WEAVE @WHT

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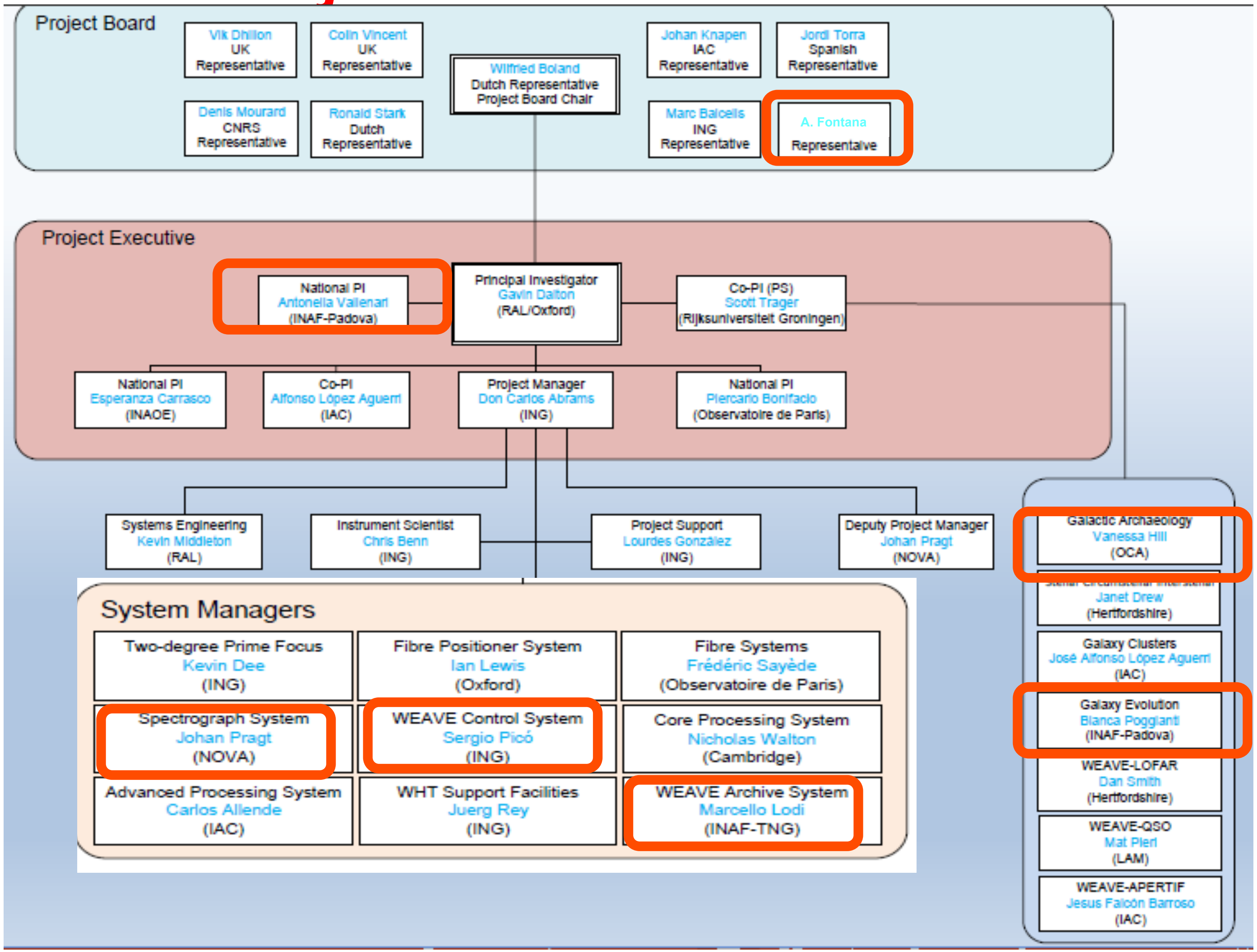
Overview

- WEAVE Instrument
- WEAVE Science
- WEAVE operations

WEAVE Consortium

Project structure



A. Vallenari
A. Bragaglia

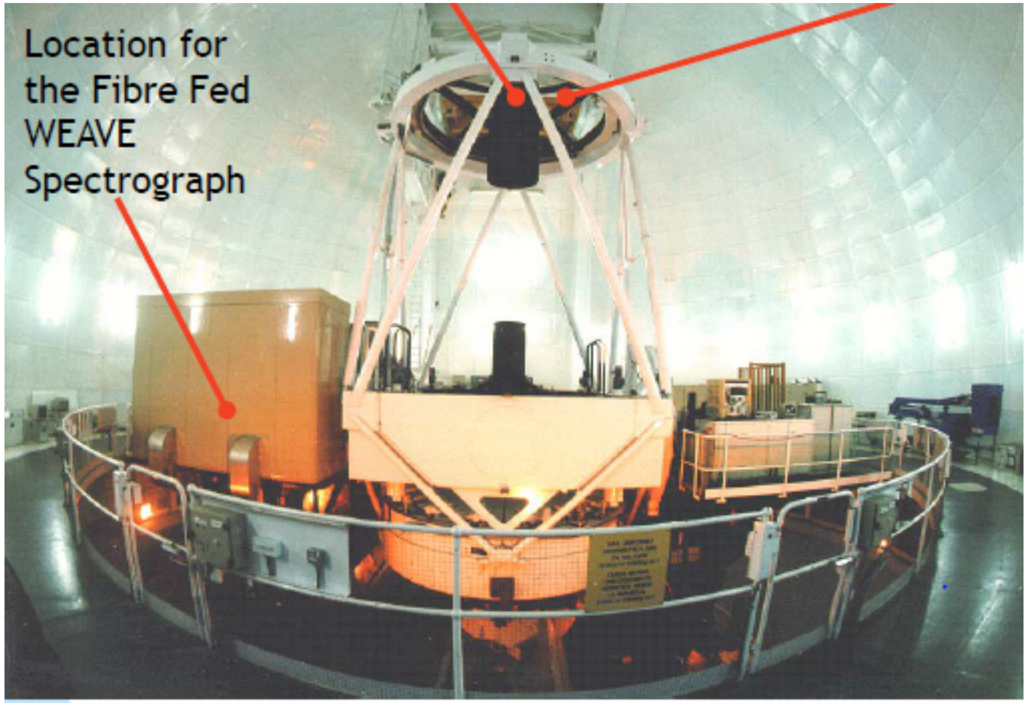
WEAVE Characteristics

Telescope, diameter	WHT, 4.2m
Field of view	2° ⌀
Number of fibers	960 (plate A)/940 (plate B)
Fiber size	1.3″
Number of small IFUs, size	20 x 11″x12″ (1.3″ spaxels)
LIFU size	1.3′x1.5′ (2.6″ spaxels)
Low-resolution mode resolution	5750 (3000–7500)
Low-resolution mode wavelength coverage (Å)	3660–9590
High-resolution mode resolution	21000 (13000–25000)
High-resolution mode wavelength coverage (Å)	4040–4650, 4730–5450 5950–6850

740 fibers mini IFU's (plate B)
589 fibers Large IFU
Reconfiguration time MOS 55 min
IFU 10 min

The WHT

Current Top End with Secondary Mirror Assembly.

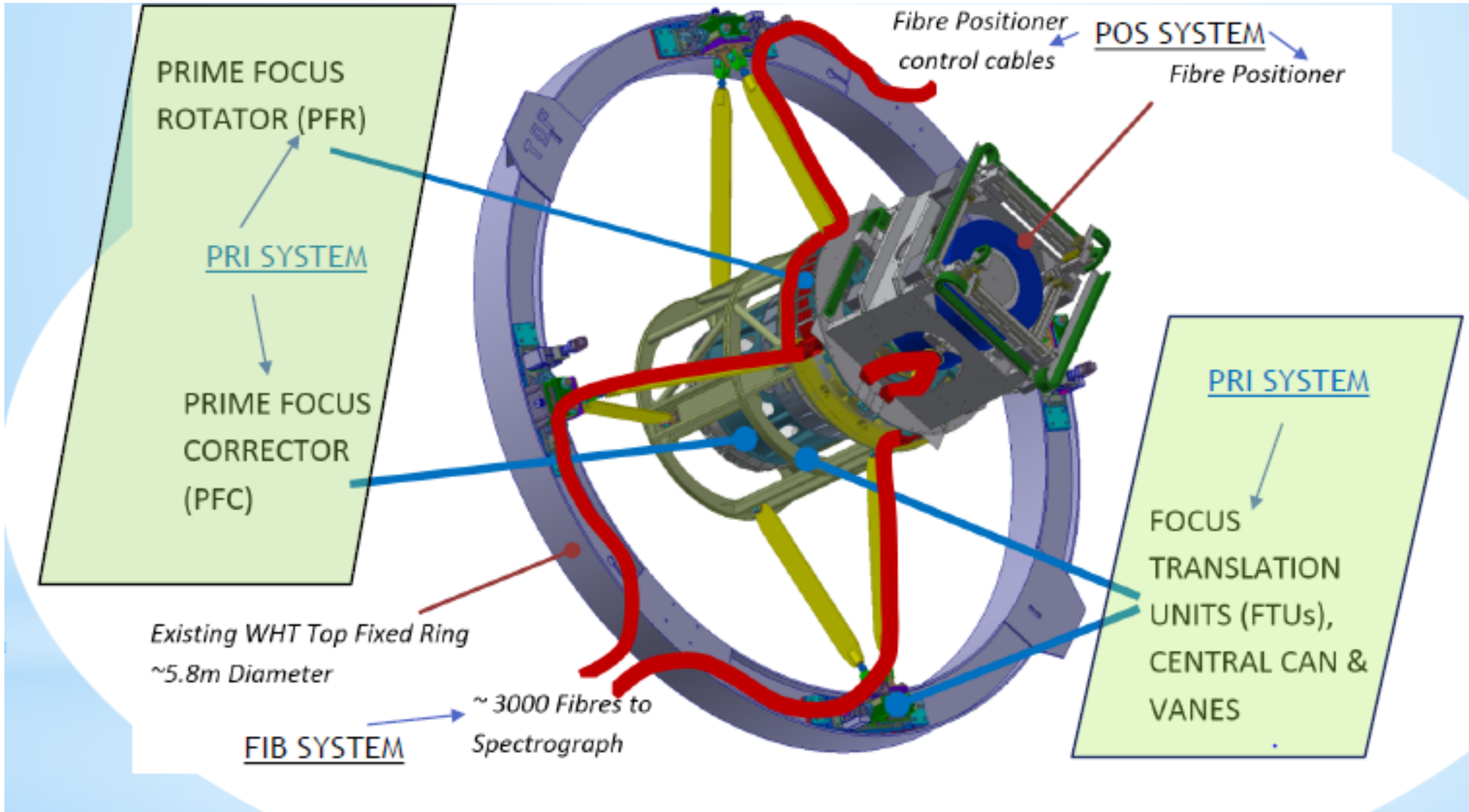


Courtesy: K.Dee

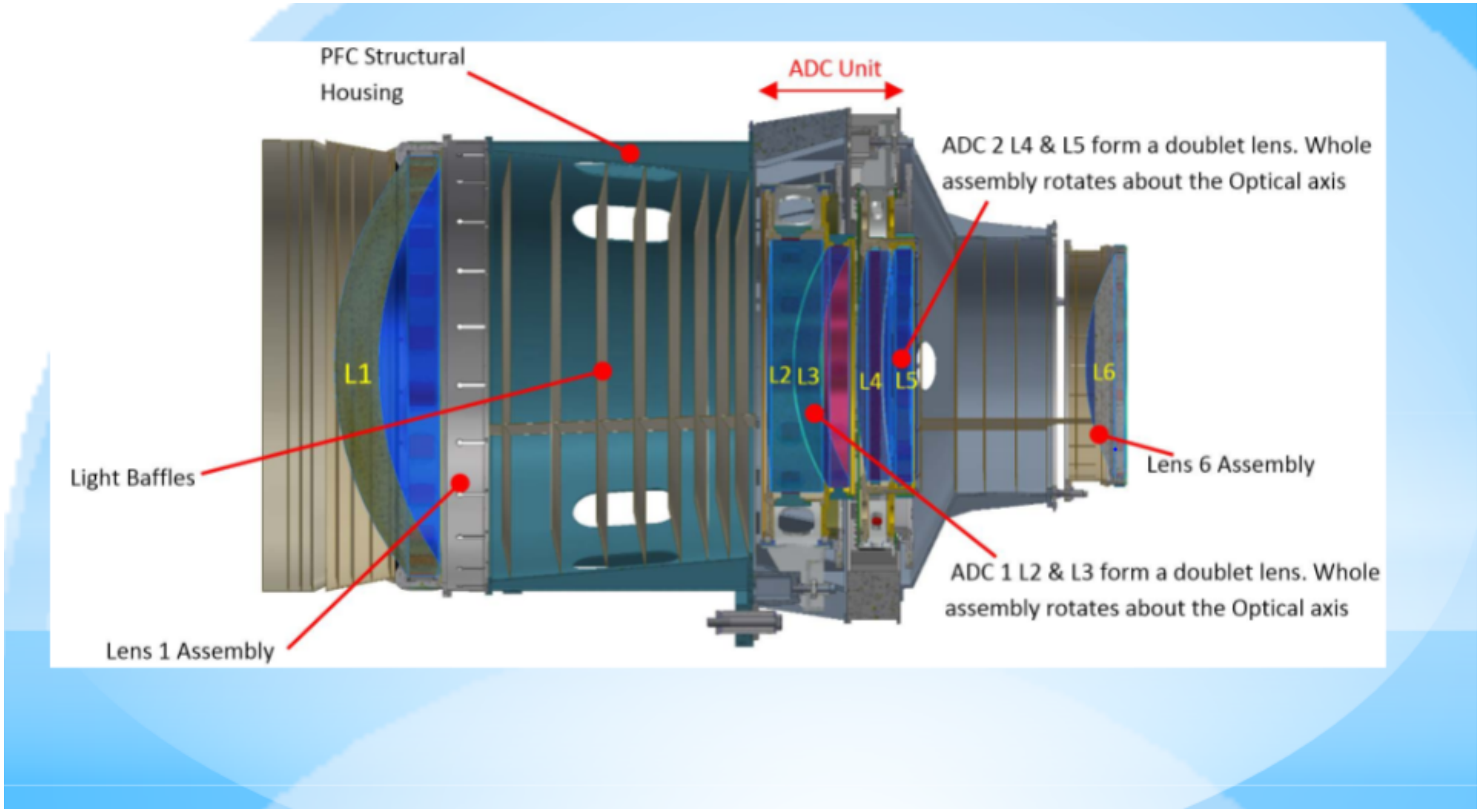
The WEAVE PRIME FOCUS ASSEMBLY will replace the current assembly

The Photo shows the Secondary Mirror Assembly mounted. In order to allow for the installation of the WEAVE Prime Focus Assembly it is necessary to remove the Secondary Mirror Assembly and Top End Flip Ring.

