ISSP Meeting - Nice, May 2023

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NEEDS AND OPPORTUNITY FOR COMPLEMENTARY DATA

QUICK SURVEY

	Spectroscopy	Photometry	Parallaxes
S01 (Roxanne)	✓ Abundances for stellar/planetary models, absorption lines	✓ F_{bol}, T_{eff}	✓ Distances, astrometry
S02/S03 (MV, OC, SD)	✓ T_{eff}, [Fe/H]	✘	✓ Extinction (with L)
S04 (Romina, Nicolas)	✓ T_{eff}, log(g), CaII and Hα?	✓ F_{bol}, T_{eff}, magK	✓ Extinction
S05 (Nayeem)	✓ Stellar parameters, fitting	✓ F_{bol}	✘
S06 (Juraj)	✓ CaII and Hα for RV determination+some orbital elements (msin(i), i)+distance	✓ Orbital solution	✘
S07 (Armando)	✓ Model fitting, projected rotation velocity	✓ Model fitting	✘
S08 (Markus)	✓ CaII and Hα for mass loss, wind	✓ F_{bol}	✘

QUICK SURVEY

	Spectroscopy	Photometry	Parallaxes
S01 (Roxanne)	✓ Abundances for stellar/planetary models, absorption lines	✓ F_{bol}, T_{eff}	All are in Gaia catalog (transits)
S02/S03 (MV, OC, SD)	Part of the data (APOGEE collaboration, SDSS-V)	✘	✓ Extinction (with L)
S04 (Romina, Nicolas)	HERMES and ESO data	F_{bol}, T_{eff} , Armazones projet (South)	✓ Extinction
S05 (Nayeem)	RVS from Gaia for a few stars	✓ F_{bol}	✘
S06 (Juraj)	Coll. with Ondřejov Observatory R~27000	Coll. with Hvar Observatory	✘
S07 (Armando)	✓ Model fitting, projected rotation velocity	✓ Model fitting	✘
S08 (Markus)	TIGRE robotic telescope (Mexico), R=20000	✓ F_{bol}	✘

