WP125500 Benchmark Stars
Remit and Progress

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WP125500

- "Benchmark stars"
- PSM_WPDs_DEV_WP125

  Identify and characterize benchmark stars. These include both general stars that can be used to develop and test the various analysis techniques to determine stellar parameters (mass, radius, age, chemical composition (implies Teff, logg)) and specific stars in the PLATO fields that can be used to verify the analysis of PLATO data (-> Operations and post-op phase). The properties of these stars should be determined, including full statistical characterization

- Key Personel: Orlagh Creevey, Pierre Maxted, Sofia Feltzing, Ulrike Heiter
- Members: Benchmark Group (next slide)
- platowp125500@oca.eu + access to shared google drive (keele.ac.uk)
- Central place to also gather benchmarking projects and initiatives

WP125500

- Members
- + L Casagrande, S Cassisi, V Adibakyen,
- + T Olander, P Jofre, M Bergemann
- +N. Miller
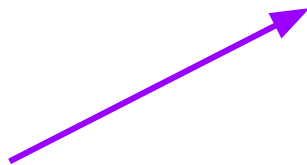
Only figure in my presentation!

- **Orlagh Creevey** (WP lead); *Observatoire de la Cote d'Azur, Nice, France*
- **Pierre Maxted** (WP co-lead. Eclipsing binaries); *Keele University, UK*
- **Jørgen Christensen-Dalsgaard** (WP125000 lead. Asteroseismology); *Aarhus*
- **Remo Collet** (WP122200 lead. 3D model stellar atmospheres and spectra); *A*
- **Margarida Cunha** (WP124000 lead. Asteroseismology); *Institute of Astrophys*
- **Guy Davies** (Asteroseismology); *Birmingham, UK*
- **José Dias do Nascimento** (Stellar spectroscopy); *UFRN, Brazil*
- **Sofia Feltzing** (WP 125400 lead. Classical determinations of parameters, age*
- **Patrick Gaulme** (Solar-like oscillations and eclipsing binaries, WP 38 lead); *M*
- **Marie-Jo Goupil** (WP120 Lead. Asteroseismology); *Meudon, France*
- **Flavien Kiefer** (Astrometric/spectroscopic binary stars) *Institut d'Astrophysiq*
- **Ulrike Heiter** (Gaia, high-resolution spectra, M dwarfs, IR spectra); *Uppsala, S*
- **Dan Huber** (Interferometry and asteroseismology, spectrophotometry); *Haw*
- **Thierry Morel** (WP 122 lead. Non-seismic diagnostics and stellar parameters*
- **Nicolas Nardetto** (Interferometry, surface-brightness relations); *Nice, France*
- **Aldo Serenelli** (WP121 lead. Stellar physics and models) *Barcelona, Spain*
- **John Southworth** (Eclipsing binary stars) *Keele University, UK*
- **Tim White** (Interferometry and asteroseismology); *ANU, Canberra, Australia*

Development phase

- Tasks:
  - **Search the relevant catalogues** for suitable stars (asteroseismic, binaries ...)
  - As required, **carry out additional observations** of these stars and/or more extensive analyses of the observations.
  - **Document the procedures** used for the selection, observations and analysis.
  - **Establish a catalogue of benchmark stars** inside and outside PLATO field
- Outputs:
  - Catalogue of benchmark stars
  - Documentation of algorithms for 1. selecting, 2. determining properties, 3. Validating
- Milestones:
  - 09/2019: Initial list of potential benchmark stars, plans for re-observation or re-analysis, as required.
  - 12/2019: First version of algorithms for parameter determination and validation of benchmark stars.

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Require input from: WP 121, WP 122

Progress

- Official since after last stesci meeting
- Where are we today:
  - Identified individuals to contribute
  - Telecons ~3 months
    - Relevant News
    - Benchmark Work
    - Other interesting projects
    - Google drive (protected) to share documents
  - Initial lists of stars (incomplete) + APs (incomplete) in database
- Objective for this meeting:
  - Inform you of work in benchmarking
  - Focus tasks and discuss with other WPs
  - Define a concrete plan for the next …..
  - Towards a concrete v0.1 catalogue

Benchmark Database

- For now we use a google spreadsheet for the database [benchmark database](#)
- List of stars
  - Gaia benchmark stars (UH)
  - Interferometric (NN, OC)
  - Seismic (OC – ms, MC – subgiants, TW – bright)
  - Binaries (PM – eb, FK – sb, ab)
  - Solar analogs (JdN +)
  - M dwarfs (UH, SF)
  - Spectroscopic targets (ThM)
- Some APs completed and references to these, but **not data** products
- Not restricted to PLATO field of view, but benchmarking is done on any star

Next steps

- Consolidate initial list to have an official v0.1 initial catalogue
- Respond to your needs
- All WPs using benchmarks: communicate info with us. Important to have one consolidated list
- Open questions
  - What do you need from us? Data or APs?
  - Do we reanalyse the stars? (if you want pdfs, then we have to)
  - How many stars are "sufficient"?
  - What about giants?
  - Can we assume that these benchmarks are included in the target list?
  - How do we provide an official catalogue?
- Discuss over lunch
- "Subscribe platowp125500@oca.eu" to sympanice@sympa-n.oca.eu

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THANK YOU FOR YOUR ATTENTION