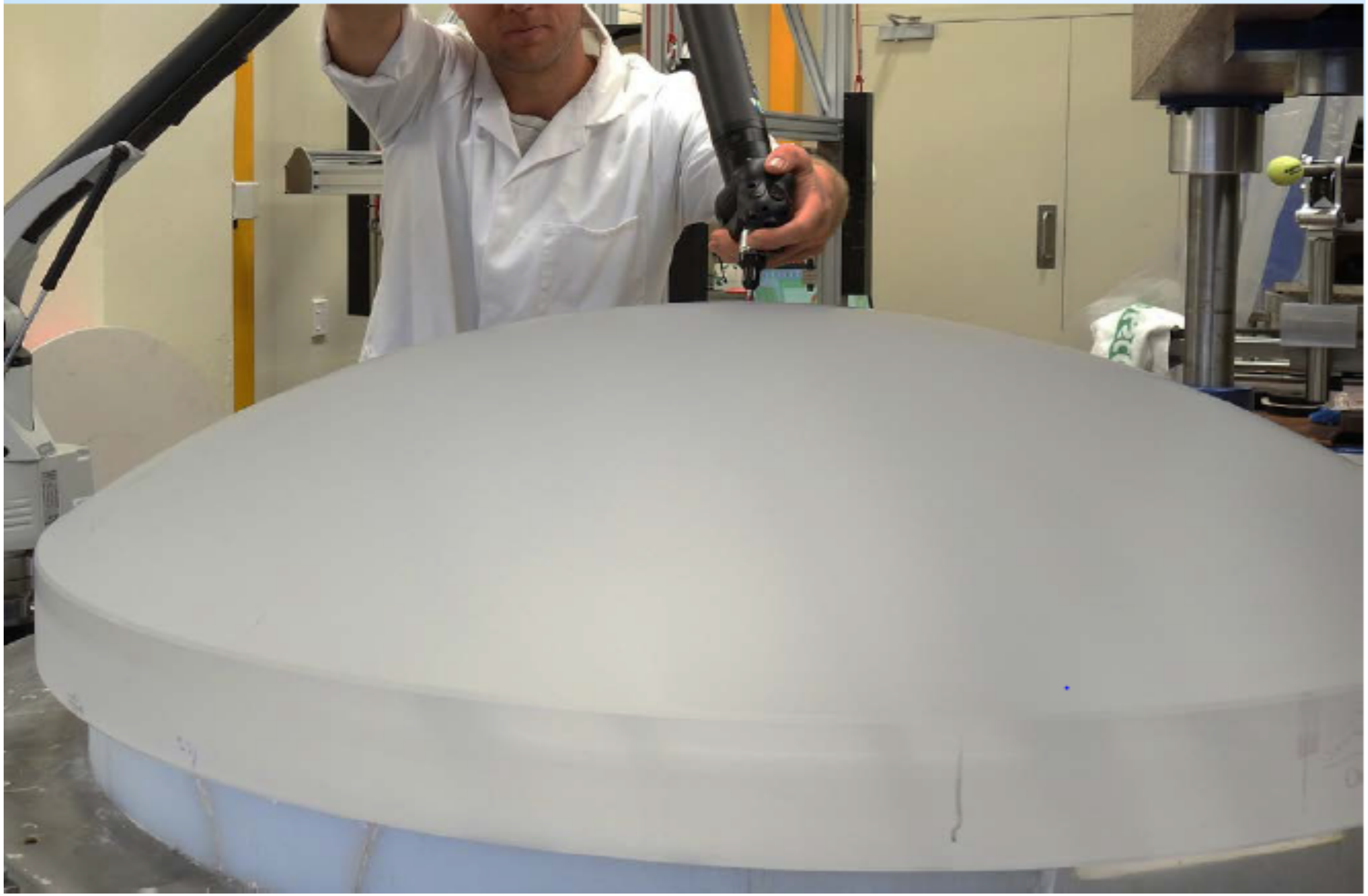
Prime Focus Assembly



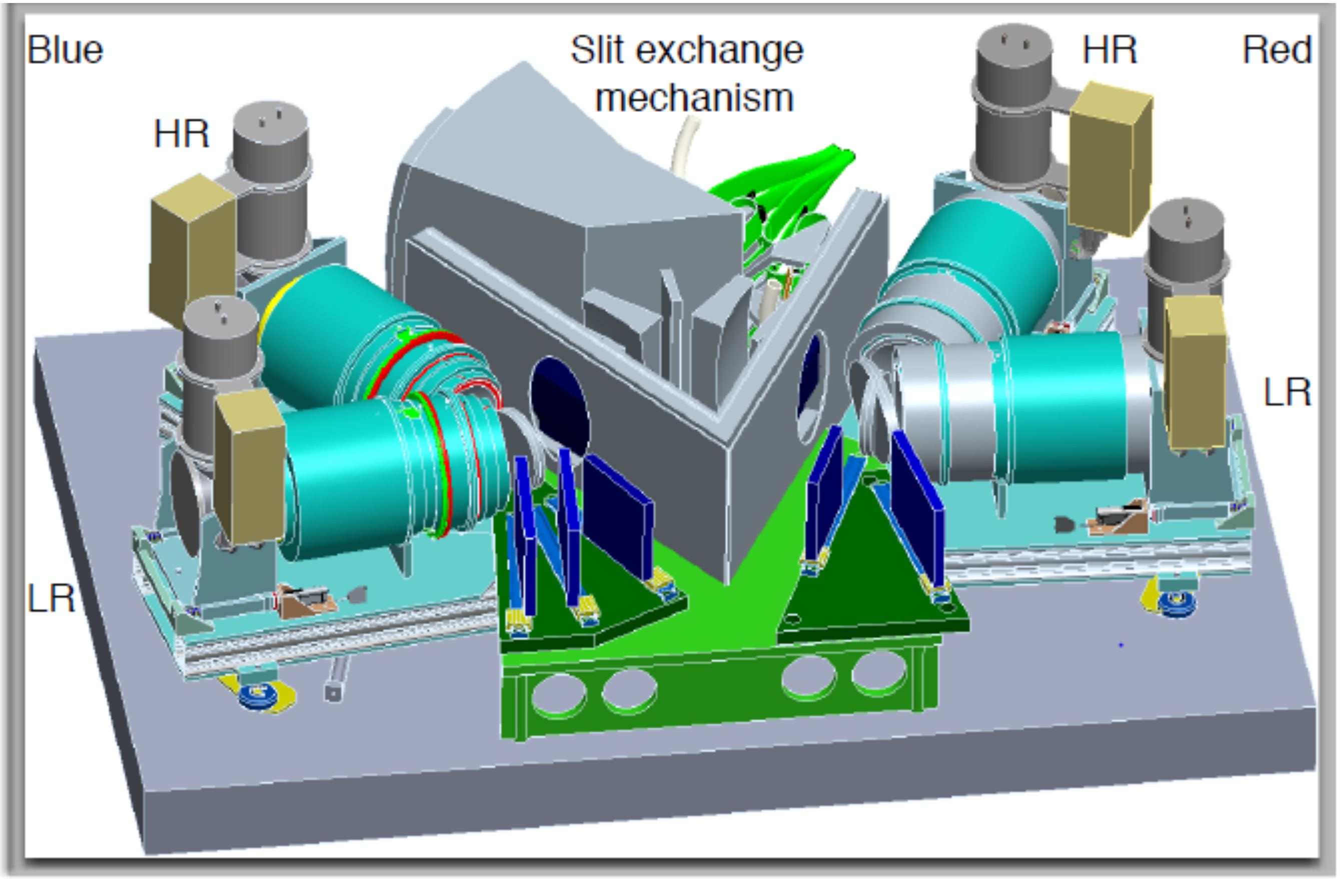
Prime focus corrector



Prime Focus corrector



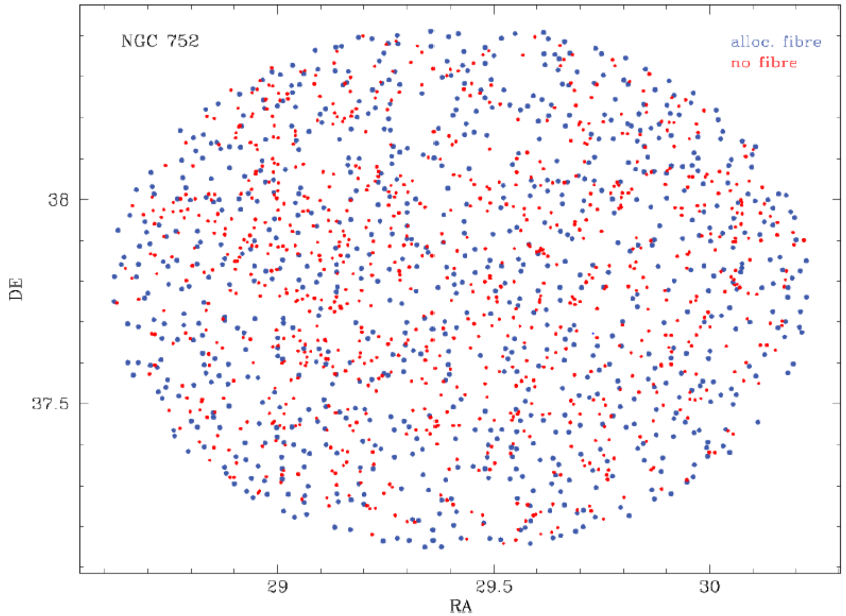
The spectrograph

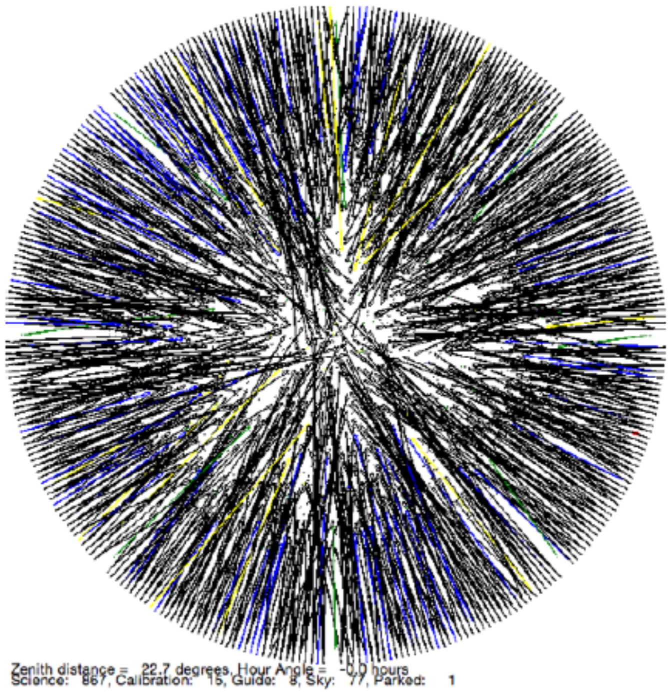


MOS and IFU cannot observe in parallel

Fibre placement

- 100 % fibres placed in a simulation of a cluster core
- about 8500 fibre crossing
- About 1800 moves in <55 minutes with two robots

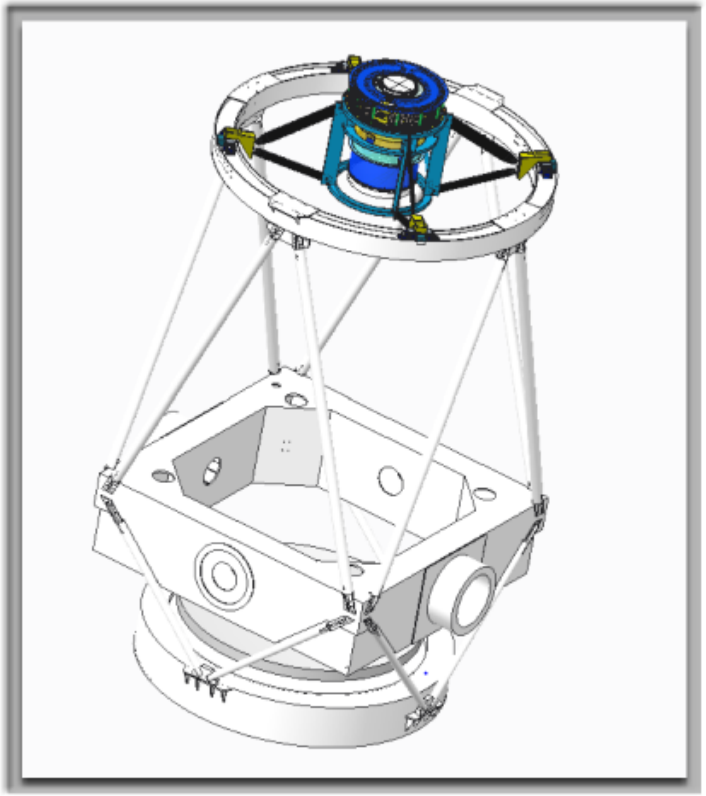




Status

- Prime Focus system:
- New top end is now working within spec
- Rotator is almost complete and into testing
- Corrector moving forwards
- Fibers: on the way

Top end flip ring test



Secondary mirror assembly and
top end flip ring removed in July 2016
to assess the feasibility

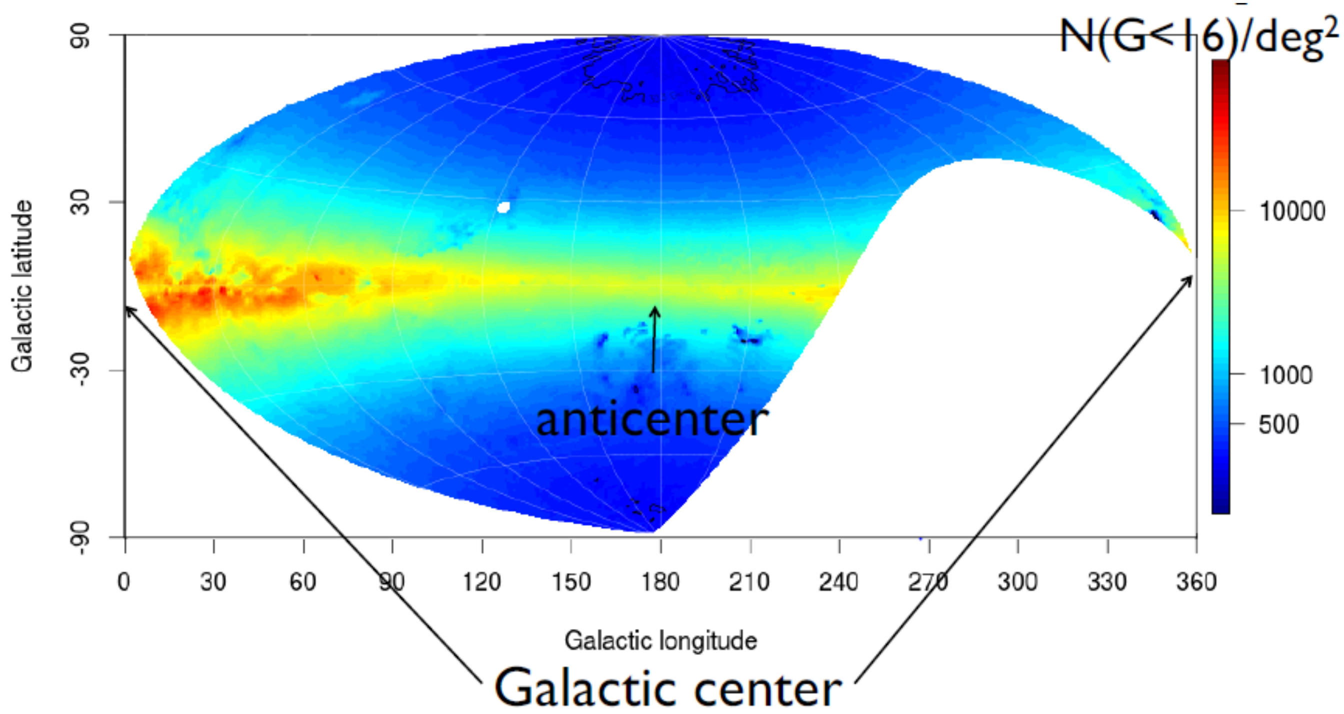
WEAVE Timeline-I

- PDR: successful 3/2013 +
- data systems 6/2014; WAS 4/2015)
- FDR: 11/2014–11/2017
- Construction complete: Q3/2019
- Assembly and integration at WHT complete: Q4/2019
- First engineering light: Q1/2020
- First science light: Q2/2020
- Surveys begin: begin Q3/2020

WEAVE Timeline-II

- Now Operation Rehearsal: OPR3
- Complete survey plans: mid Q2/2019
- Survey readiness review: Q2/2019
- Early science project definition (first year of observations)
- Science verification begins: mid Q3/2018
- 2019-2024: 5 years of WEAVE surveys (70% of available time, 236 nights/year), plus TAC time (30%) which may also include using WEAVE
- Post-2024: not defined, but likely continued use of WEAVE instrument (not necessarily current surveys)
- ING Board is starting to define post-2026 strategy

WEAVE Northern multiplex



WEAVE is the only HR Xwide field Xmultiplex optical facility in the north !

- **Lamost:** R=1800, r=19 mag (Tian+2016)
  - Disk structure, 5 million spectra at the anti-center
  - [Fe/H] uncertainty of 0.3-0.4
  - No chemical tagging

Extragalactic surveys

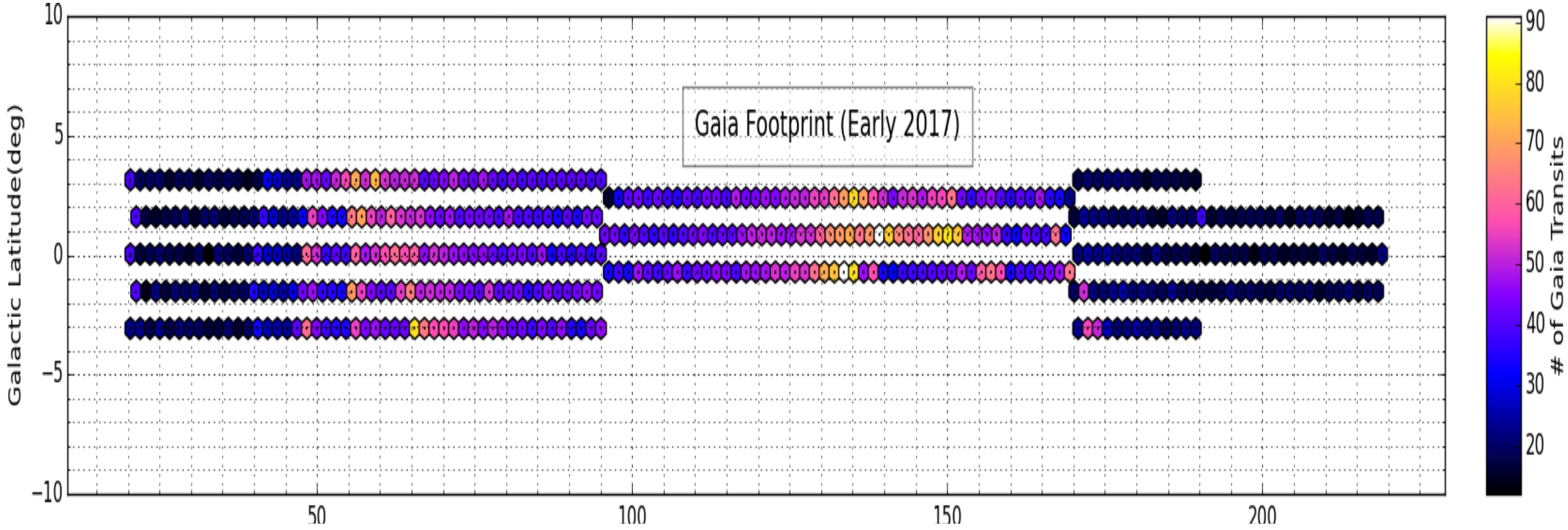
- WEAVE-Clusters
  - Evolution of dwarf galaxies in clusters : 10^4 galaxies R=5000 +mIFU
  - infall regime: 10^4 galaxies in superstructures Z=0.1—0.2, LR, R<21
  - Evolution of cluster galaxies at z<0.5 . LIFU+MOS
- WEAVE-APERTIF
  - star formation quenching, dark matter, disk kinematics of a sample of galaxies, with LIFU and mIFU
- StePs
  - Archeological studies to probe massive galaxies evolutions at z=0.3—0.8 on 25 sq deg with MOS
- WEAVE-LOFAR
  - LOFAR follow-up for 10^6 galaxies over 10^4 sq deg , V<21, z>6, LIFU +mIFU
- WEAVE QSO: 10,000 sq , g< 22, BAO constrain and IGM physics (LR+HR at g<20)

Stellar Science Surveys

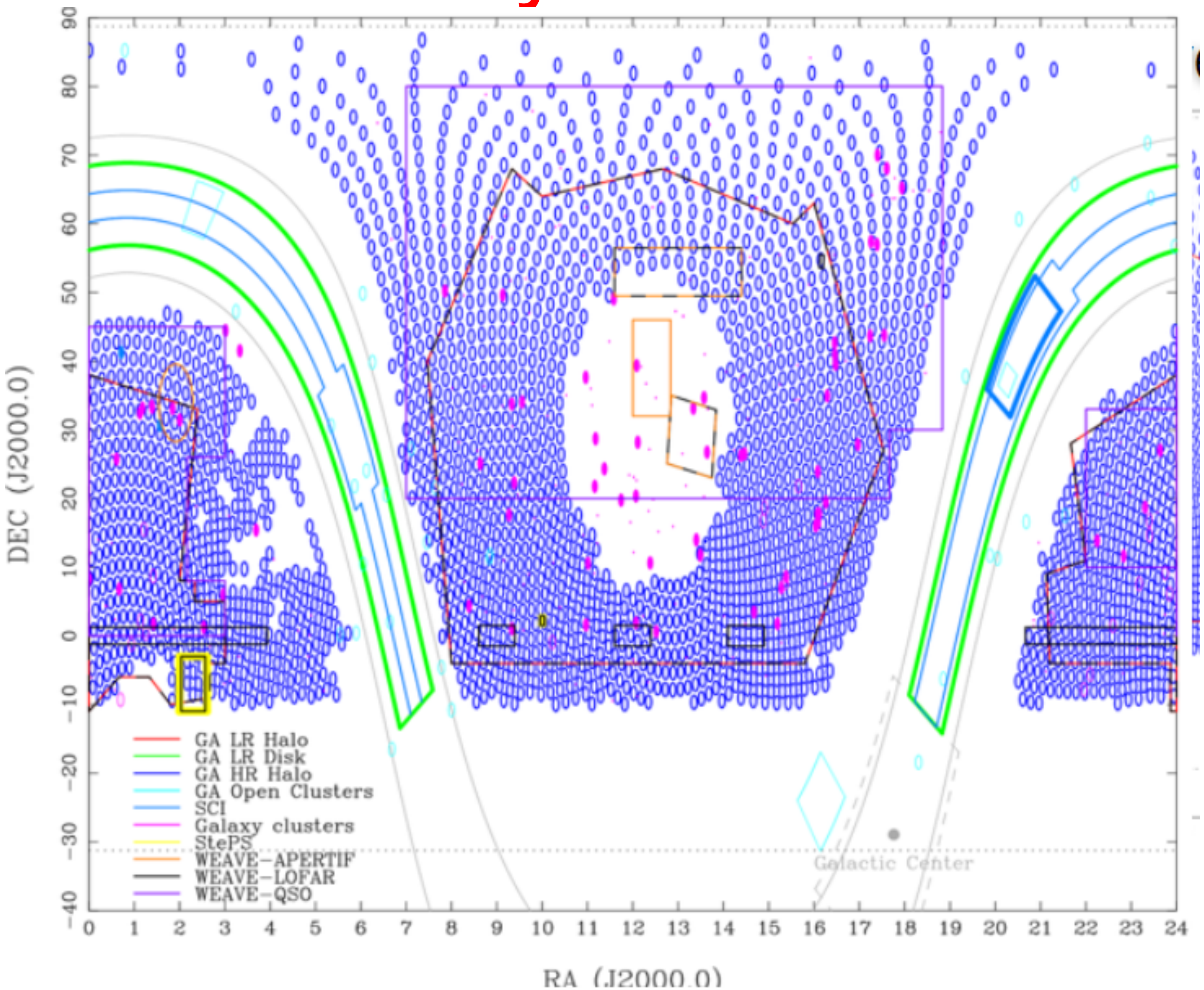
- WEAVE GA Goals:
  - To complement Gaia
  - To complement 4MOST , MOONS (in the North)
  - Bridge the gaps in APOGEE footprints
- GA Surveys:
  - LR Halo /LR disk
  - HR halo/HR disk/OC/GC
- Stellar, Circumstellar, and Interstellar Physics (SCIP): on the disk (b<3-4 deg) to probe massive stars, ISM, YSO+ Great Cygn Rift star formation
- WD survey: 10-20 WDs per FOV , G<20 : calibration(tellurics/flux)
- Characteristics:
  - Continuous sky coverage to sample global phenomena
  - High statistics
- WEAVE will not do binaries, variables