STATUS OF SPECTROSCOPIC INSTRUMENTS

Instrument	Telescope	Aperture[m	Hemispher	InstType	Wavelengtl	ESO	OPTICO	Chile	NOA	IAC-I	PAT	Notes
ACAM	WHT	4.2	North	Imager	UV+VIS						✓	See WHT-ACAM
BUSCA	CAHA-2.2m	2.2	North	Imager	VIS		✓					Simultaneous imaging in four bands.
CAFE	CAHA-2.2m	2.2	North	EchSpec	VIS		✓					
CARMENES	CAHA-3.5m	3.5	North	EchSpec	VIS+JH		✓					VIS and NIR arms operate simultaneously
CRIRES+	VLT	8.2	South	EchSpec	NIR_JHK	✓		✓				R = 50 000 or 100 000, 0.9-5.3um
ESPaDOnS	CFHT	3.6	North	EchSpec	VIS		✓					
ESPRESSO	VLT	8.2	South	EchSpec	VIS	✓		✓				R=70,000 with 4x8.2-m or R=140-190,000 with 1x8.2-m
FEROS	ESO/MPI 2.	2.2	South	EchSpec	VIS			✓				Access through MPI (?)
FIES	NOT	2.5	North	EchSpec	VIS		✓					
GIANO	TNG	3.58	North	EchSpec	NIR_JHK		✓					HARPS-North and GIANO used simultaneously on the same target
HARPS	ESO 3.6-m	3.6	South	EchSpec	VIS	✓		✓				R = 120 000
HARPS-North	TNG	3.58	North	EchSpec	VIS		✓					HARPS-North and GIANO used simultaneously on the same target
HAWK-I	VLT	8.2	South	Imager	NIR_JHK	✓		✓				7.5×7.5 arcmin
HRS	SALT	11.0	South	EchSpec	VIS		✓					3700 to 8900 Å. R = 14 000, 40 000 or 65 000
IDS	INT	2.5	North	GrSpec	UV+VIS						✓	Will be replaced by HARPS3
IO:O	LT	2.0	North	Imager	VIS		✓				✓	CURRENTLY OFFLINE - ugriz, BV, Hα filters, 10 × 10 arcmin
IO:O	LT	2.0	North	Imager	NIR_JH		✓				✓	CURRENTLY OFFLINE - H filter (could change to J in future semes
ISIS	WHT	4.2	North	GrSpec	UV+VIS						✓	It has a dichroic, and does observations in the blue and red arms sin
MUSCAT2	TCS	1.5	North	Imager	VIS		✓					Simultaneous imaging in three bands. Band 1: g or r. Band 2: i. Banc
Neo-NARVAL	TBL	2.0	North	EchSpec	VIS		✓					Also French national access (?)
NOTCam	NOT	2.5	North	Imager	NIR_JHK		✓					
RISE	LT	2.0	North	Imager	VIS		✓				✓	High-speed imaging, 7200 Å long-pass filter (roughly I+z)
SOPHIE	OHP 1.93m	1.93	North	EchSpec	VIS		✓					Also French national access (free for French). 3872 to 6943 Å
SPICA	CHARA	1.0	North	LBI	VIS+NIR				✓			Access also through collaborators, e.g. OC, NN, instrument has HR
SPIRou	CFHT	3.6	North	EchSpec	NIR_JHK		✓					
UVES	VLT	8.2	South	EchSpec	UV+VIS	✓		✓				
Veloce	AAT	4.2	South	EchSpec	VIS		✓					5800 to 9300 Å , R = 80 000
VISIR	VLT	8.2	South	GrSpec	MIR	✓		✓				R = 350, 3200 or 25000
WFI	REM	0.6	South	Imager	VIS+NIR		✓	✓				Five bands observed simultaneously (g, r, i, z plus one IR band)
X-SHOOTER	VLT	8.2	South	EchSpec	VIS+NIR	✓		✓				R = 4500 (blue/IR), R = 7000 (red)
CHEOPS	CHEOPS	0.3	Both	Photom	VIS							Ultraprecise photometry of bright stars
HERMES	MERCATOF	1.2	North	EchSpec	UV+VIS							See MERCATOR access
HORUS	GTC	10.4	North	EchSpec	UV+VIS					✓		380 and 690 nm, R=25,000

