GES 2013 : Gaia-ESO Survey First Science

Book of abstracts & Posters

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Table of content

Index of ORAL Presentations

1. Looking for imprints of the Galactic spiral arms and the bar *5*
Antoja Teresa **5**
2. The first stars in the Galactic bulge *5*
Asplund Martin, Howes Louise, Keller Stefan, Marino Anna, Lind Karin **5**
3. The first Bulge fields observed by GES *5*
Babusiaux Carine **5**
4. Unveiling the abundance structure of the outer Galactic disk *5*
Bensby Thomas **5**
5. Testing the chemical tagging with old OCs *6*
Blanco Cuaresma Sergi **6**
6. WG13 - Hot stars stellar parameters *6*
Blomme Ronny **6**
7. GALAH takes flight *6*
Collaboration Galah, Zucker Daniel **6**
8. The GES Science Archive *6*
Collins Ross, Hambly Nigel, Davenhall Clive, Read Mike, Sutorius Eckhard **6**
9. Dynamics of young stellar clusters: Towards a predictive Theory of Star Formation *7*
Cottaar Michiel, Meyer Michael **7**
10. Advanced data release overview: homogenisation scheme *7*
François Patrick **7**
11. Lithium abundances in young clusters: gamma2 Velorum *7*
Franciosini Elena **7**
12. Investigation of the ages of main-sequence turn-off stars in the Gaia-ESO survey *7*
Hourihane Anna, Worley Clare, Gilmore Gerry, Kordopatis Georges **7**
13. The metallicity gradient in the inner disk of the Milky Way: First results of open clusters inside the solar circle from the Gaia-ESO survey *8*
Jacobson Heather, Friel Eileen **8**
14. Kinematic substructure in the young Gamma Velorum association *8*
Jeffries Rob, Jackson Richard, Cottaar Michiel, Meyer Michael **8**
15. Chemodynamical model of the extended solar neighbourhood *8*
Just Andreas **8**
16. Pre main sequence accretion: GES complemented by VPHAS Halpha photometry *9*
Kalari Venu, Vink Jorick **9**
17. The metal weak thick disc investigated by GES *9*
Kordopatis Georges **9**
18. Extraction of diffuse interstellar bands from GES spectra *9*
Lallement Rosine, Bonifacio Piercarlo, Babusiaux Carine, Zwitter Tomaz, Kos Janez, Puspitarini Lucky **9**
19. Abundance ratios in old and intermediate-age open clusters *9*
Magrini Laura **9**
20. Globular clusters chemical abundances from the GES data. *10*
Marino Anna **10**
21. Testing the Chemo-Dynamical evolution of the Milky Way with the GES *10*
Minchev Ivan **10**
22. Quantitative Chemical Tagging, Stellar Ages and the Chemo-dynamical Evolution of the Galactic Disk *10*
Mitschang Arik **10**
23. Evolution of tidal substructures in the integral of motion space *11*
Penarrubia Jorge **11**
24. Vertical and radial chemical properties of the disc with GES Giraffe data *11*
Recio-Blanco Alejandra **11**
25. Learning about the Galactic potential from Gaia ESO data *11*
Rix Hans-Walter **11**

26. Preparing the Besancon Galaxy Model for GES analysis *11*
Robin Annie **11**
27. Preparing N-body Simulations for Gaia *12*
Roskar Rok **12**
28. Elemental Abundance Ratios from the UVES Spectra of Milky Way Field Stars *12*
Ruchti Gregory **12**
29. Chemodynamical Distribution Functions *12*
Sanders Jason **12**
30. The status of DR1 analysis in WG11 *13*
Smiljanic Rodolfo **13**
31. GES Open Clusters as benchmarks for stellar evolutionary models *13*
Sordo Rosanna, Vallenari Antonella, Cantat-gaudin Tristan **13**
32. Elemental abundances in pre-main-sequence clusters: the cases of Gamma Velorum and Chamaeleon I *13*
Spina Lorenzo **13**
33. CNO abundances in open clusters *13*
Tautvaisiene Grazina, Drazdauskas Arnas, Mikolaitis Sarunas, Chorniy Yuriy, Puzeras Eduardas **13**