Galactic Plane Stellar, Circumstellar and Interstellar Physics (SCIP)

- LR Surveys on GP selected from EGAPS over 1380 sq.deg
- Synergie with EGAPS: GP surveys
  - b<3 deg, ugri, Halpha , 20th mag VPHAS+ (u,g,r,i,Ha) ESO, UVEX (u,g,r, some HeI) North
  - IPHAS (r,i,Halpha) North
- Targets: *Young massive stars:* Comprehensive samples for improved modelling of massive-star evolution & Unbiased demographics: e.g. unclustered as well as clustered OB stars included
  - Targets: early B star with Av ~ 3, 10kpc away would have apparent mags B ~ 18.5, R ~ 17.5, I ~ 17 (S/N >30)
-

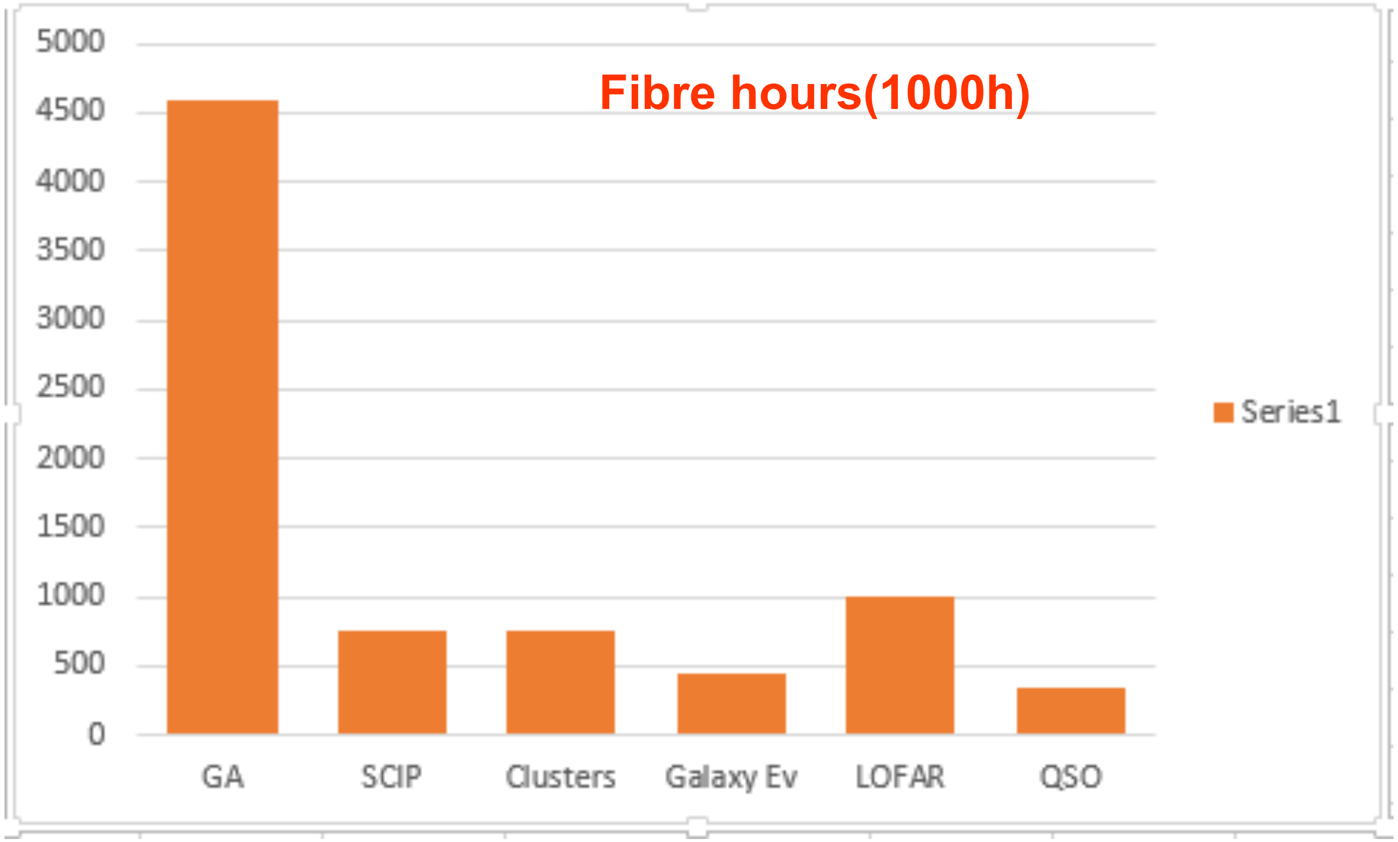


Survey Overview



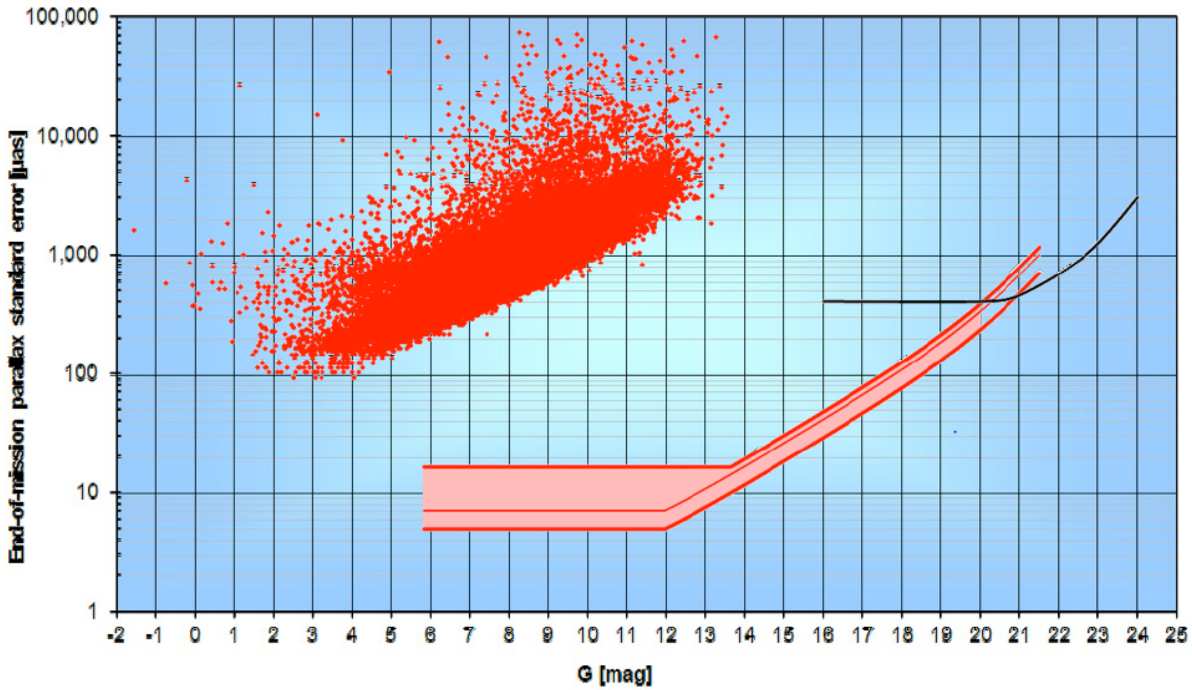
Preliminary fibre hours

Based on 5-year survey; 236 night/y, 7 h/night, 950 fibre/h



Galactic Archeology from 2018

- A wealth of information from ground and space based and surveys
  - **Pan-STARRS** (Kaiser+2010, δ>-30, no u filter), **Sky mapper**(Keller 2012)
  - **Gaia, LSST** (Ivezic+ 2014, 2022, r=24.5, 30,000sq deg), **PLATO**
- Spectroscopic surveys: GES, RAVE, APOGEE, 4MOST, MOONS...



Towards a chemodynamics of the MW

Total velocity distribution vs radius

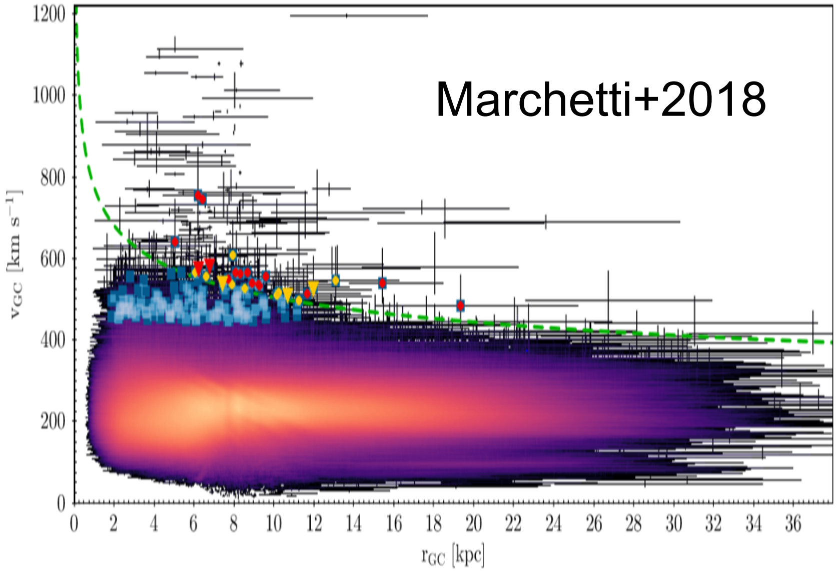
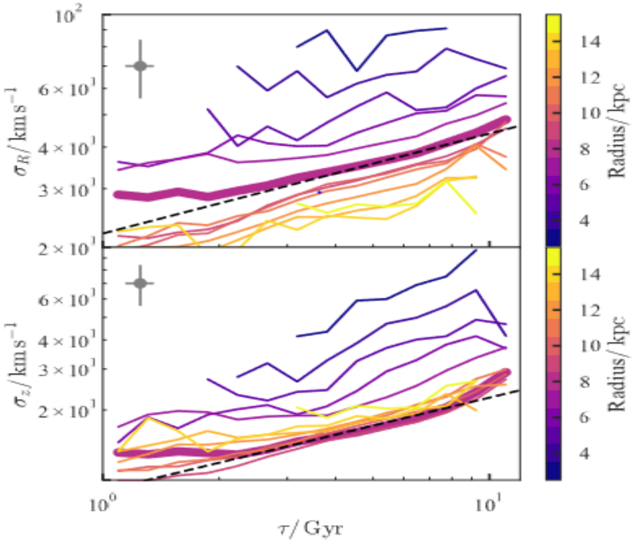


Figure 2. Total velocity in the Galactic rest-frame v_{GC} as a function of Galactocentric distance r_{GC} for all the 6869707 stars in *Gaia* DR2 with relative error on total velocity < 0.2. Colour is proportional to the logarithmic number density of stars. The green dashed line is the median posterior escape speed from the Galaxy from (Williams et al. 2017). We overplot in blue the "clean" high velocity star sample introduced in Section 4. Circles and triangles correspond, respectively, to HRS and HVS candidates discussed in Section 5, colored in yellow (red) if $P_{MW} > 0.5$ ($P_{MW} < 0.5$).

Disk age-velocity distribution

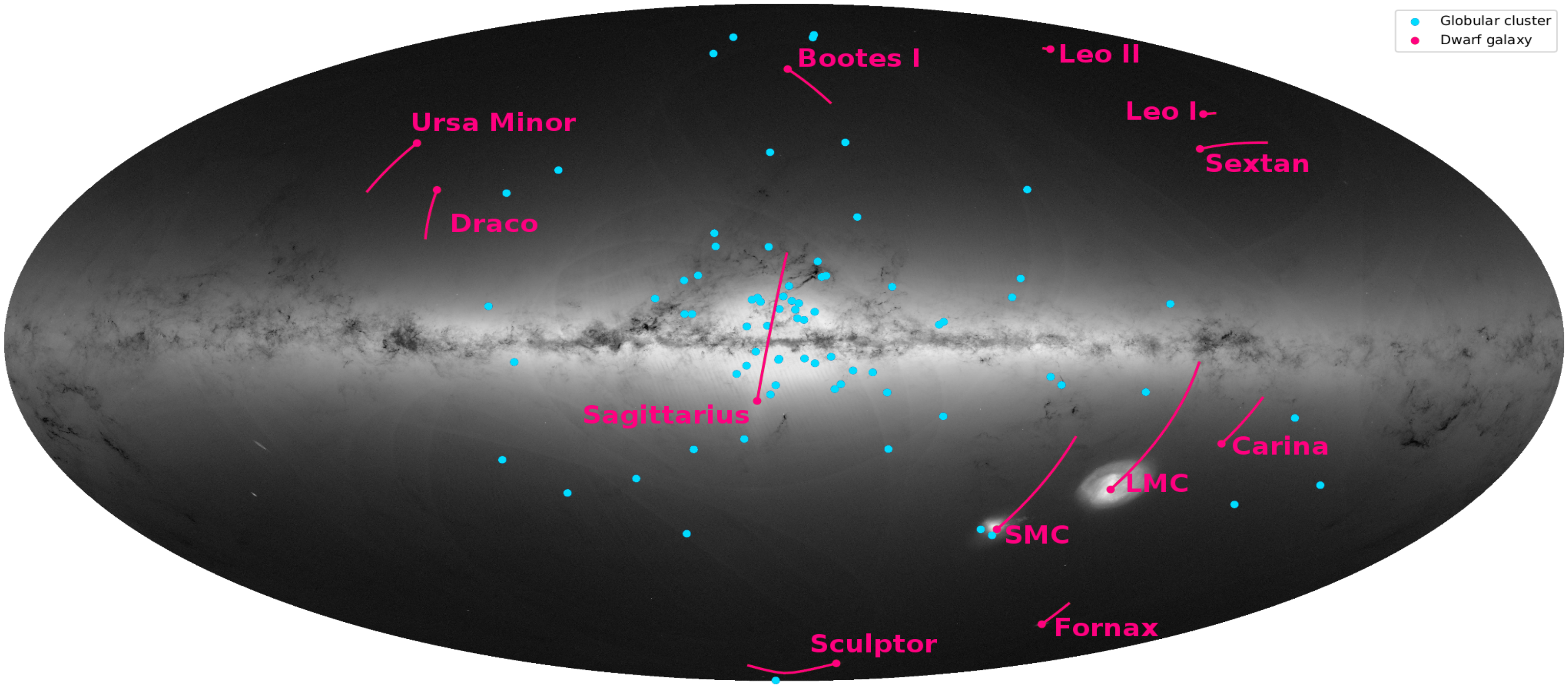


Sanders+2018

Figure 10. Velocity dispersions against age for a series of radial bins (for giant and turn-off stars with $|z| < 0.6$ kpc and [M/H] > -1 dex). Each line is coloured by the mean Galactocentric radius of the bin. The top panel shows

- Distances from parallaxes (Bailer Jones et al 2018)
- Ages for 3 million stars using DR2 parallaxes, +SEGUE, GALAH, GES, LAMOST, APOGEE chemical information
  - Uncertainties from 16%(APOGEE) to 40%(RAVE, GES)
  - However: dependence on priors and selection function
- A Catalog of velocity for 7million stars (Marchetti et al 2018) http://home.strw.leidenuniv.nl/~marchetti/research.html
  - Age-velocity dispersion in the disk shows no break at intermediate ages: consistent with heating from GMC (Sanders+2018, Ting &Rix 2018)

WEAVE-Gaia Connection



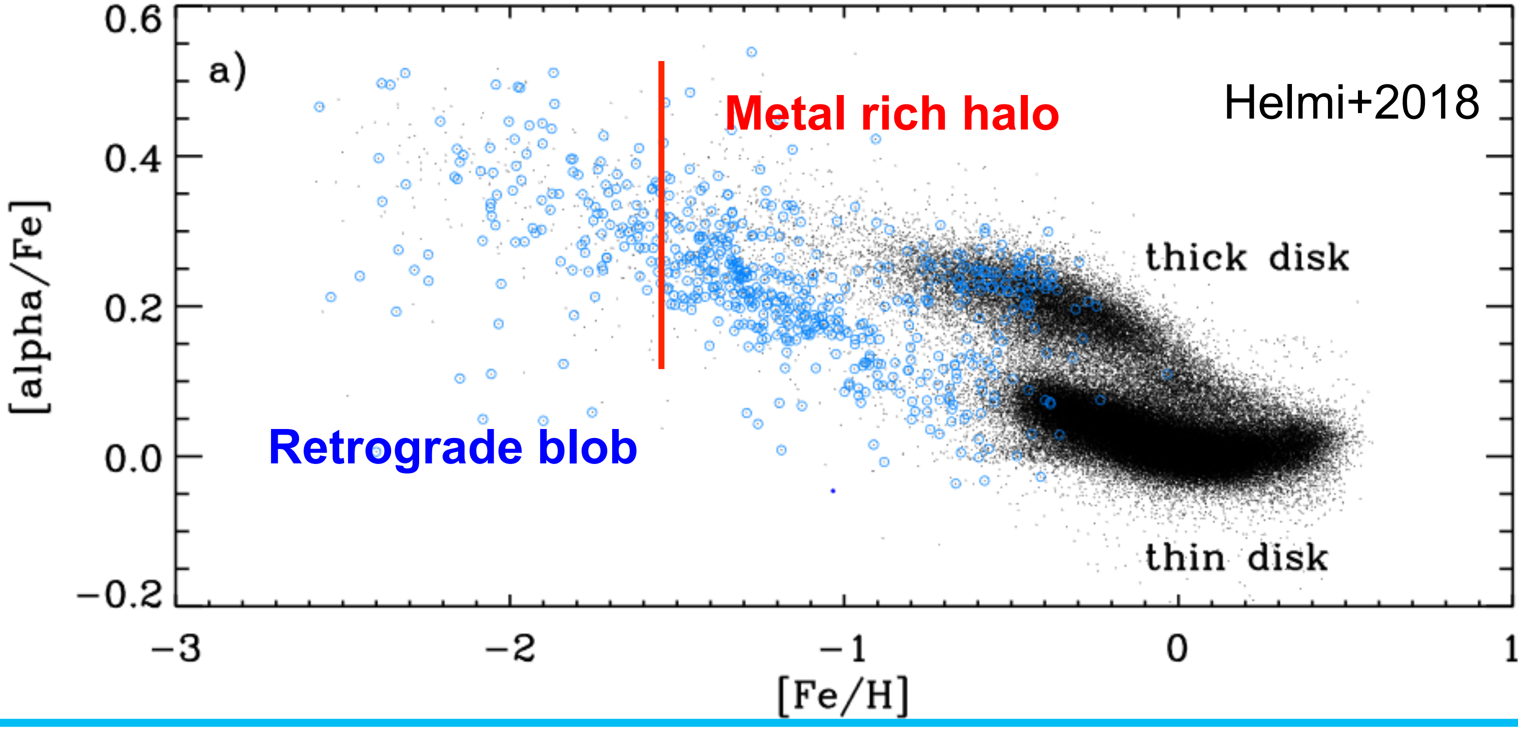
- WEAVE is the first survey with target selection from Gaia DR2+ and building on Gaia DR2 results
- Gaia DR2 real catalog (real data quality, real target densities, ...) : evolution of target selection
- Consider Gaia DR2 new findings (e.g Enceladus) in target selection and footprint consider OPRs Outcome for target selection (depth, ...), environmental constraints,

