



The EU Framework Programme
for Research and Innovation

HORIZON 2020



Interferometric Survey
of Stellar Parameters

The ISSSP Survey

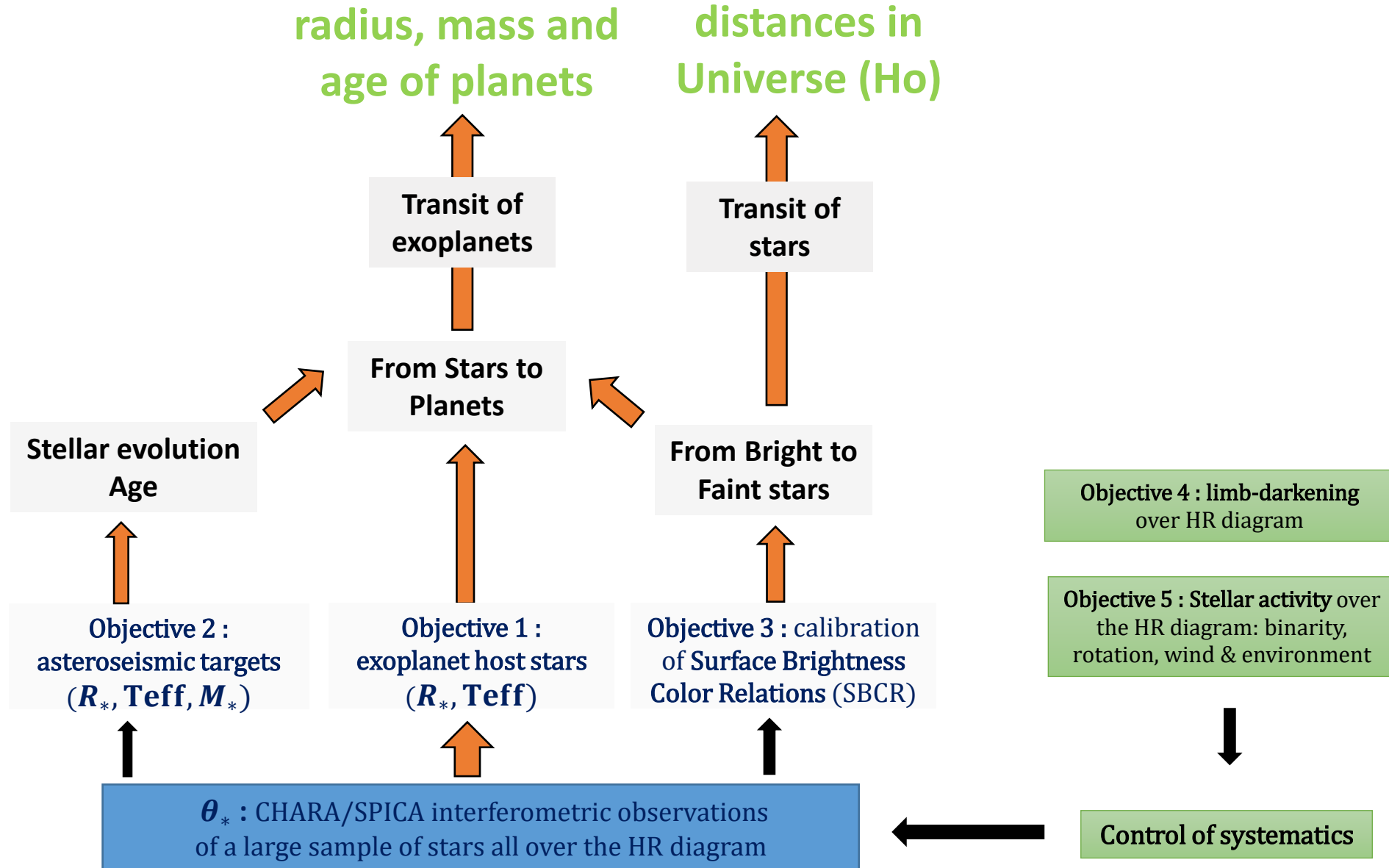
ERC Adv Grant 2020 #101019653

ISSP program



- 5-year program started on 1/09/2021 and ending on 31/08/2026 aiming at collecting and interpreting a large (1000) and homogeneous sample of stars all over the HR diagram
- Up to now, ~200 different stars have their angular diameter precise at the 1% level based on different instruments (JMDC catalogue, Duvert+16): Mainly Giants, different techniques, different spectral bands...
- Why measuring many angular diameters? No details here (see talks tomorrow) but impact on stellar physics, exoplanets, and distance determination
- Opportunity because space missions are now looking to brighter targets for a better characterization. And in parallel important progresses in sensitivity and precision in optical interferometry
- Unique opportunity with the 300m baselines of CHARA and the access to visible wavelengths to reaching 0.1 mas of angular resolution.

Interferometric Survey of Stellar Parameters



Strong links with:
- ESA/PLATO mission
- Araucaria program

What is needed to reach this goal?

SPICA instrument at its maximum performance

- Sensitivity (flux and V^2)
 - Best performance of CHARA adaptive optics and image quality
 - Operational fringe tracker for permitting long exposure in the visible
 - Instrumental visibility
- Efficiency
 - Automated procedures
 - Low downtime
 - Survey management tools

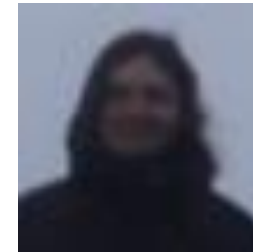
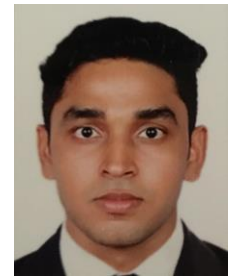
Activities around the survey

- Shaping the CHARA AO for the visible → 2-year contract of Pierre Geneslay
- Managing a large survey in interferometry: 3-year contract of David Salabert (with the JMMC group in Grenoble)
- Pushing SPICA-FT to its optimal performance: 9-month contract of Cyril Pannetier after his PhD
- SPICA-VIS optimization at Mount Wilson: 1-year stay of Julien Dejonghe
- And active and efficient management by Philippe Berio



The science team of ISSP

- Roxanne Ligi: 3-year postdoc (1/12/2022) – exoplanet host stars
- Mathieu Vrad: 3-year postdoc (1/11/2022) – interferometry and asteroseismology
- Romina Ibañez-Bustos: 3-year postdoc(1/04/2023) –SBCR
- Nayeem Ebrahikutty: PhD (1/07/2023) – Limb darkening
- Juraj Jonak: PhD (1/12/2022) – binaries and stellar masses



Associated col of the survey: Orlagh Creevey (astero-dwarfs), Sébastien Deheuvels (astero-giants), Armando Domiciano (rotating stars), Nicolas Nardetto (SBCR), Markus Wittkowski (winds and environnements), and Karine Perraut