Index of POSTERS

1. Physical parameters from Stromgren photometry of NGC6705 *14*
Balaguer-nunez Lola, Jordi Carme, Masana Eduard, Casamiquela Laia **14**
2. Metallicities and ages of stars in GES: clusters and the Milky Way field *14*
Bergemann Maria **14**
3. FLAMES observations of blue stars with excesses in NGC6611 *14*
Bonito Rosaria, Prisinzano Loredana, Guarcello Mario, Micela Giusi **14**
4. Gaia-ESO Survey and the Galactic rotation curve *15*
Chemin Laurent, Soubiran Caroline **15**
5. A linelist for the analysis of the Gaia-ESO Survey high resolution spectra using equivalent widths *15*
Delgado Mena Elisa, Adibekyan Vardan, Santos Nuno, Sousa Sérgio **15**
6. Testing Methods to Improve Sky Subtraction Efficiency. *15*
Dobson Amy, Jeffries R., Jackson R. **15**
7. Rotation, Chromospheric emission and Accretion in Gamma2 Vel and ChaI *15*
Frasca Antonio **15**
8. On Atomic Diffusion in NGC6752 *16*
Gruyters Pieter **16**
9. VPHAS photometry for open clusters Trumpler 23 and Pismis 18 *16*
Hatzidimitriou Despina, Drew Janet, Kontizas Mary, Dapergolas Anastasios, Bellas-velidis Ioannis, Kontizas Evangelos **16**
10. Benchmark stars - defining a standard for abundance analysis *16*
Jofre Paula, Heiter Ulrike **16**
11. Kinematic study of Open Clusters *16*
Jordi Carme, Balaguer-nunez Lola, Muinos Jose Luis, Casamiquela Laia **16**
12. Globular clusters as GES calibrators *17*
Lardo Carmela **17**
13. Astrophysical Parameters of A-stars in the Young Open Clusters NGC 3293 and NGC 6705 *17*
Lobel Alex, Blomme Ronny, Fremat Yves **17**
14. Constraining Milky Way formation and evolution from SDSS survey *17*
Machado Murtinheira Martins André, Robin Annie **17**
15. Neutron Capture Elements in the Bulge *18*
Maiorca Enrico **18**
16. Metallicity trends in evolved stars *18*
Maldonado Jesus, Villaver Eva, Eiroa Carlos **18**
17. The joint impact of dynamics and metallicity on the structural properties of dense young star clusters *18*
Mapelli Michela **18**
18. Fine tuning GES pipelines with the help of asteroseismology : the case of Liege node *18*
Miglio Andrea, Morel Thierry, Valentini Marica **18**

19. Searching for new members of stellar kinematic groups: kine-chemical tagging FGK stars with GES/UVES data *19*
Montes David, Tabernero Hugo, González Hernández Jonay **19**
20. Can we constrain the initial conditions of stellar systems with kinematic data ? *19*
Moraux Estelle, Becker Christophe **19**
21. The DANCe project (Dynamical Analysis of Nearby ClustErs) *19*
Moraux Estelle, Bouy Herve, Bertin Emmanuel, Sarro Baro Luis Manuel **19**
22. Tracing Galactic structure with red supergiants *19*
Negueruela Ignacio, Dorda Ricardo, Gonzalez-Fernandez Carlos **19**
23. Comparison of different technical methods for membership in the young cluster Gamma 2 Velorum *20*
Prisinzano Loredana, Damiani Francesco, Micela Giusi, Bonito Rosaria **20**
24. Atmosphere parameters of stars in open clusters determined from UVES spectra *20*
Puzeras Eduardas, Tautvaisiene Grazina, Mikolaitis Sarunas, Chorniy Yuriy **20**
25. Bulge GES DR1 fields analysis *20*
Rojas Alvaro **20**
26. Membership and Dynamics of the Chamaeleon I Star Forming Region *21*
Sacco Germano **21**
27. Determination of the fundamental parameters of hot stars in NGC 3293 and NGC 6705 *21*
Semaan Thierry, Morel Thierry, Gosset Eric, Frémat Yves **21**
28. Looking for multiple stellar populations in the massive cluster M11 *21*
Sordo Rosanna, Vallenari Antonella, Cantat-gaudin Tristan **21**