MW Surveys:key questions

Structure formation on sub-galactic scale

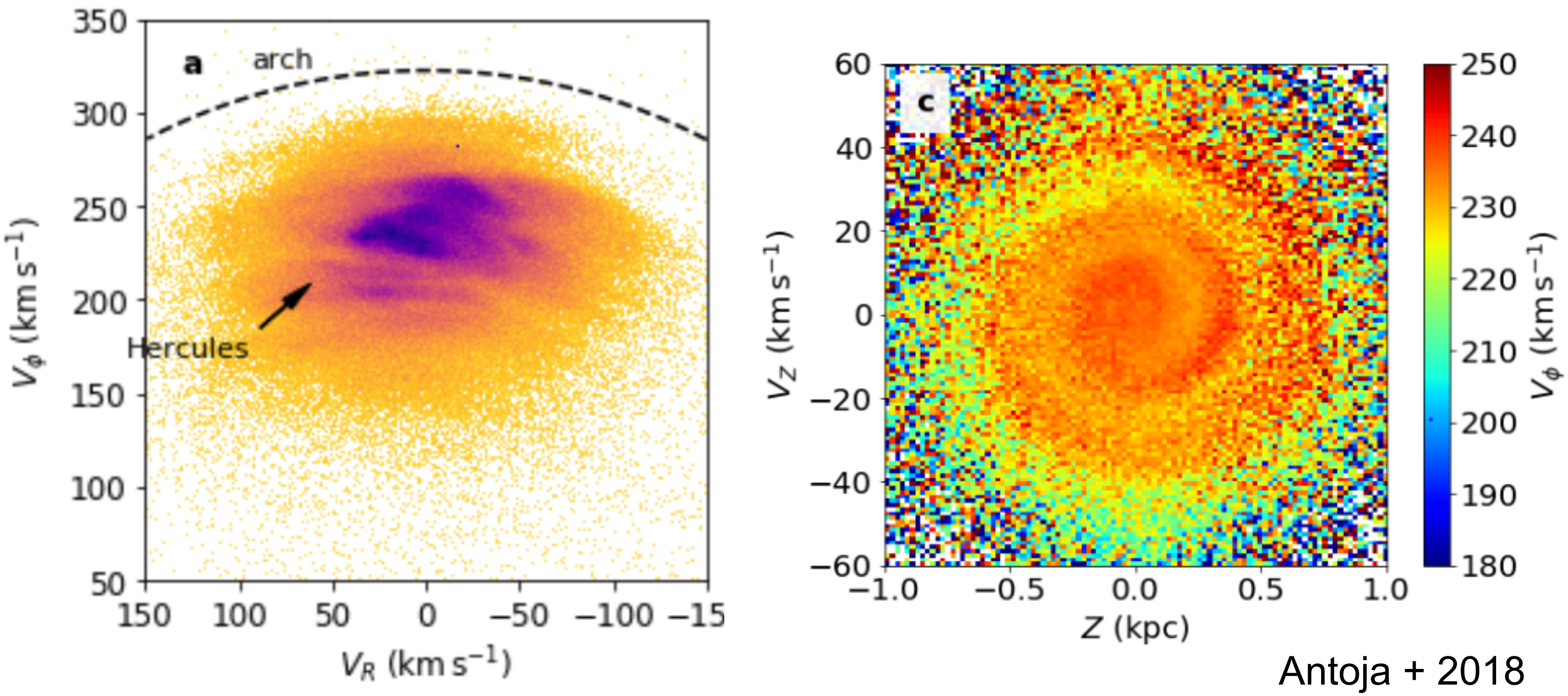
- Halo: in situ vs accreted (Belokurov et al. 2018; Myeong et al. 2018a,b; Deason et al. 2018; Kruijssen et al 2018,Koppelman+ 2018, Lancaster+2018)
  - What is the total mass of the Milky Way? What is the shape of the Galactic gravitational potential? (Battaglia + 2015, Koposov+ 2009)
  - Where are the most metal-poor stars in the Milky Way, what are their properties, and what do they tell us about the physics of the early Universe? (Caffau+2011)
  - dSph and UDFs : the role of disrupted dwarfs (Fabrizzio+2015, Tolstoy+2009)
- Dark matter
  - How much substructure does the Galactic dark matter distribution have within 20–50 kpc? How do they interact with cold streams? (Yoon + 2011)
- Disks respective roles of hierarchical formation and secular evolution in shaping the Galaxy?
  - what are the roles of spirals (+ number of arms, pitch angle, pattern speed?) and the bar (length, pattern speed?) (Helmi+2006, Schoenrich & Binney 2009, Minchev+2015)
  - What is the chemical evolution traced by the open clusters? (Magrini+ 2010, Jacobson+2016, Bragaglia+ 2006, Sestito + 2008, Cantat+2012, Donati+2012)

Gaia DR2 new view of the Halo



- Gaia+SDSS data : Gaia Sausage contributing to 50% mass of the halo within 25 Kpc (Belokurov+2018, Lancaster+2018, Kruijssen+2018)
- 100,000 stars DR2+APOGEE within 5 Kpc (Helmi+ 2018)
- Gaia Sausage/Enceladus retrograde stars are on the blue sequence(Helmi+2018)
- Inner 30 Kpc the stellar halo could be largely dominated by a single, ancient, extremely radial merger 10 Gyr ago
- High mass progenitor :10 $^{9\text{-}10}$ Mo
- [alpha/FeH] different from thick disk: long lasting SF
- High e stars with abundances of dwarf satellites (APOGEE)(Mackereth+2018)

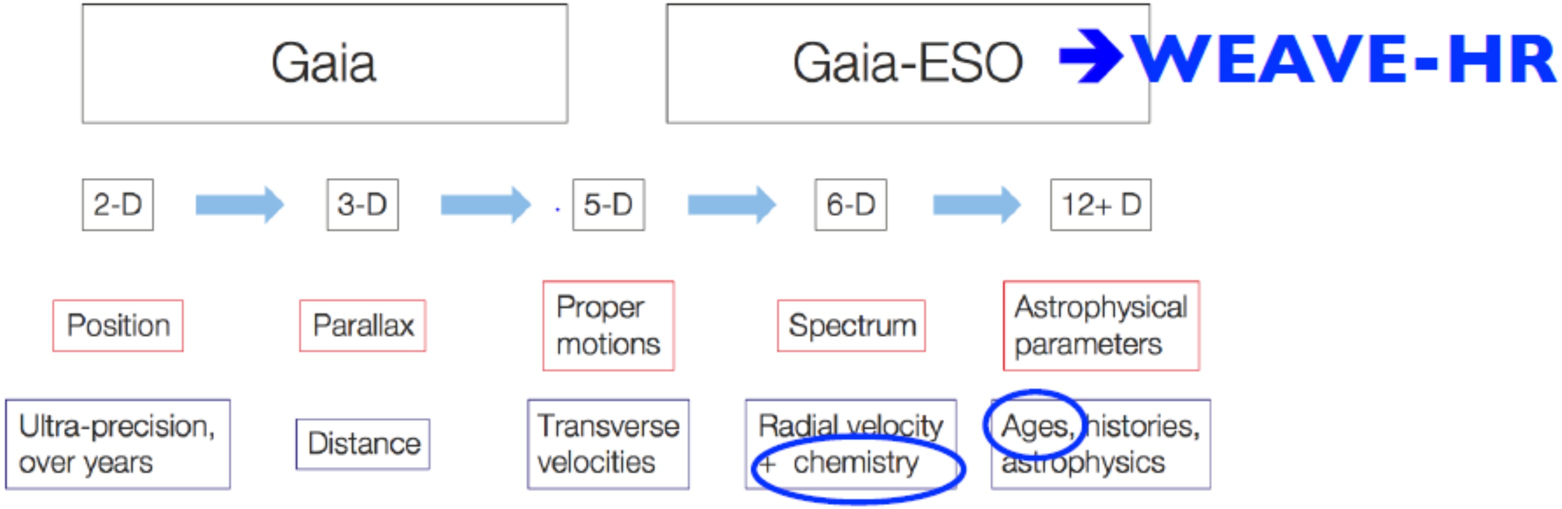
Disk perturbations



Antoja + 2018

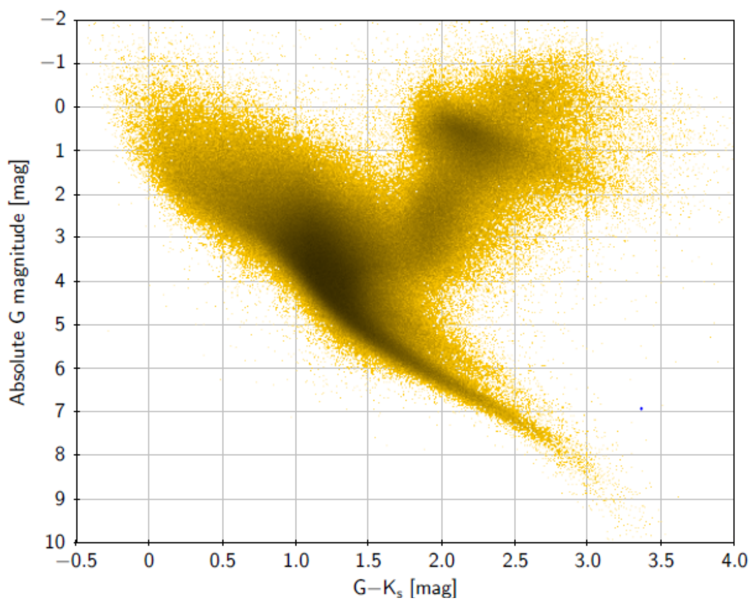
- The disk is out of equilibrium state (Gaia Collab., Antoja+2018, Kawata+2018, Trick +2018)
- Bending modes excited by dark matter halo (Chesquers 2018)
- vertical waves from a perturbing satellite (Sagittarius?) (Binney Schoenrich 2018, Bland-Hawthorn+ 2018)
- Perturbations created by spiral arms (Hunt+2018, Quillen+2018)
- Bar perturbations (Gaia Collab 2018)

WEAVE HR/LR Surveys



Gilmore et al. 2012

- GOALS
- Combine (spectroscopic) stellar parameters with Gaia distances, pm, radial velocities to constrain ages, to constrain the mass assembly of the MW disc(s) with time.
- Derive distances where errors on Gaia parallax are killing
- Chemical labelling / tagging with all main nucleosynthetic channels, to deconstruct galactic stellar populations



WEAVE performances

- Surveys to acquire accurate Vr (2 km/s) (and stellar parameters, incl. Metallicity at 0.2 dex)

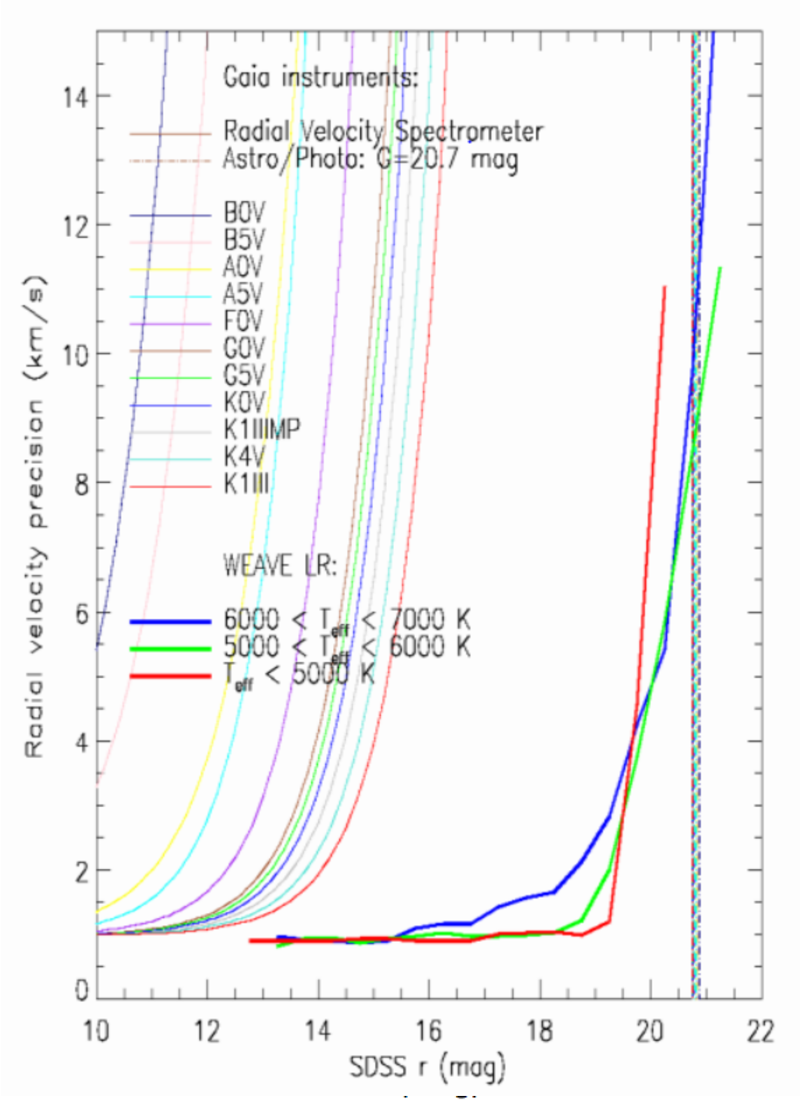
  15<G<20

  Defined the LR mode of WEAVE:

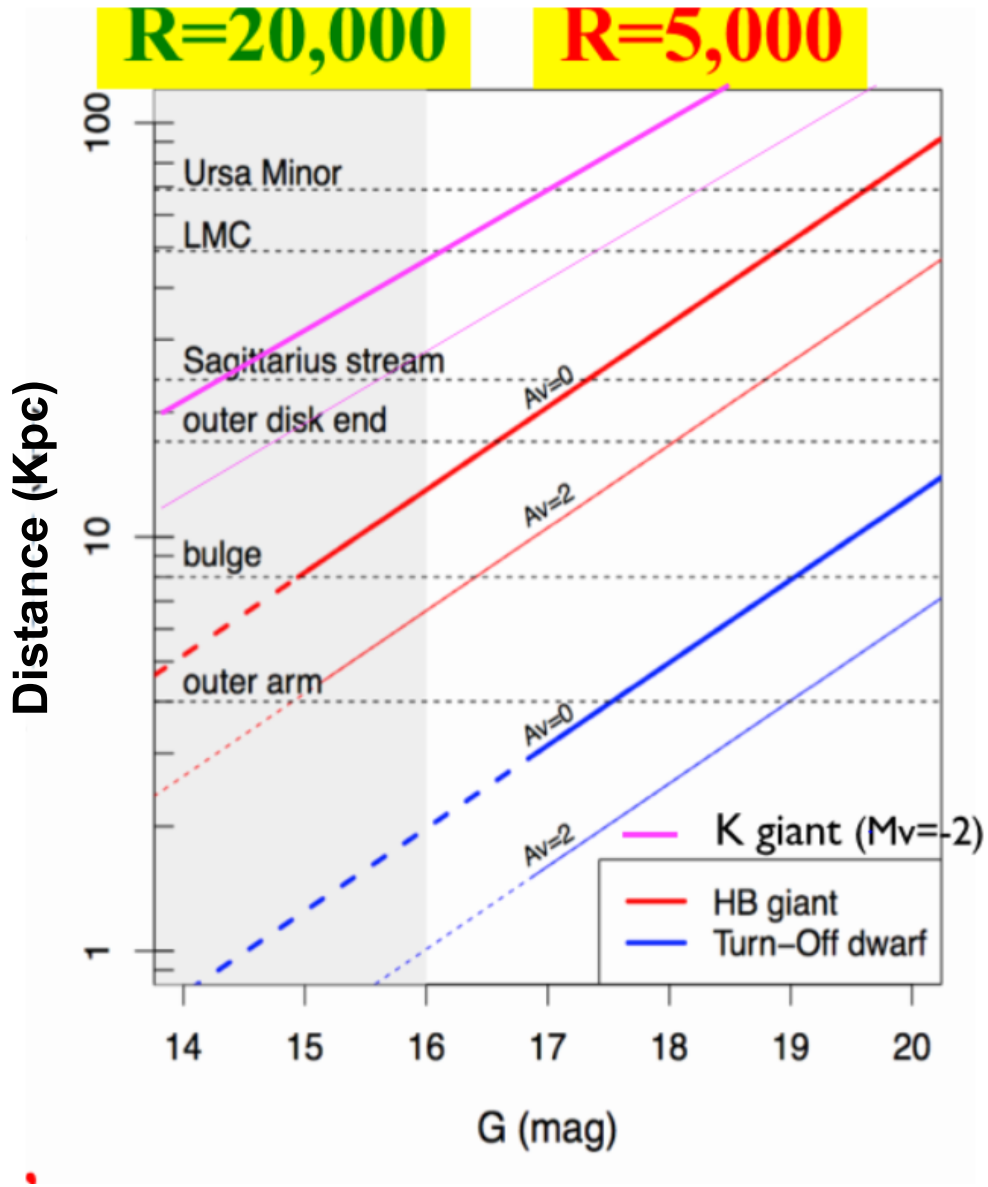
  - R = 5,000 in a wide range [366 – 606] nm + [579 – 959] nm
- Surveys to determine accurate stellar parameters and detailed chemistry(at 0.1 dex)

  for G>11-17

  - Defined the HR mode of WEAVE:
  - R = 20,000 in two windows [404 – 465] nm or [473 – 545] nm + [595 – 685] nm
  -