STELLAR EVOLUTION MODELS

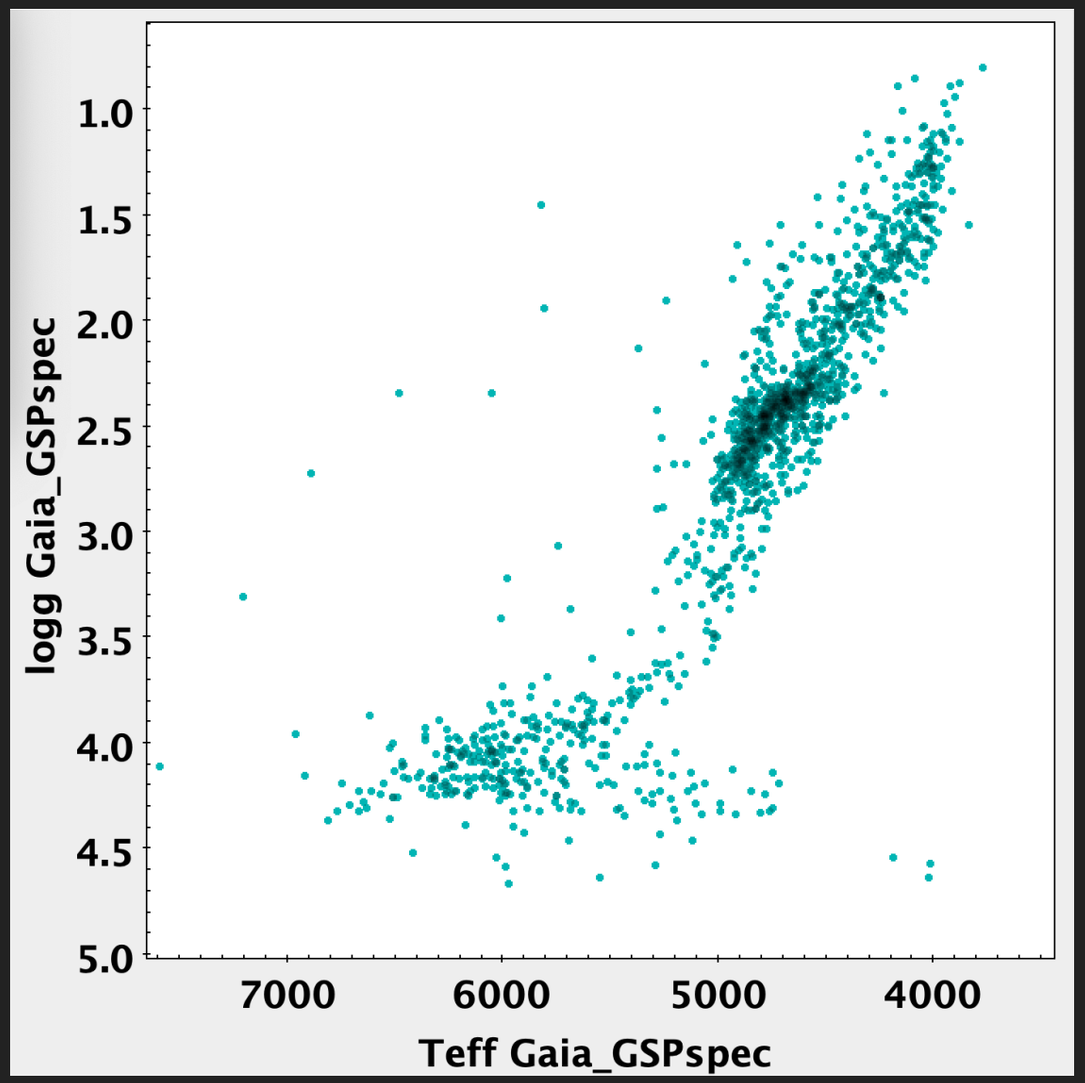
- Who needs stellar evolution models?
  - Just isochrones? Or evolution models?
- What for?
  - Mass, age?
- Which models?
  - Homogeneity? Compatible with all the programs?
  - MESA covers all stellar types
- Who will be in charge? (General SPICA catalog)
  - Use for all SPICA targets? Or just benchmark stars?