Oral sessions

1. Looking for imprints of the Galactic spiral arms and the bar

Antoja Teresa(1)

1 - Kapteyn Astronomical Institute (University of Groningen) (Netherlands)

The bar and the spiral arms of our Galaxy influence the orbits of disc stars through mechanisms like resonant trapping/scattering. We will present some models which show that these processes leave imprints in the thin and thick discs. For instance, substructure can appear in velocity space of particular regions of the discs, or the moments of the velocity distribution can show some peculiarities, which would not be expected was our Galaxy axisymmetric. The detection of such features promises a better understanding of the properties of the bar and the spiral arms and their importance in the global evolution of the disc. The Gaia ESO Survey will obtain a large amount of radial velocities in several fields in the Galactic plane that will be of great interested for this study. For instance, approximately 10000 RC stars will be observed in a field around l=-85 and b~0 deg, with distances that range from ~ 2-4 to 8-10 kpc. In the future, we plan to analyse the distribution of radial velocities in these fields looking for kinematic substructure or other imprints that we can relate to the effects of the bar or the spiral arms.

2. The first stars in the Galactic bulge

Asplund Martin, Howes Louise, Keller Stefan(1), Marino Anna, Lind Karin

1 - Australian National University (Australia)

In spite of intense efforts over many years, no Population III star has yet been found. All of these searches have targeted the old and metal-poor Galactic halo or more recently Local Group dwarf galaxies. According to models for the formation of the first stars and galaxies like the Milky Way, however, the oldest and most metal-poor stars should now reside in the bulge. Until now any search for the first stars in the bulge has been considered largely hopeless due to the enormous crowding and the overall metal-rich nature of the bulge; the most metal-poor bulge star known has [Fe/H]=-2. Here we present the first results from a dedicated search for the first stars in the bulge using SkyMapper photometry to preselect low-metallicity candidates that are spectroscopically confirmed using the 2-degree multi-object AAOmega spectrograph on the AAT. We expect to discover >100 bulge stars with [Fe/H]

3. The first Bulge fields observed by GES

Babusiaux Carine(1)

1 - Galaxies, Etoiles, Physique, Instrumentation (France)

I will present the target selection of the first Bulge fields observed by GES, the preliminary analysis that has been obtained for those fields and the method being developed to get distance estimates for those stars.

4. Unveiling the abundance structure of the outer Galactic disk

Bensby Thomas(1)

1 - Lund Observatory (Sweden)

The abundance structure of the outer Galactic disk is poorly known, and especially if there exists a similar thin/thick disk dichotomy as observed in the solar neighbourhood. The recent study of 20 outer disk red giants by Bensby, Alves-Brito, Oey, Yong & Melendez (2011) found that the abundances in the outer disk essentially only showed thin disk abundance patterns, even for stars 2-3 kpc above/below the Galactic plane -- a region that was believed to be dominated by thick disk stars. A first interpretation of this apparent lack of outer thick disk stars is that the thick disk scale-length is much shorter than that of the thin disk. We aim to investigate the interface between the thin disk and the thick disk with Galactocentric distances in the outer disk. By observing a much larger sample of stars between galactocentric distances 10 to 15 kpc and up to 3-4 kpc from the plane we will be able to map the abundance structure of the outer

disk in more detail than before and whether there is an outer thin/thick disk dichotomy similar to what is seen in the solar neighbourhood. Even though we will target many elements we will mainly focus on the alpha-elements (Mg, Si, Ca, and Ti) and the light element Al. This study will help us to constrain the scale-lengths and scale-heights of the two disks and also whether radial migration has played a significant role in the evolution of the Galactic disk.