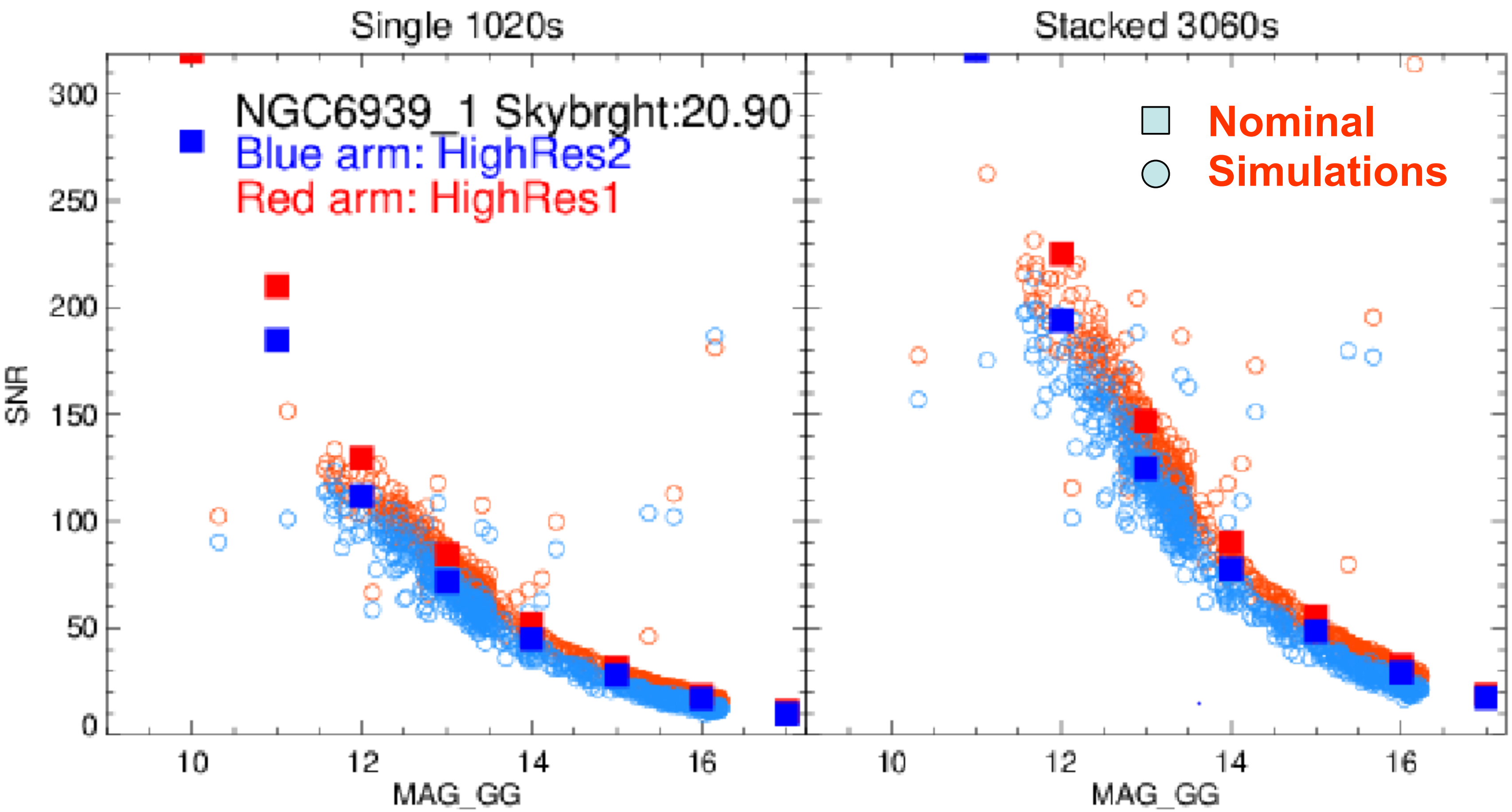


R=5000


R=20,000
R=5,000
Distance (Kpc)
100
10
1
Ursa Minor
LMC
Sagittarius stream
outer disk end
bulge
outer arm
Av=0
Av=2
Av=0
Av=2
K giant (Mv=-2)
HB giant
Turn–Off dwarf
14
15
16
17
18
19
20
G (mag)

S/N

- From OPR3 simulations



LR Halo wide survey

- Goal 1. Formation scenarios for the Galactic stellar halo: in-situ or accreted?
  - Dist=10-35 Kpc to trace the break of the halo
- Goal 2. Outer halo survey with RGB stars
- Goal 3. Total mass of the Milky Way out to 200 kpc through Jeans analysis
- Goal 4. The shape of the Galactic gravitational potential within 50–100 kpc from tidal streams
  - Dist > 50 Kpc
- Goal 5. Chemo-dynamics of Milky Way dwarf satellite galaxies
- Goal 6. Halo sub-structure
  - Dist < 30 Kpc
- Goal 7. Metal-poor stars and the earliest phases of metal-enrichment.
- Goal 8. Large scale mass assembly of the thick disc

Halo substructures

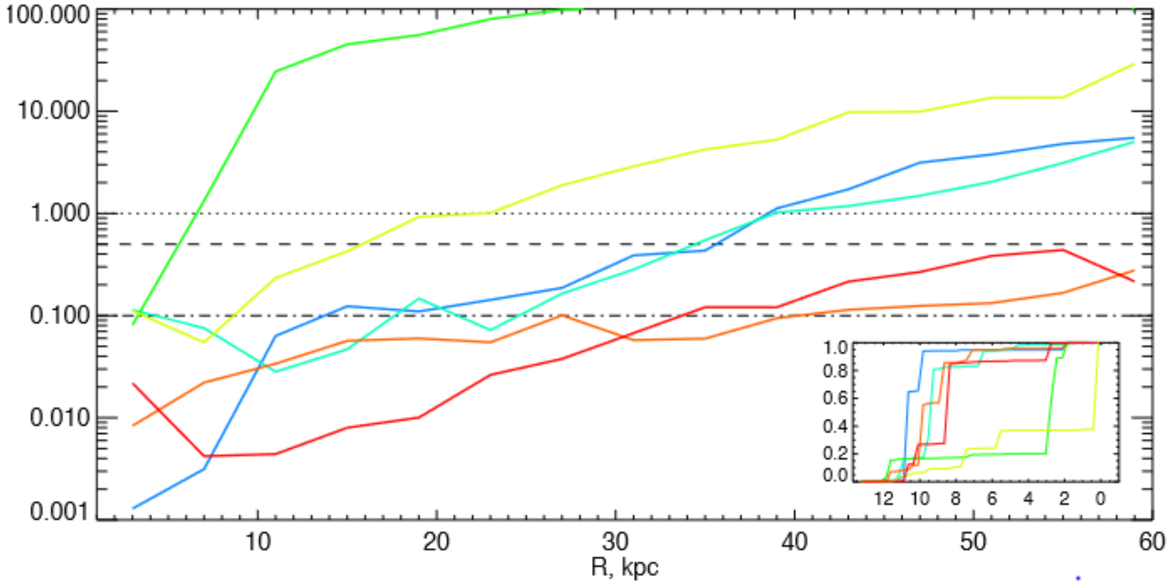
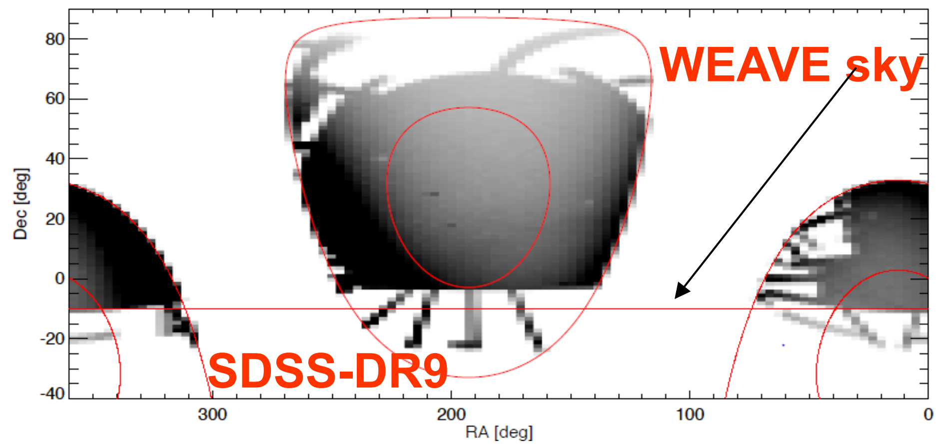


Figure 3.3 The ratio of stellar mass locked in young tidal debris (accreted up to 8 Gyr ago) to old tidal debris (accreted more than 8 Gyr ago). Dash-dotted, dashed and dotted lines indicate a ratio of 0.1, 0.5 and 1, respectively. 6 different stellar halo simulations are shown, each with distinct accretion history (as shown in the inset, X-axis is the lookback time). Old and well-mixed tidal debris always dominate the central halo. The region with a significant fraction of young un-mixed debris can be between 10 and 40 kpc from the Galactic centre.

LR Halo wide survey:selection function

- 8500 deg ^{2}
- High galactic latitude survey (|b|>30°), V<20, 1h integration time
- Total number ~1–2×10^6 stars (nstream > 30 to break degeneracy, Helmi 2011)
- Overlapping with SDSS-DR9, selection on gri photometry +Gaia DR2
- Other photometry under study (PANSTARRS)
- Tracers : old MSTO (30Kpc) dense regions
- RGB (100 kpc) far reaching in the ha
- BHB (from ugri photometry)
- RR Lyrae (from light curves)
- EMPS candidates → from Pristine
- Magn limits+ color cut (g-r)>0.45



Pristine EMPS selection

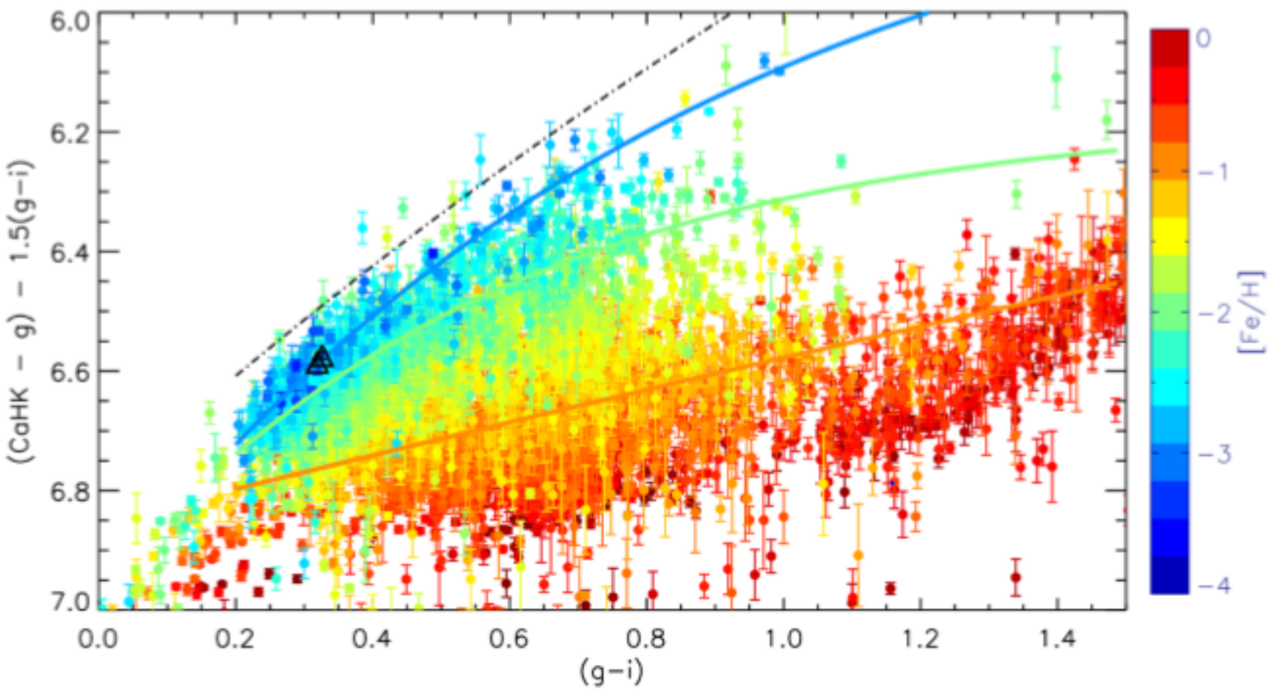


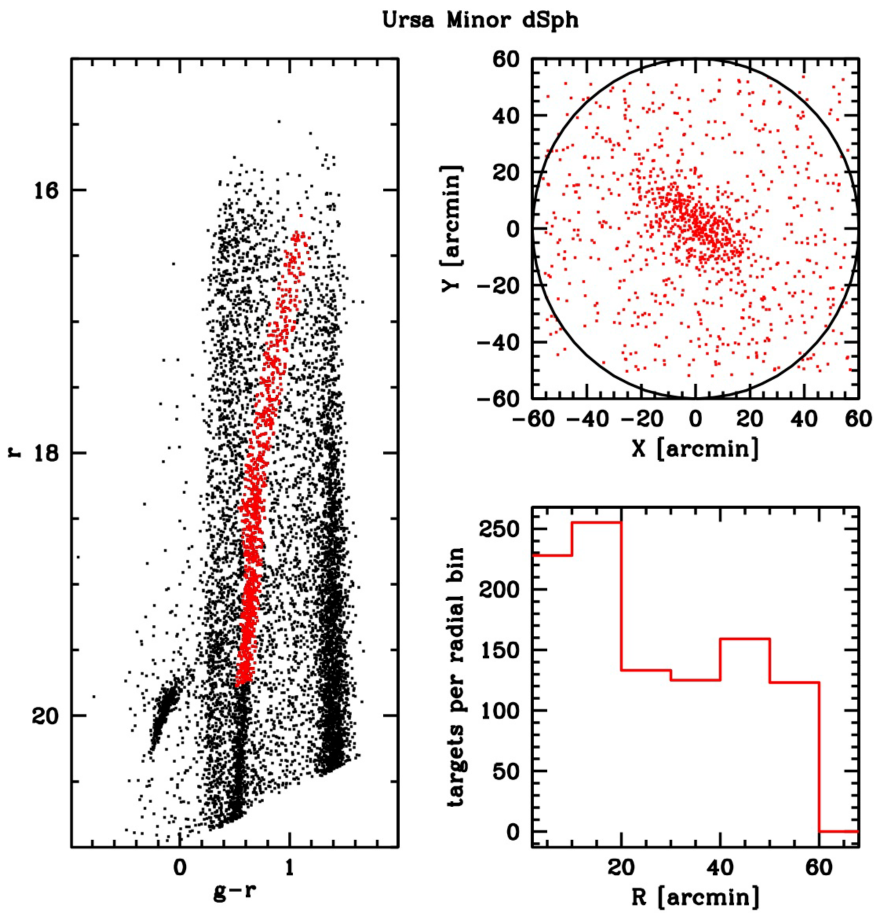
Figure 3.10 Colour-colour plot used for the selection of EMPS with the narrow band filter (including the Ca H and K) at CFHT. Stars with [Fe/H]<-2.5 are easily separated out in a broad temperature (g-I colour) range encompassing MSTO and RGB stars.

LR Halo Pointed Survey

- Dwarf Galaxies and UDFs
- Northern dSphs + large streams and clouds + UFDs
- 250 deg^2 down to V =21 (4x1 h exposures per pointing)
- A few exposures over 2 years for 3 dSphs (detection of 30% of

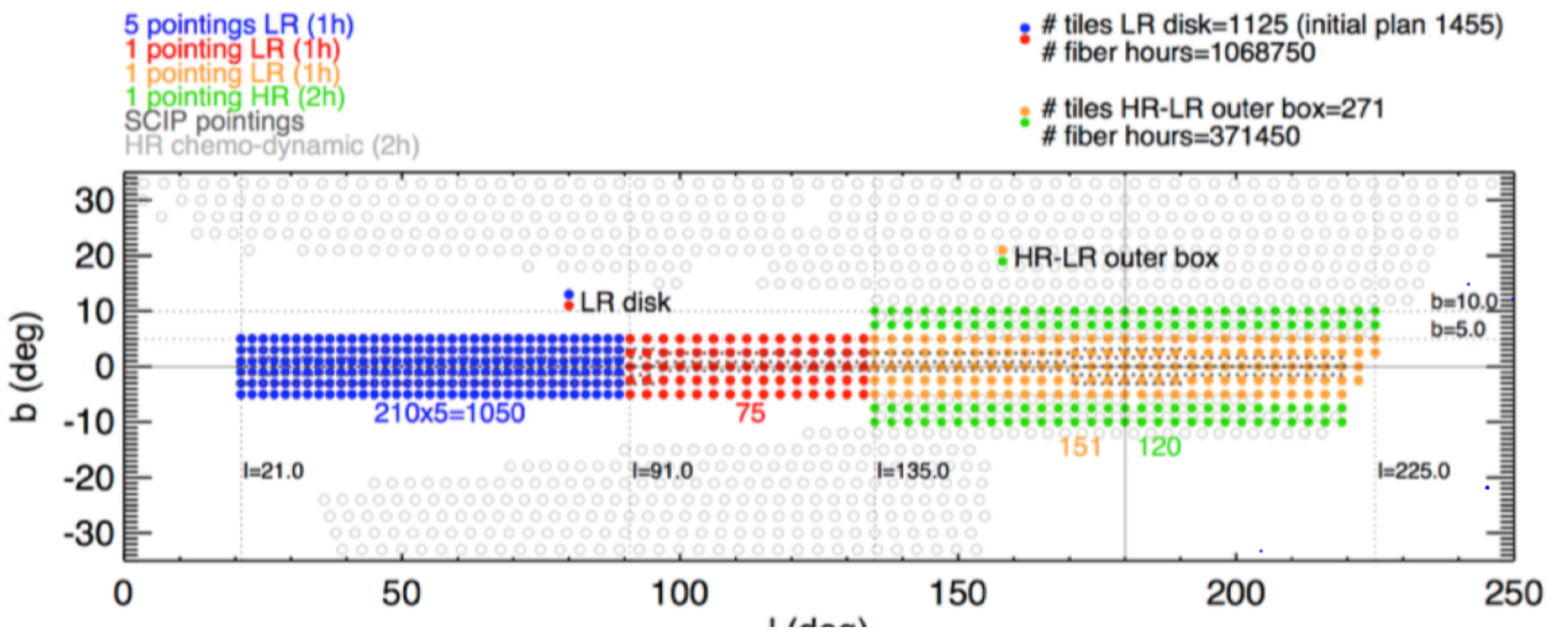
  binaries with |dv| > 2 km/s;

Catalogues: e.g. SDSS/PanSTARRS photometry or proprietary data



LR disk survey

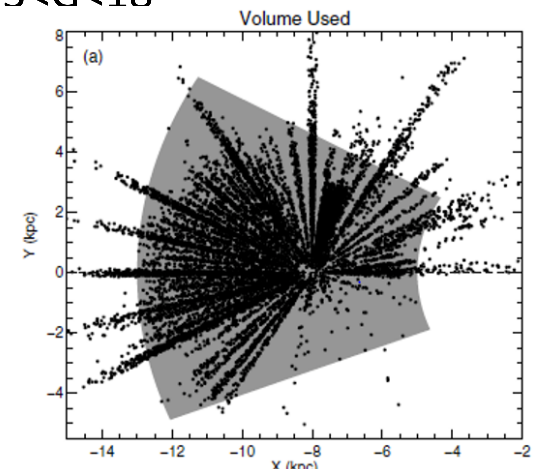
- A galactic plane experiment to constrain the disc potential, including departures from axisymetry (spiral arms, bar, …), moving groups. |b|< 6, 550 LOS
  - Needs: Vr to 2Km/s to discriminate streams with 5-10 km/s
- WEAVE Privileged access to outer disk
- The outer disk has clearly a complex non-equilibrium structure, most probably affected by satellite interactions (corrugation patterns, Monoceros/GASS, plumes, disk-halo interface, satellite interactions



