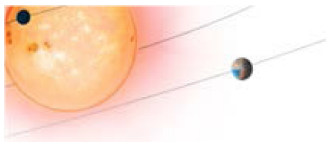
Approval Sheet

	Name	Signature	Date
Prepared by:	A. Serenelli		01.12.2017
Verified by:	Author2		02.12.2018
Approved by:	Author3		02.12.2018

Document Change Record

Issue	Rev.	Date	Pages affected	Modification	DCR	Initials
1	0	2 August 2016	all	New document	N/A	MBE

DCR=Document Change Request



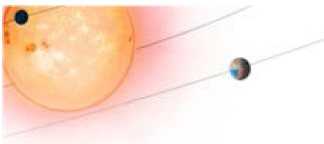
Contents

1 Purpose of the document	3
2 Scope and agenda	3
3 Overview of PLATO schedule involving WP121 for 2019	3
4 Detailed WP121 for 2019	3
4.1 Delivery of first set of IPs	3
4.2 Tests on physics inputs	3
4.3 Synthetic stars	4

List of Figures

List of Tables

1 Synthetic main sequence stars to be used by WP124 in Hare & Hounds and by WP121 for testing impact of physics uncertainties in seismic inferences.	4
--	---



1 Purpose of the document

This document presents a summary of the WP121 meeting held during January 30th, 2019, in Barcelona.

2 Scope and agenda

The meeting was held in order to get leaders of the subWPs of WP121 (WP121100 to WP121400) involved in the development of 1-D models up to date and to decide on several activities to be carried out mainly during 2019. Attendees to the meeting: Josefina Montalbán, Yveline Lebreton, Ana Palacios, Marie-Jo Goupil, Joao Marques, Juan Carlos Suárez, Tiago Campante, Morgan Deal, Santi Cassisi, Aldo Serenelli. The agenda was:

1. Morning talks
 - a Status and prospects of modeling and age determination for very low mass stars - Santi Cassisi
 - b Status and prospects of modeling and age determination for pre main sequence stars - Joao Marques
 - c Status and prospects of (non-convective) mixing - Ana Palacios
 - d Numerical aspects of frequency calculations - Juan Carlos Suárez
2. Discussion on next activities within WP121 including: impact of physics on seismic inferences, impact of numerics on frequency calculation, initial grid of models.

3 Overview of PLATO schedule involving WP121 for 2019

A quick update of the schedule directly involving WP121 was presented.

- a Update of Technical Notes (if needed, April 2019)
- b Delivery of first set of IPs (November 2019) consisting on a v0.0 of the grid of stellar models.

4 Detailed WP121 for 2019

4.1 Delivery of first set of IPs

This consists of the first grid of stellar models to be used by WP125. It was agreed that the initial grid has minimal requirements regarding the physical inputs with which models are computed, as long as they are well documented.

Several grids exist that are ready, or almost ready, to use. Santi offered the new Basti grid which includes seismic data and also has gong files. The mass resolution is not optimal, $0.05 M_{\odot}$, and might results too coarse. A few tests will be done.

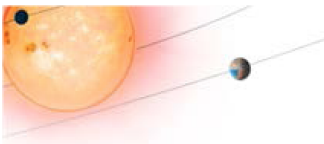
Action: Juan Carlos is going to test if structure of models in the Basti grid, as tabulated in the gong files, is good enough for the calculation of oscillation frequencies with the required precision.

In anticipation that the mass resolution in Basti is too coarse, other grids could be used.

Action: Some tests to be run on mass resolution by Morgan and Aldo, using a finer grid from Aldo. The basic grid has $0.01 M_{\odot}$ resolution.

4.2 Tests on physics inputs

Previously we had discussed on which physical (and other) inputs should be adopted. This will have impact on the accuracy of results. But also physical inputs carry uncertainties and we need to check the impact on seismic inferences this has. The basic tests will be based on synthetic main sequence stars, later to be extended to subgiants.



Synthetic stars are produced in accordance to requirements made by Margarida Cunha in WP124. Bill Chaplin and Warrick Ball are in charge of creating the synthetic stars.

It has been agreed that different checks will be carried out by different people, as follows:

Actions:

1. Ana will run tests to check impact of nuclear physics, pp and p+14N rates in particular
2. Yveline and Morgan will use CESTAM to run tests for different radiative opacities, OPAL and OP are the ones available
3. Josefina is in charge of tests regarding overshooting and interaction with semiconvection (e.g., does OV mix effectively SC regions?)
4. Ana will contact Anne Thoul about implementation of SC in MESA. Tests with/without SC should be considered then
5. Tiago and Diego Bossini will test the impact of solar mixture
6. Tests on microscopic mixing are already being carried out in WP121200

It was discussed the EoS probably does not require testing as it is not believed to produce seizable uncertainties. This should probably be discussed at a later time if an EoS such as Saha-S shows a revision is needed. Ages might not be affected, but results based on acoustic glitches, particularly helium, might be affected.

Timescale

Results from these tests should be presented at the November meeting in Barcelona. Returning results would happen before, in September 20th.

4.3 Synthetic stars

Bill and Warrick had already produced subgiants as hares for WP124 tests. We will eventually use the same stars.

Since the meeting took place today, Bill and Warrick have already produced the synthetic main sequence stars that will be used for the tests above. Here's a summary of the synthetic main sequence stars:

	Teff	L/L _⊙	[Fe/H]	ν_{\max}	$\Delta\nu$
Gerald	5814	1.50	0.03	2207	106.3
George	6195	3.67	0.35	1284	68.8
Zippy	6357	2.85	-0.17	1660	86.4
Patch	5991	1.03	-0.28	2906	132.9
Zebedee	5886	0.98	0.10	3254	136.5
Fred	6714	5.42	-0.04	1393	67.0

Table 1: Synthetic main sequence stars to be used by WP124 in Hare & Hounds and by WP121 for testing impact of physics uncertainties in seismic inferences.

Action: Aldo will distribute these stars to WP121 members who'll run the tests above first week or March