5. Testing the chemical tagging with old OCs

Blanco Cuaresma Sergi(1)

1 - Laboratoire d'Astrophysique de Bordeaux (France)

De Silva et al. 2007 demonstrated the chemical homogeneity of two open clusters and one moving group together with the uniqueness of their abundance patterns. These findings open the possibility of using the technique of chemical tagging to identify common formation sites in the disk as proposed by Freeman & Bland-Hawthorn 2002. We evaluate the feasibility of this technique with the old OCs observed by UVES so far. We present the parameters and abundances determined by spectral synthesis within LUMBA and we compare them to those obtained with different methods.

6. WG13 - Hot stars stellar parameters

Blomme Ronny(1)

1 - Royal Observatory of Belgium (Belgium)

I will report on the progress that WG 13 (OBA spectrum analysis) made in the analysis of hot stars. The work has concentrated on two clusters: NGC 3293 and NGC 6705, for which preliminary stellar parameter determinations are now available. A search for binaries has also been performed.
A detailed look at the signal-to-noise ratio shows problems in attaining the required values for the bluest Giraffe gratings.

7. GALAH takes flight

Collaboration Galah(1), Zucker Daniel(2)

1 - GALAH Collaboration (Australia), 2 - Macquarie University (Australia)

The GALAH (GALactic Archaeology with HERMES) Survey is a major Australian-led project to obtain detailed elemental abundances for over a million stars, and apply the technique of chemical tagging -- identifying chemically similar groups of stars in the Galactic disk, which presumably formed together -- to decipher the star formation, migration and minor-merger history of the Milky Way. HERMES, scheduled for commissioning in mid-2013, is a multi-fibre spectrograph being built for the AAT 3.9m telescope at Siding Spring, designed to simultaneously obtain high resolution (R ~28000) spectra for ~400 stars over a 2D field of view. For the GALAH Survey, ~10^6 stars (down to V~14, at a S/N of ~100 per resolution element) will be observed in four passbands selected to include elements from all major independently-varying element groups. Beyond its primary objectives, the survey will be directly complementary to wide-area photometric surveys such as Skymapper, and the multidimensional dataset which will come from ESA's Gaia mission.

8. The GES Science Archive

Collins Ross(1), Hambly Nigel, Davenhall Clive, Read Mike, Sutorius Eckhard

1 - WFAU, IfA, University of Edinburgh (United Kingdom)

Gaia-ESO Survey (GES) data releases will be accompanied by corresponding static database releases proprietary to the survey consortium, and ultimately public database releases open to the world community, in the GES Science Archive (http://surveys.roe.ac.uk/ges). This is a relational database, linking together all of the observation metadata, to provide an easy yet powerful means for mining the data as well as persistent references that can be shared in publications enabling others to have direct access to the data used in your work. A web page interface presents simple data retrieval methods, whilst also exposing the full database schema allowing users to construct more complex queries to run directly on the database. Access is provided to all of the pipeline-reduced FITS files that have been mirrored from Cambridge to the

Wide-Field Astronomy Unit (WFAU) in Edinburgh, which hosts the GES Science Archive. Additionally the web site provides several helpful data visualisation tools, including interactive previews of spectra and interactive plotting of query results via TOPCAT. The archive has been developed using the same framework as previous WFAU archives such as the WFCAM and VISTA Science Archives, which were themselves inspired by the Sloan Digital Sky Survey (SDSS) archive, and likewise also allows the data to be accessed through the international virtual observatory services.

9. Dynamics of young stellar clusters: Towards a predictive Theory of Star Formation

Cottaar Michiel(1), Meyer Michael(1)

1 - Institute of Astronomy, ETH Zurich (Switzerland)

The early dynamical evolution of embedded clusters is still poorly understood. Yet it is crucial for determining (1) under which conditions a star-forming region is expected to produce a bound cluster or disperse into the field and (2) the rate of close dynamical interactions between the young stars, which influence mass infall rates, planet formation, multiplicity, and mass segregation. We aim to determine the dynamical state of young clusters as part of the ESO- Gaia Large Spectroscopic Survey, including rho Oph, Cha I, and Gamma 2 Vel. We have developed a tool to measure the velocity dispersion and mean velocity in a cluster from a single epoch of data, which statistically corrects for both the effect of spectroscopic binaries and the contamination of field stars (Cottaar et al, 2012, A&A, 547A, 35). Applying this tool to the ESO- Gaia radial velocities, we find a velocity dispersion consistent with virial equilibrium for Cha I and the majority of stars in Gamma 2 Vel. We searched for a variety of other dynamical signatures, including: i) rotation from a dependence of mean velocity on position; ii) collapse/expansion from a dependence of mean velocity on Av; and iii) mass segregation from a dependence of velocity dispersion on mass. By comparing these results with N-body simulations and analytic results, we hope to use these dynamical tracers to quantify, and thus better understand, the evolution of young clusters.