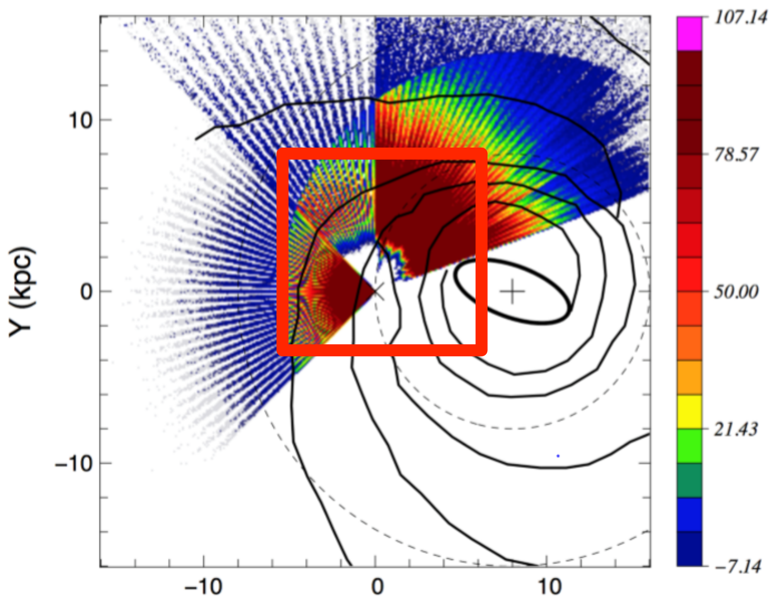
LR disk footprint

- Inner disk survey
- 20<l<90 (tip of the bar)
  - Competitive with APOGEE
  - Continuous coverage with RG
  - Tracers: red clumps 15<G<19
- 90<l<135 influence of bar and spiral arm
  - Sparse coverage
- Outer disk survey
  - 135<l<225
  - b<6 LR, b>6 HR
  - Tracers : RC 13<G<18
- IPHAS, VPHAS

APOGEE



WEAVE Target $(100pc)^2$



WEAVE HR Surveys

- Goal 1. Probing the assembly of the Galactic discs with chemical labelling and ages
- Goal 2. Chemical labelling of streams, groups and substructures in the Galactic halo
- Goal 3. History of the chemical enrichment in the galactic disc
- Goal 4. Globular clusters /OCs

WEAVE HR Surveys

- **Goal: Chemical tagging : 5650deg ^{2}**
- High latitude Halo: searching for streams + first stars
- Assuming 500 streams cross the solar neighbourhood
- 100 members each needed to characterize them

  → 5 x10 ^{4} halo star– target 5 x10 ^{5} stars
- Given the density of halo stars at magnitudes 12<V<16 (~10 / deg^{2})

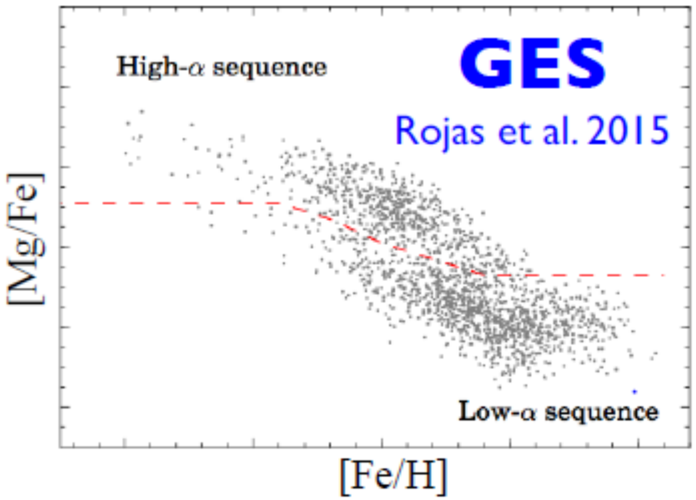
  → demands a high-latitude survey of 5000 deg2 (at |b|>30-40)
- Intermediate latitude survey mapping the thick disk
- MSTO stars selected from Gaia
- Assuming 0.1 dex thin/disk separation

  an error on [α/Fe] abundances of 0.05 dex

  Nmin=3,000 stars per (RG,[Fe/H],Z) box
- **1,800 deg^{2} with 15<|b|<30°**

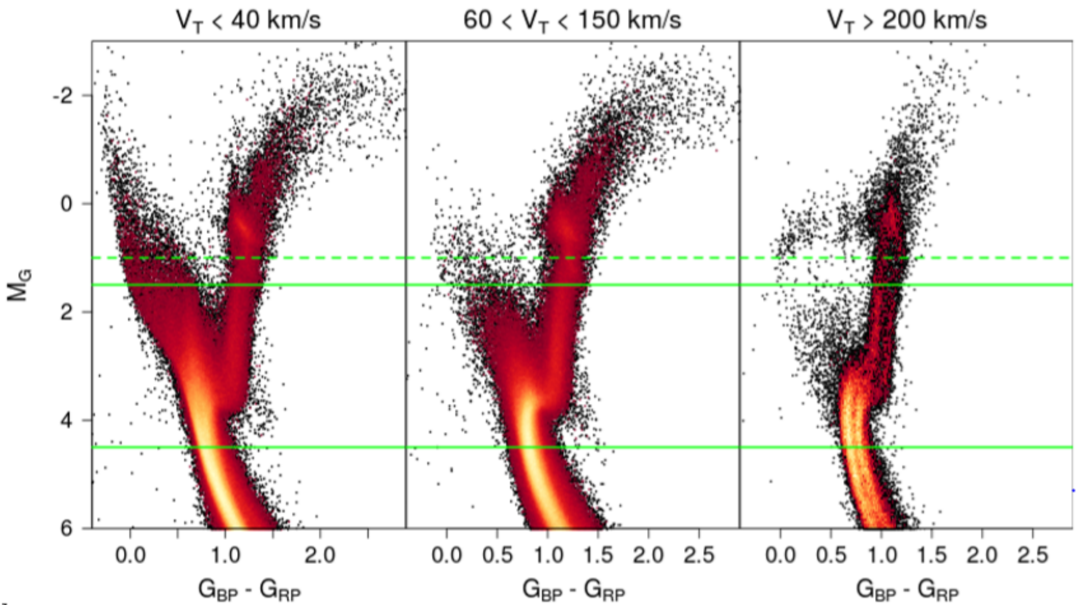
  to insure Rgc,Z coverage

→ minimum number of targets of 6x 10 ^{6} HR disk



HR target selection

- 90% of the HR survey is within the GDR2 5D sample
- Target selection: G< 16 including Gaia parallaxes (G<17 anticenter)
- Giants: all stars with MG < 1.5
- MS: all stars 1.5<MG<4.5



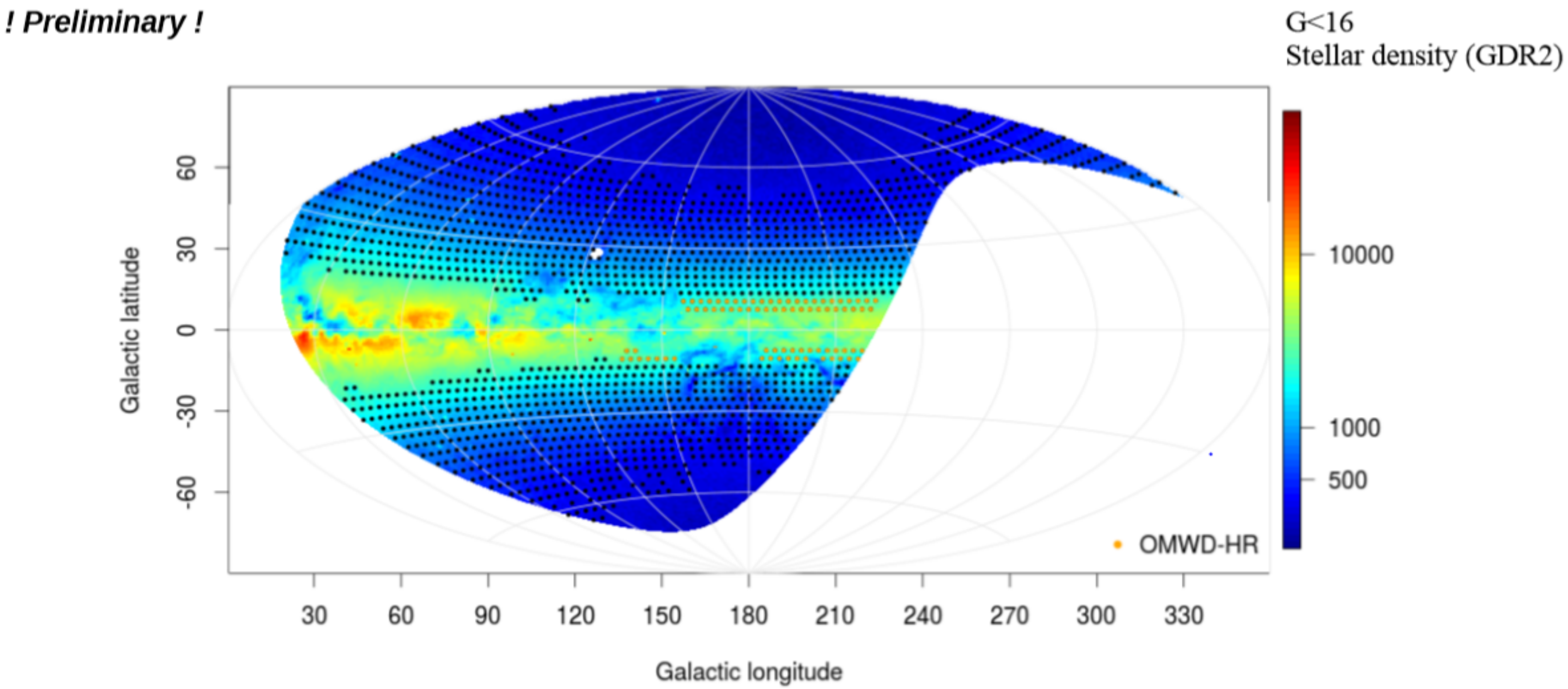
Giants (OMWD-HR

$M_G < 1.5$ or 1?

$M_G < 4.5$: ok

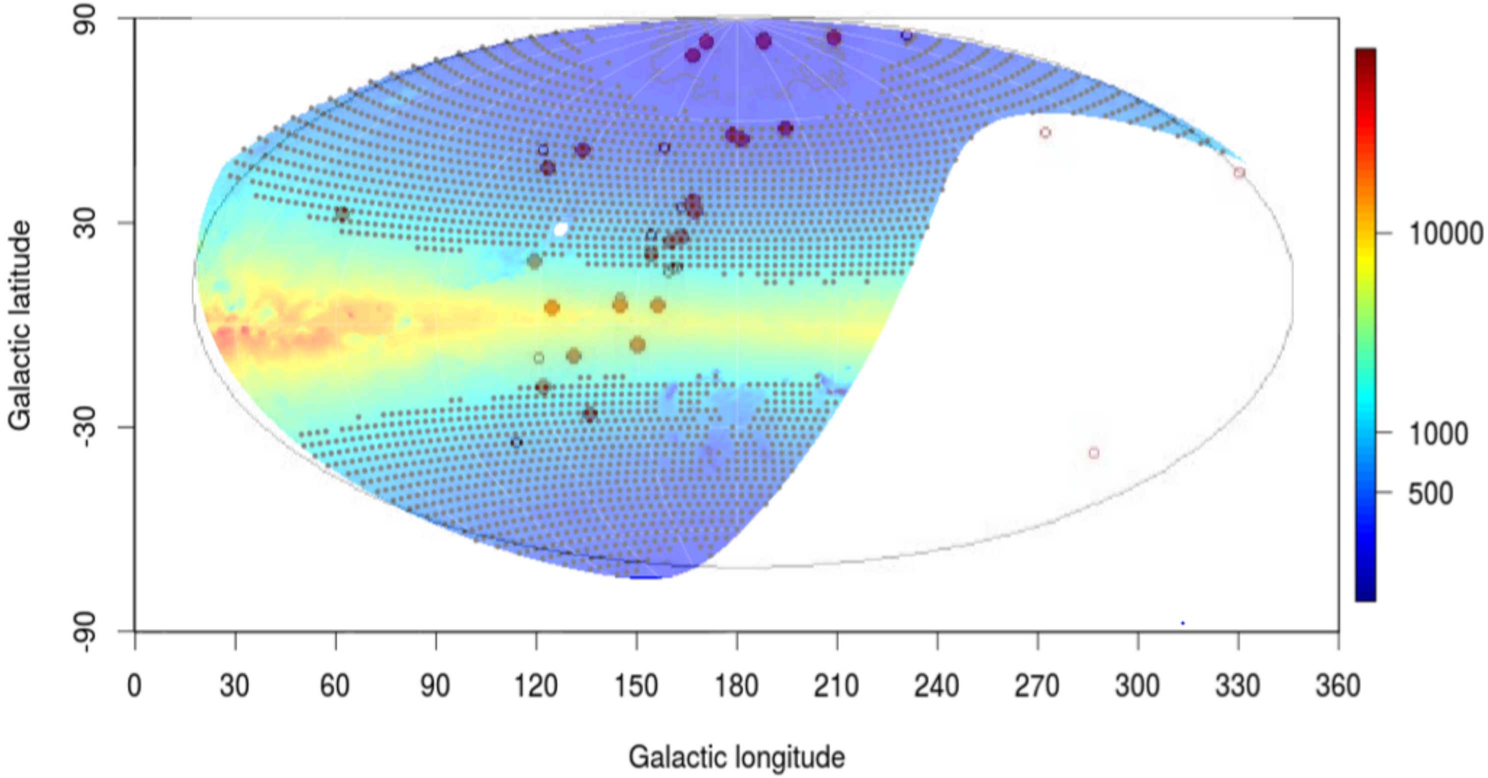
Gaia DR2 HR diagram

Target density



- G<16, Av< 1 (at 1Kpc) (Lallemant+2018 maps)
- 1700 WEAVE fields → ~5350 deg2, of which 3000 deg2 are at |b|>30°
- Fields with high extinction (A0>1.0 at 1 kpc) are excluded
- Fields with Gaia DR2 densities lower than ~300 stars deg–2 were excluded
- **90% of the sources with Gaia DR2 σπ/π < 20%**

Globular clusters

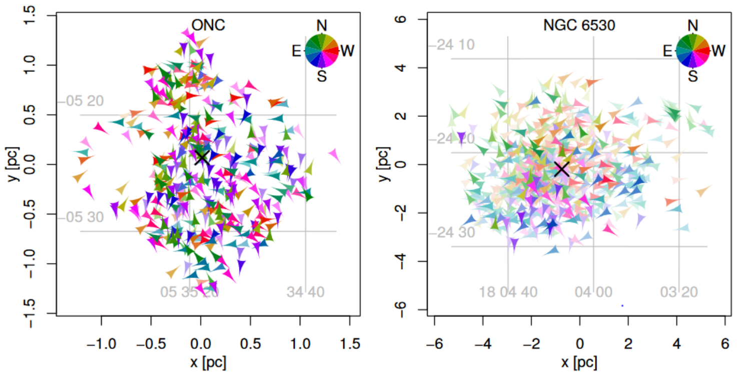


OC Survey

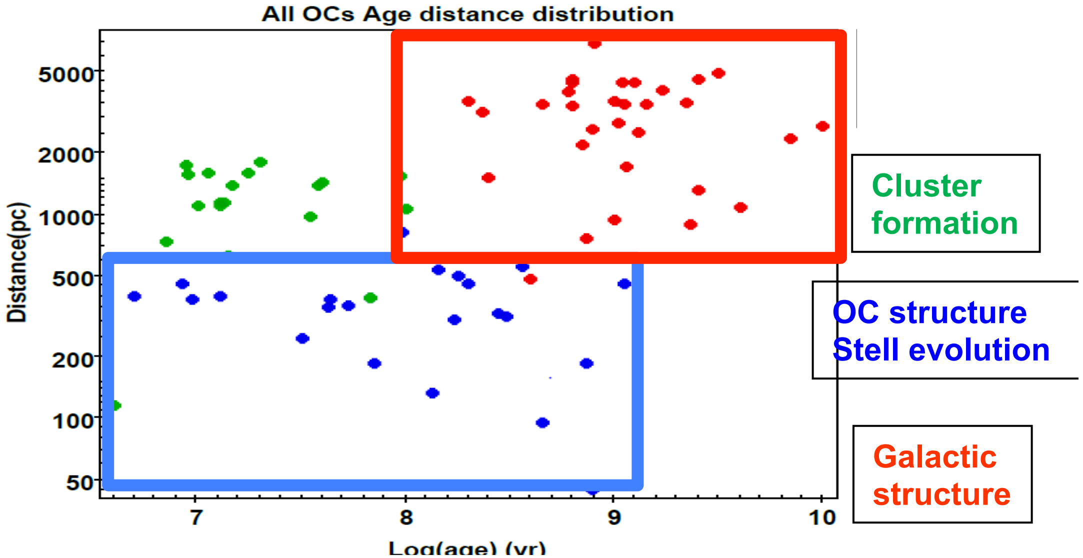
- Are all stars formed in clusters? How do clusters dissolve into the disc field? (Baumgardt& Kroupa 2007, Bressert+2010)
- What is the spatial distribution of the chemical elements in the Galactic disc? What is the effect of environment on star formation and the early stages of stellar evolution? (Mapelli+2014, Spina+2014)
- What is the impact of internal mixing, stellar rotation, and magnetic fields on stellar evolution?

No expansion

78% young OC expand!



gure 3. Direction of motion of individual stars in the rest frame of the cluster. Diagrams are shown for the ONC (left) and 3C 6530 (right). The orientations of the arrows and their hues indicate their direction, while saturation indicates weighting sed on statistical uncertainty. In the ONC stars with different velocities are mixed together, while, in NGC 6530, many stars ve directions of motions away from the cluster center (as indicated by the outward pointing arrows and color segregation by muth). Plots for other clusters are included in an online figure set.