GAIA COMPLEMENTARY DATA

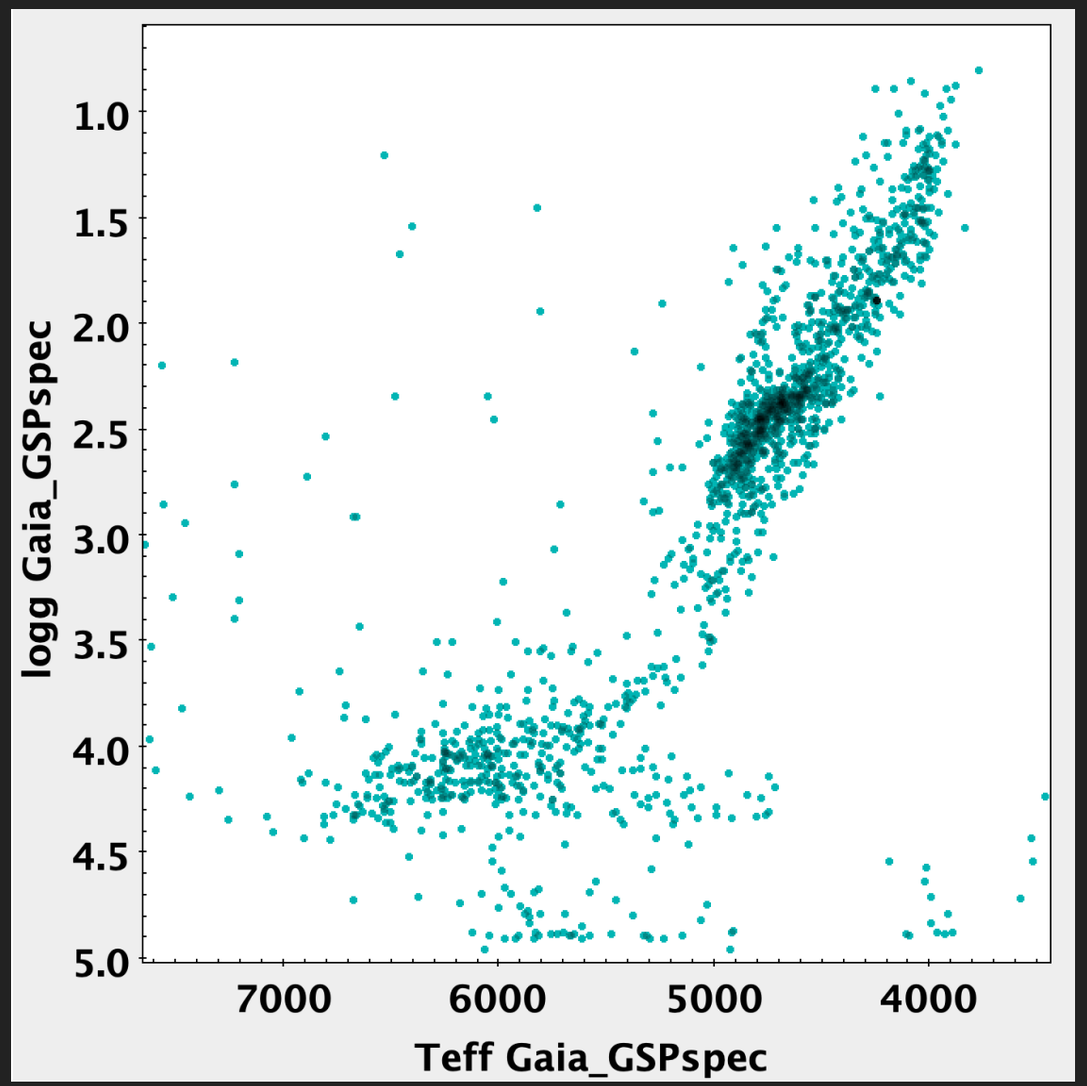
- 1744 stars common with GSPspec
- 1482 stars with high quality spec
- Teff, logg, [M/H], and alpha elements abundances relative to Fe (= Ca abundances).
- Calibrated and non calibrated spec