Kuhn+2018

WEAVE OC science

- Goal 1. Formation of open clusters and associations→FGK stars in Cygnus: 19 objects
- Goal 2. Disruption of open clusters
  - chemical tagging of young clusters in the field
  - Chemical tagging of old open clusters halo
- Goal 3. OCs as tracers of the Galactic disc and of its chemical evolution → old Ocs (age >500 Myr): 25 Ocs +16 (anticenter)
  - As tracers of disk perturbations
- Goal 4 Early stellar evolution → nearby Ocs: 25 objects
  - lithium (nuclear ages, mixing, etc)
  - accretion, activity: evolution and effect of environment
  - Expansion vs contraction
- Goal 5 Stellar evolution at later stages
  - Stellar population, binary confirmation, PMS

→ Science case/target selection revision based on new Gaia DR2 data

Updating OC census

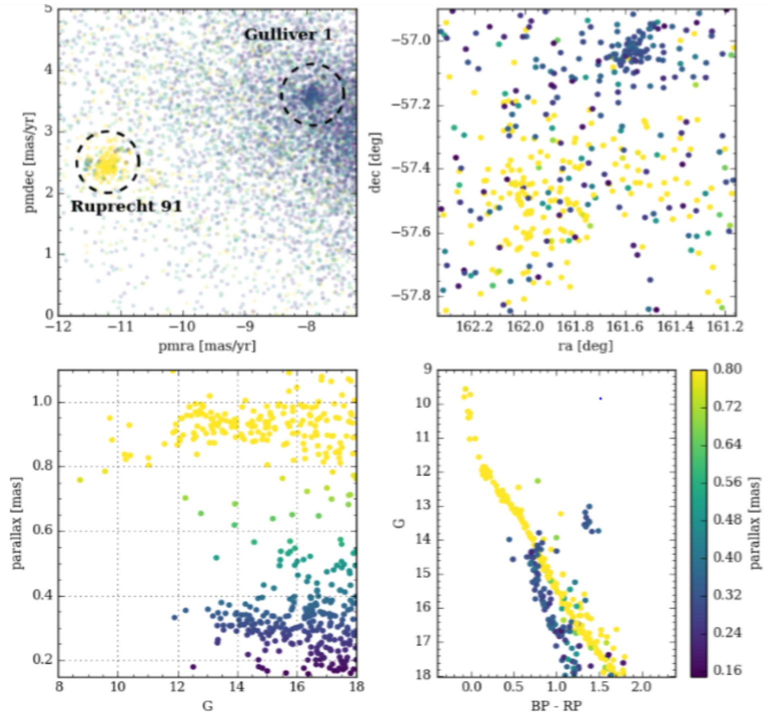


Fig. 8. Top left: Ruprecht 91 and Gulliver

Cantat-Gaudin + 2018

- Revised census for 1200 OCs
- 60 new Ocs by Cantat-Gaudin + 2018
- 32 of those have d< 2 Kpc
- Other discoveries by
  Koposov et al. 2017; Dias+ 2018
- Are we really complete inside 2 Kpc?
- New Ocs discovered by Castro Ginete 2018(31)
and Cantat 2018b

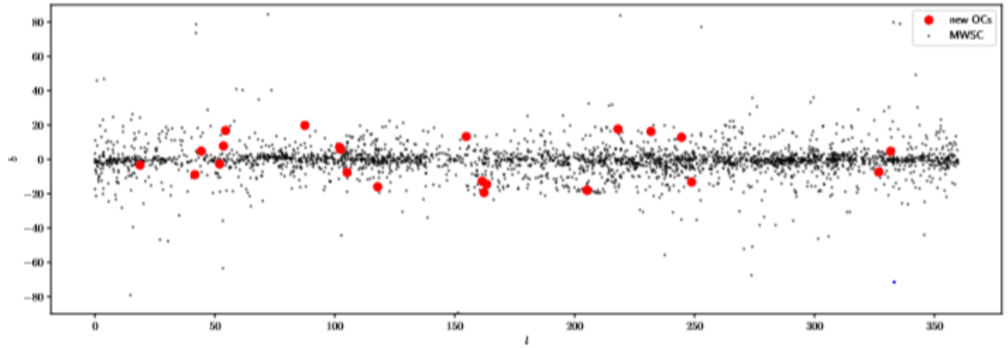


Fig. 10: Spatial distribution in (l, b) of the found OCs (red) together with the ones listed in MWSC (black). The confirmed OCs tend to be at latitudes $|b| > 5$ deg.

Undetected Ocs in MWSC

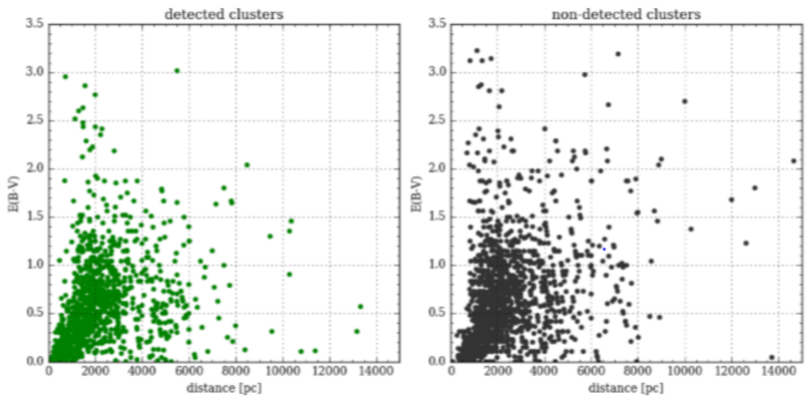
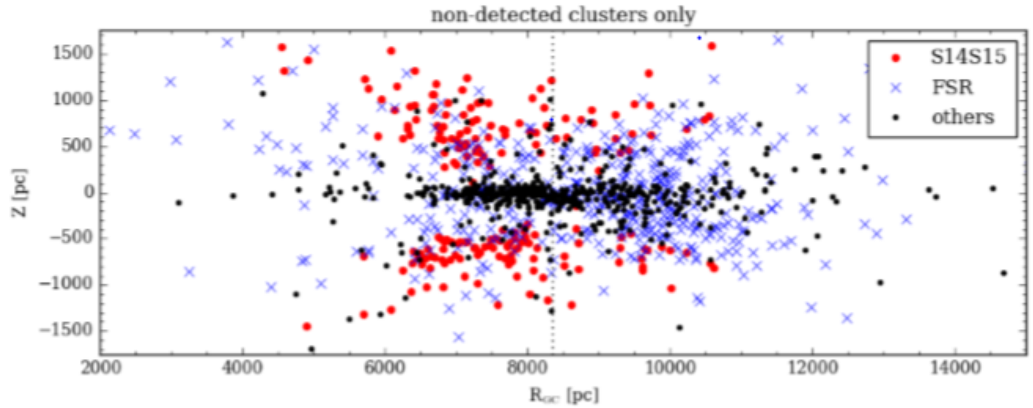


Fig. 9. Distance and extinction (as listed in MWSC) for the clusters we detected in this study (left) and those we did not (right). The second panel does not include the objects flagged as dubious or as asterisms (see text).



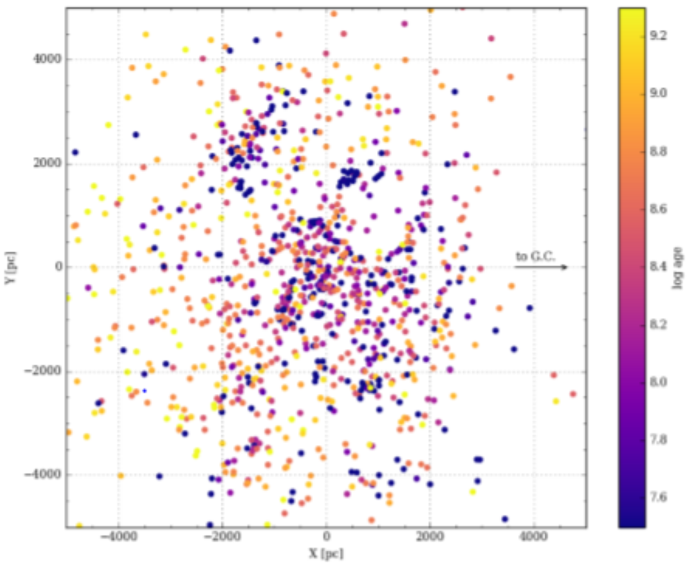
Cantat-Gaudin + 2018

- About 50% of the Ocs in MWSC were not identifed by Cantat-Gaudin+2018. We detect:
- 15% of Froebrich candidates even if we restrict to E(B-V) < 1
- 0 of the 203 Schmeja +2014, Scholz+2015 even if at high lat: no groups in DR2 pms
- Concerning others undiscovered Ocs
- Most of the undetected Ocs are located at low Galactic latitude , high crowding
- Too old and too faint
- Too distant
- Discovered in the IR
- asterisms

Ocs Parameter revision:astrometry

- Parallax-Pms revision for 150 OCs in the inner 2 Kpc in DR1 and 1200 in DR2 (Cantat-Gaudin, Jordi, Vallenari+2018)
- Upmask(Krone-Martins 2014)+ Maximum likelihood determination
- 84% of Ocs have uncertainty <5% on parallaxes;
- 94% of Ocs have uncertainty < 10% on parallaxes

Cantat-Gaudin+2018



lane, using the distances derived in this study. The yellow dots indicate
e of OCs, colour-coded by age (as listed in MWSC). Superimposed is

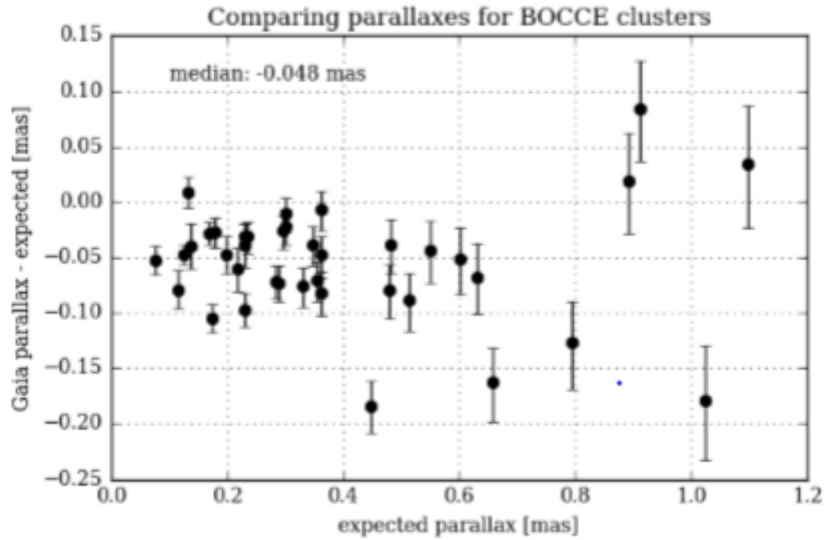
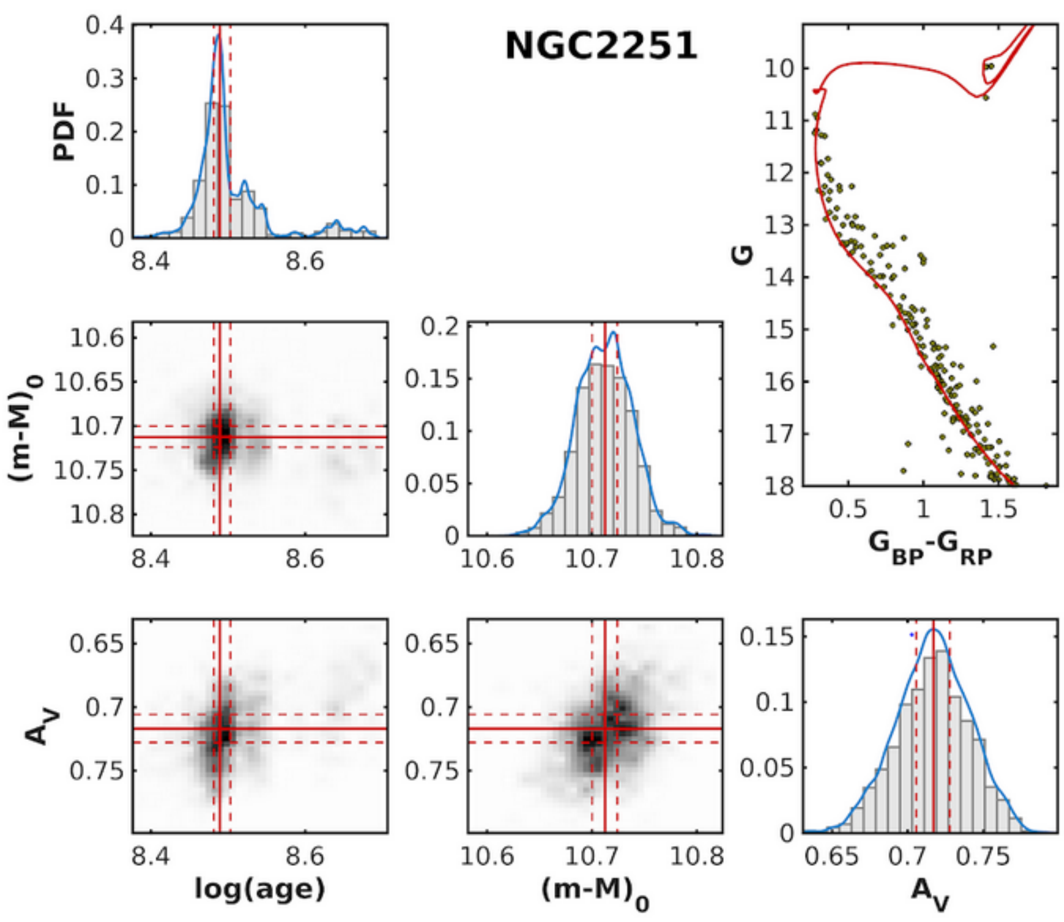


Fig. 5. Difference between our parallax determination and the expected value given their distance, for the BOCCE clusters. The error bars represent the quadratic sum of our uncertainty and a 5% error on the reference distance. References are listed in Table 2.

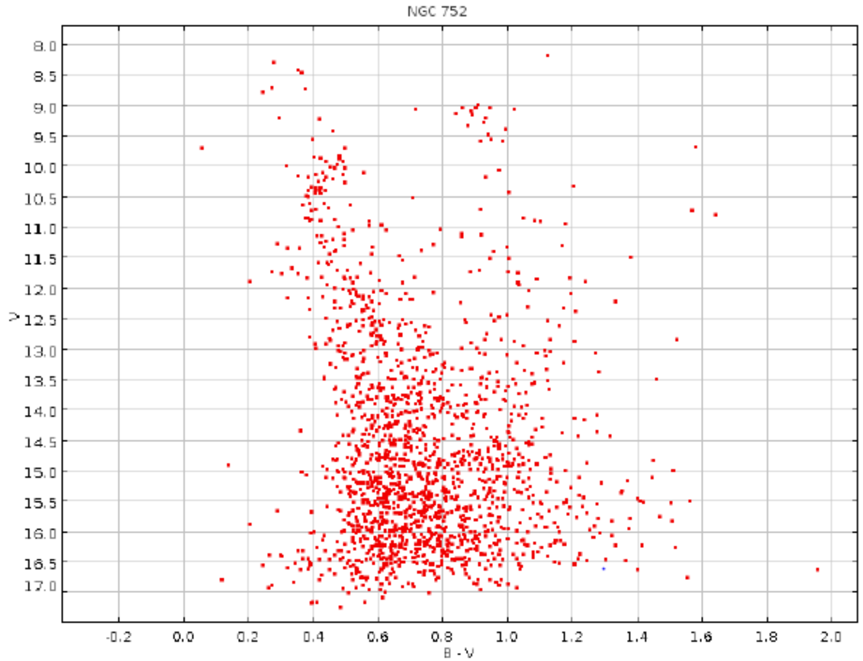
Ocs Parameter revision: Ages

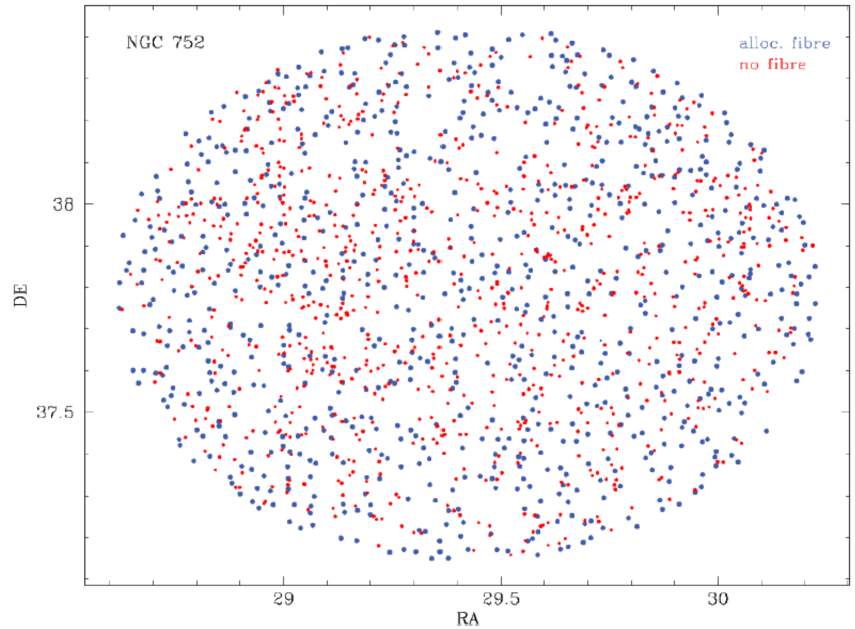
- Ages for 80 Ocs (Gaia collab, van Leeuwen+, 2017, 2018, Randich 2017, Cantat+2018) using DR1 data and more than 269 in DR2 (Bossini +2018)
- Bayesian age determination (BASE9- van Hippel 2004)



Bossini+2018

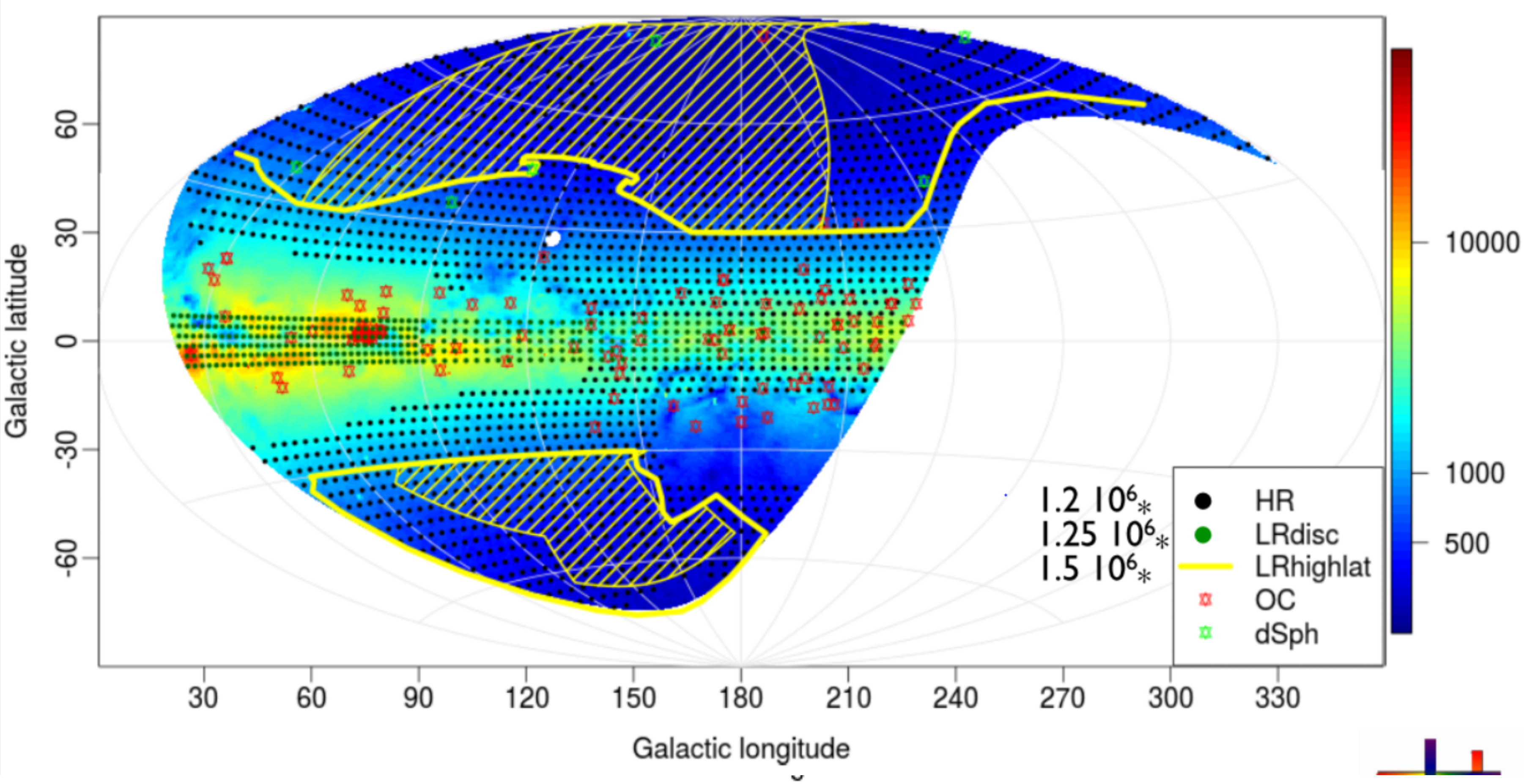
Target selection





- Criteria: selecting on wide areas to detect exchaping stars
- High priority on known members -→using Gaia data
- Preliminary selection done on existing catalogs (APASS, 2MASS, VPHAS)
- Old Ocs: 1700 target stars per FOV; 900 fibers allocated

WEAVE GA at glance



WEAVE - GA ~3-4 million stars to unravel the MW history !

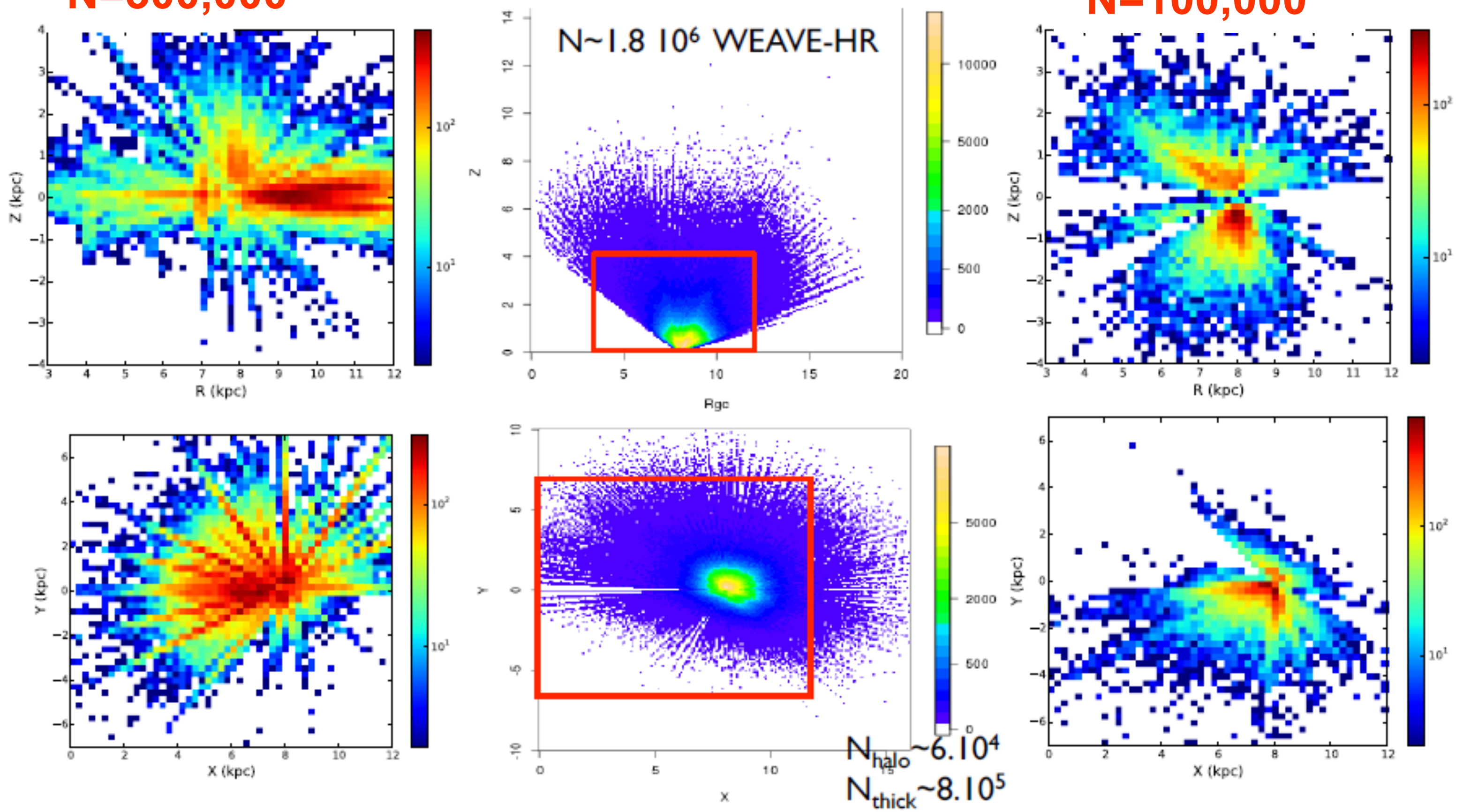
LR disk: |b|<6
$1.5x10^6$ stars – on 210+405 LoS

HR disk: 1,800 deg2 with 15<|b|<30° to insure coverage of discs

WEAVE HR in contest

APOGEE - WEAVE - GES

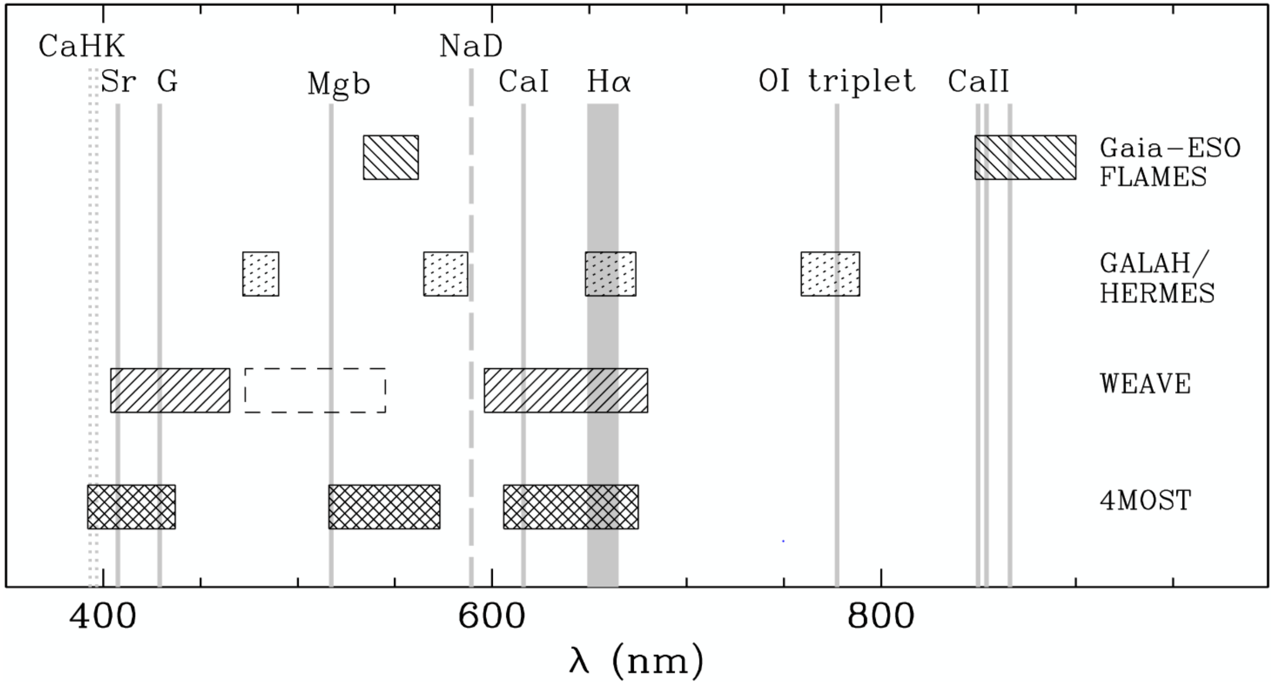
N=300,000 **N=100,000**



N_{halo}~6.10^4
N_{thick}~8.10^5
N_{thin}~1.10^6

APOGEE WEAVE GES

HR WEAVE & 4MOST

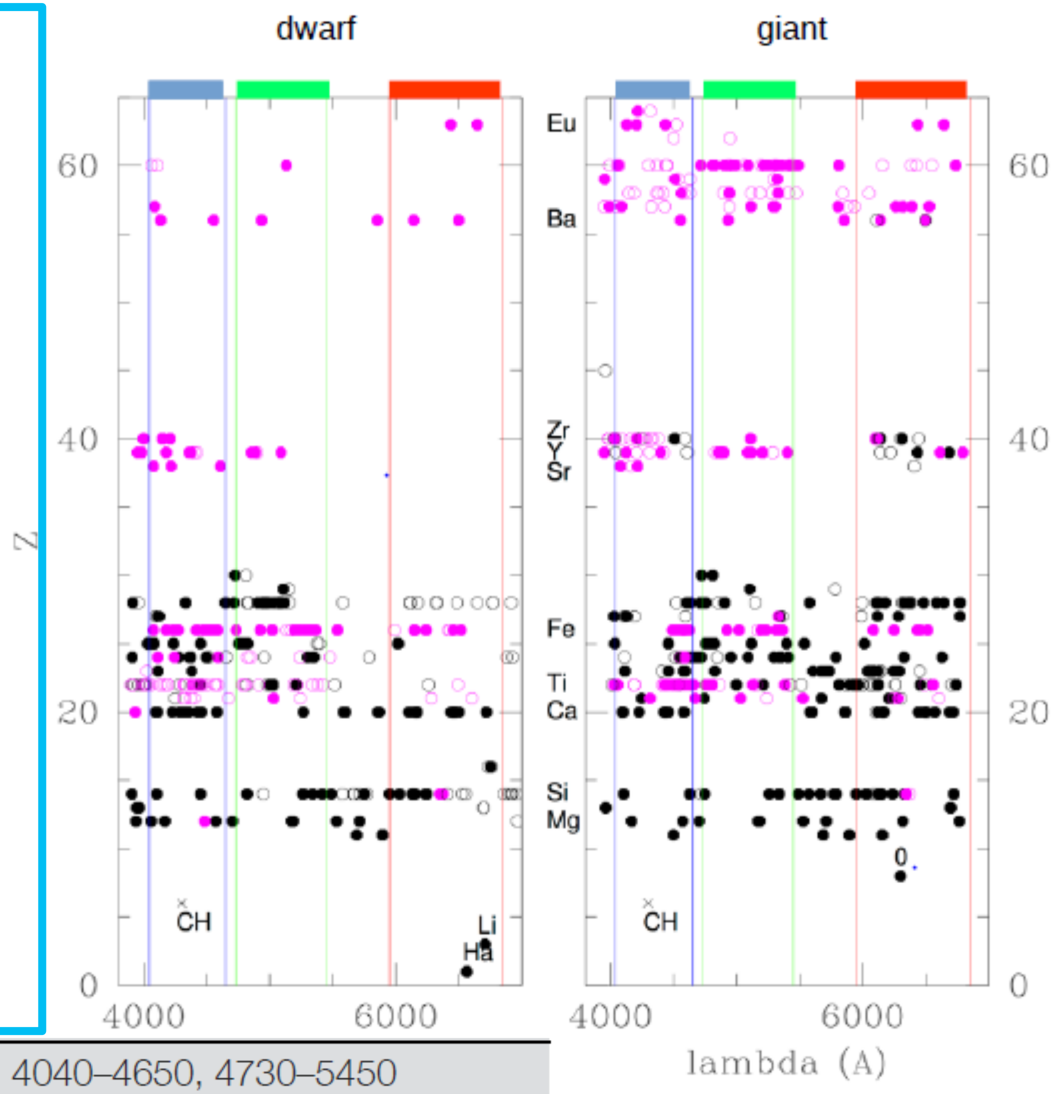


Feltzing 2018

- WEAVE – 4MOST excellent complementarity
- 4MOST 2 LRH and 1HR (3 passbands)-late 2022

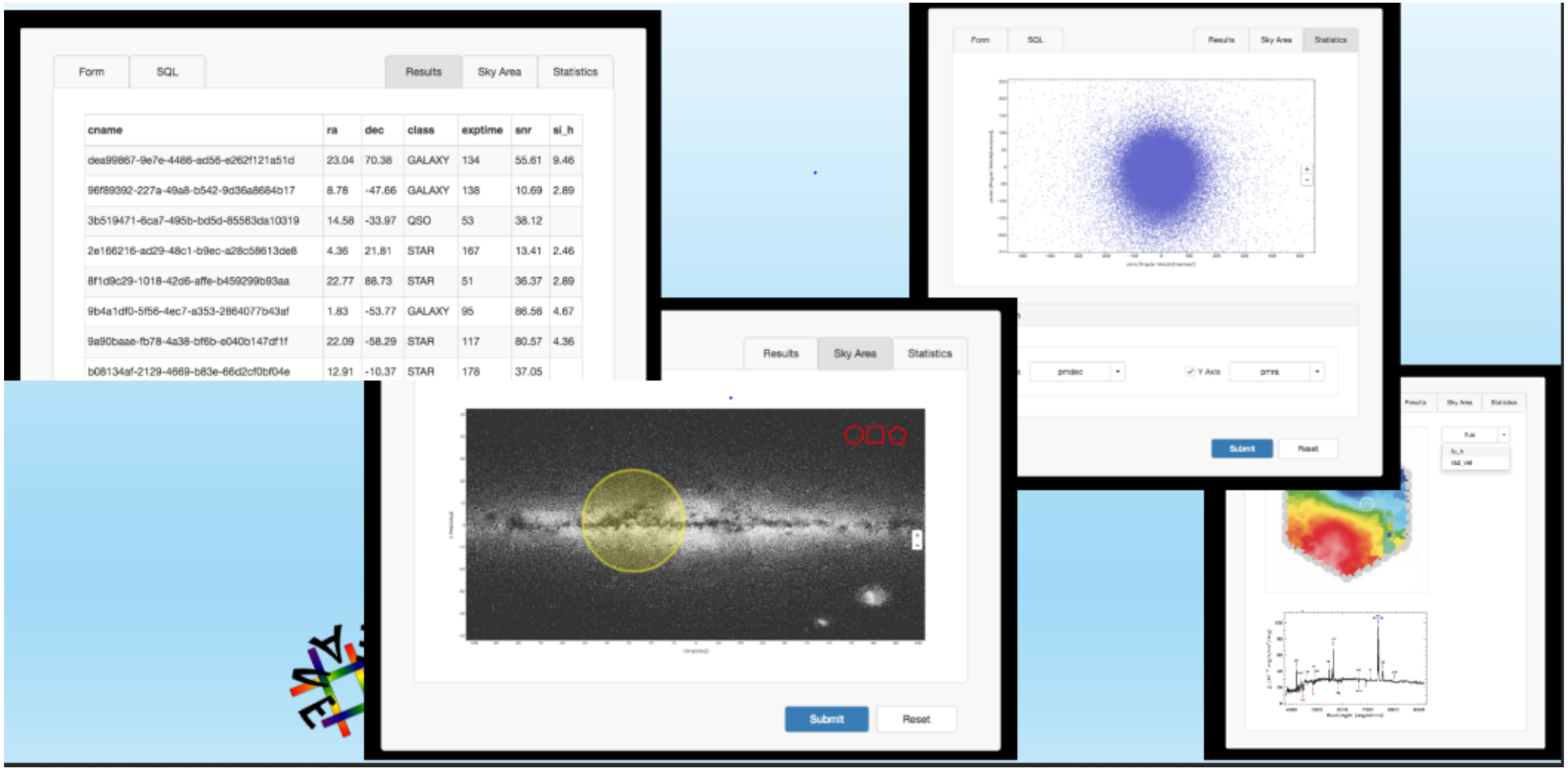
WEAVE HR products

- WEAVE can measure stellar parameters and individual abundances in all main nucleosynthetic channels to V=16, i.e closely matching the Gaia's most precise   sphere (distances, ages)
- Teff, log(g), Vrad, Vsini
- Nucleosynthetic chanels :
  - Lithium → young objects
  - iron peak (Fe, Ni, Cr, Co, Zn),
  - alpha elements (C, Mg, Si, Ca, [O ...),
  - neutron-capture slow and rapid elements (Zr, Y, Sr, Ba, La, Nd,Eu)
  - odd elements (Na, Al, Sc)



High-resolution mode wavelength coverage (Å)	4040–4650, 4730–5450 5950–6850

WEAVE Archive@TNG



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96f89392-227a-49a8-b542-9d36a8684b17	8.78	-47.66	GALAXY	138	10.69	2.89
3b519471-6ca7-495b-bd5d-85563da10319	14.58	-33.97	QSO	53	38.12	
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9b4a1df0-5f56-4ec7-a353-2864077b43af	1.83	-53.77	GALAXY	95	86.56	4.67
9a90baae-fb78-4a38-bf6b-e040b147df1f	22.09	-58.29	STAR	117	80.57	4.36
b08134af-2129-4669-b83e-66d2cf0bf04e	12.91	-10.37	STAR	178	37.05	

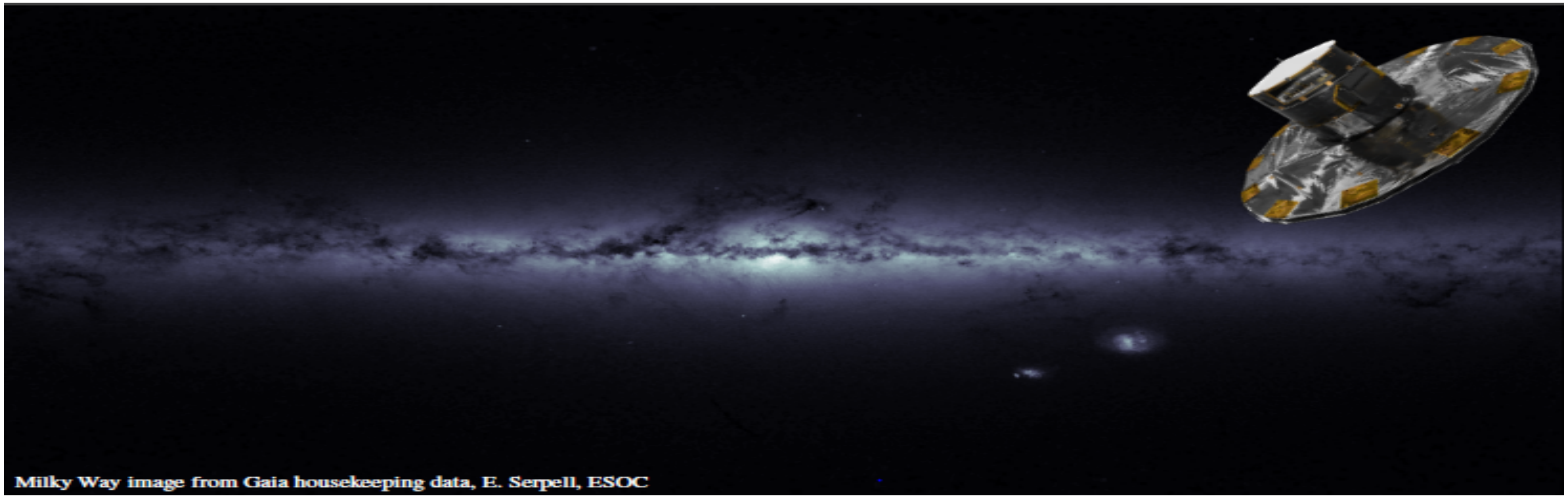
Data policy

- Open data access inside the Consortium for all «nominal» products
- Proprietary period of 1 year for additional data products
- First data release after 2* years from survey beginning
- Then every year
- PI WEAVE projects are analysed by the WEAVE pipeline

Conclusions

- WEAVE Galactic surveys will complement present and upcoming Galactic surveys
- Italian scientific community should organize itself to ensure the maximum scientific return
- For more information see:

*www.ing.iac.es/**weave**/*



Milky Way image from Gaia housekeeping data, E. Serpell, ESOC