GAIA COMPLEMENTARY DATA

1482 stars

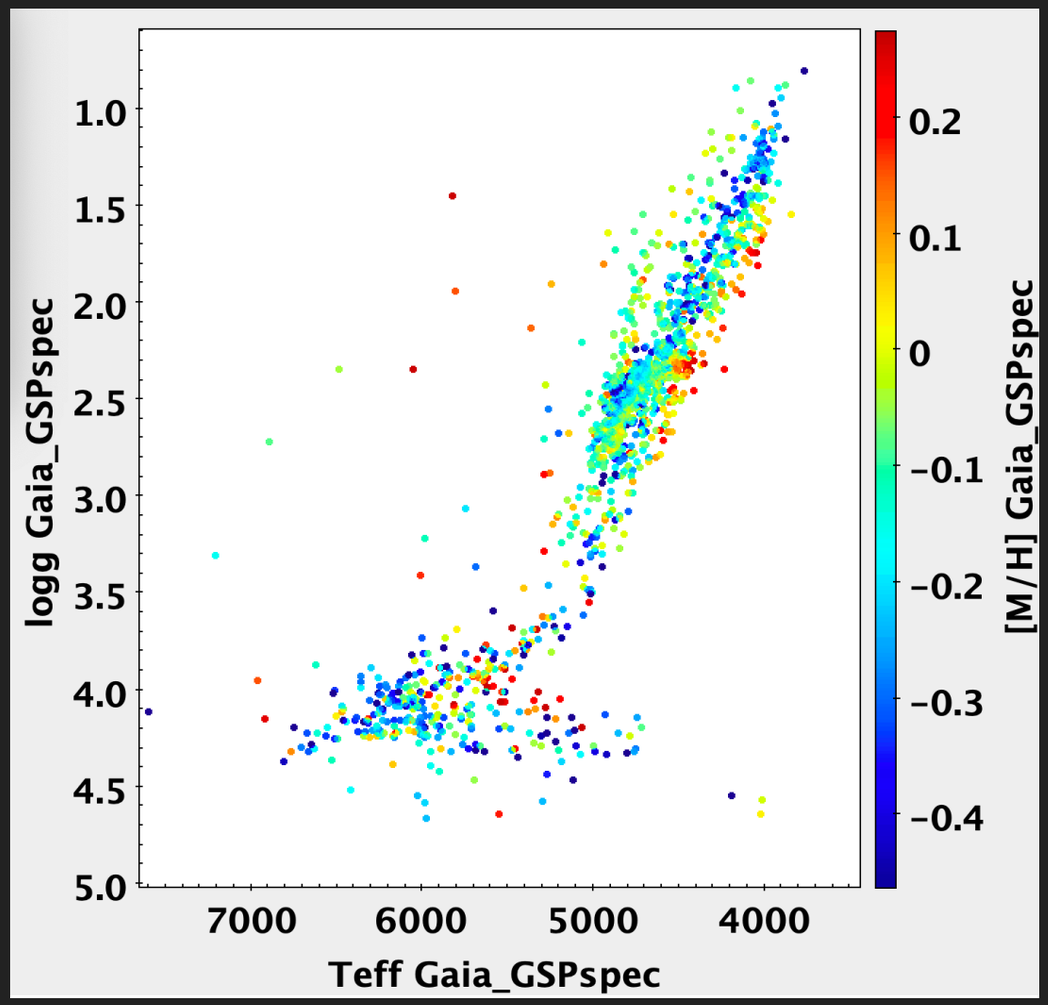


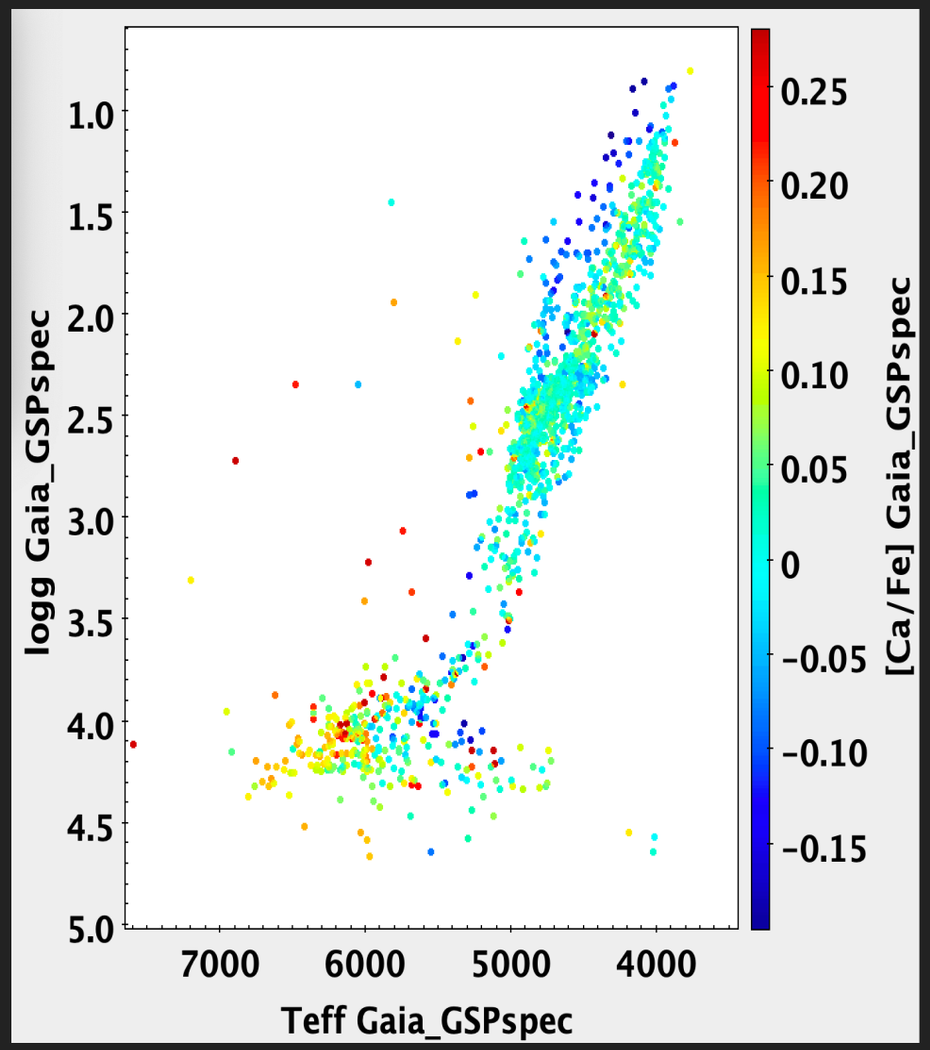
1744 stars



GAIA COMPLEMENTARY DATA

1482 stars





QUESTIONS TO BE RAISED

- Stellar models
- Spectroscopy and other complementary data
  - Availability for everyone?
  - How to manage the access to the complementary data (in the cloud? elsewhere?)
  - What happens to stars for which there is not complementary data (yet)?
    - Ask for observation time? Global proposals?
- Methodology for basic parameters (T_{eff}, F_{bol}, mass, age…)
- Publications of a homogeneous final catalog?

ANNEXES

SPECTROSCOPY AND PHOTOMETRY

	Complementary data needed
SPICA SURVEY	
Angular diameter measurements	**Photometry:** Fbol is necessary for WP1,2,3,7,11,13 in order to derive Teff_interf. **Spectroscopy:** might be interesting for WP1,2,3,7,11,13 for a comparison of Teff_interf & Teff_spectro
S01	**spectroscopy:** Stellar abundances are used as an input of models of planets.
S02	**spectroscopy:** coordination with WP122300 of PLATO is necessary for those relevant targets (small subset). I think in general, we should apply to the OHP to observe all of our WP2 targets. this is an idea only.
S03	**spectroscopy:** coordination with WP122300 of PLATO is necessary (same tools). Important for Scaling Relation: Fe/H, Teff, log
S04	**spectroscopy** for 1/ logg, 2/ activity diagnostics, 3/ Fe/H, 4/ Teff (spectro) + **photometry** for K magnitude (0.015 of precision)
S05	spectroscopy: needed, in order to study LD as a function of logg and Fe/H !
WP13	**spectroscopy** is part of the objective of WP13 which is to build a reference sample for (Teff, logg, [Fe/H], [X/Fe]) for galactic archeology; S/N > 100
Activity images	
S06	Gaia Astrometry + case by case analysis (RV, light curve)
S07	**spectroscopy**: vsini determinations are necessary for stars without a precise and secure mesurements. Flux calibrated measurements can also be useful if available.
S08	