10. Advanced data release overview: homogenisation scheme

François Patrick(1)

1 - Observatoire de Paris (France)

TBD

11. Lithium abundances in young clusters: gamma2 Velorum

Franciosini Elena(1)

1 - INAF - Osservatorio Astrofisico di Arcetri (Italy)

Lithium measurements are a powerful tool to investigate young stellar evolution by probing the internal structure of PMS solar-type stars. Moreover, they provide an independent tool to estimate age in young clusters, allowing us to investigate possible age spreads, which has important implications for the cluster star formation histories. An extremely interesting lithium pattern has emerged from the GES observation of the 5-10 Myr old cluster gamma2 Velorum. I will present the results and their interpretation using models of lithium depletion in young stars. I will also discuss the potential of the GES in this research area.

12. Investigation of the ages of main-sequence turn-off stars in the Gaia-ESO survey

Hourihane Anna(1), Worley Clare(1), Gilmore Gerry(1), Kordopatis Georges(1)

1 - Institute of Astronomy, University of Cambridge (United Kingdom)

In order to explore potential age gradients for the oldest stars with height above the Galactic plane, we propose to investigate the age distribution of the Galactic disc and halo using isochrone-fitting of colour-magnitude diagrams. We will use the colour and the metallicity of the main-sequence turn-off to estimate the ages of stars in height slices above the plane. Colours will be obtained from VISTA JHK photometry and metallicities ([M/H]) will be derived from the analysis of GES GIRAFFE and UVES Milky Way targets.

13. The metallicity gradient in the inner disk of the Milky Way: First results of open clusters inside the solar circle from the Gaia-ESO survey

Jacobson Heather(1), Friel Eileen(2)

1 - Massachusetts Institute of Technology (United States), 2 - Indiana University (United States)

Open clusters have long been used as tracers of the metallicity gradient of the Milky Way's thin disk. While recent years have seen much work devoted to clusters in the outer disk (Rgc ~ 10 kpc and beyond), clusters inside the solar circle have received relatively little attention. The analysis of three inner disk clusters by Magrini et al. (2010) indicated that the radial metallicity gradient increases sharply inside the solar circle, as also seen in studies of Cepheids (e.g., Andrievsky et al. 2002). As three old and intermediate-aged open clusters inside the solar circle have been observed in the first year of the Gaia-ESO survey, this is an excellent opportunity to revisit the inner disk's metallicity gradient. In this contribution, we discuss the mean [Fe/H] values of the clusters Tr 20, M 11 and NGC 4815 in the context of the metallicity distribution of the Milky Way's inner disk, compared to previous studies of clusters and of other stellar populations inside the solar circle.

14. Kinematic substructure in the young Gamma Velorum association

Jeffries Rob(1), Jackson Richard, Cottaar Michiel, Meyer Michael

1 - Keele University (United Kingdom)

We have used the DR1/2 GES data to search for kinematic substructure in the young Gamma Velorum association. This study demonstrates the power of GES to address such issues. Radial velocities (RVs) from DR2 are analysed, showing that precisions better than 0.3 km/s were achieved. Selecting lithium-rich cluster members, we show that the Gamma Vel association contains at least two kinematic subgroups that appear to be characterised by different mean RVs and RV dispersions. There is also marginal evidence for the two populations in proper motion data and in the strengths of their lithium absorption lines. There is however a clear difference in the spatial distributions of the two populations, with one more closely clustered around the central massive binary system Gamma^2 Velorum. We speculate about the origin of this kinematic and spatial substructure.

15. Chemodynamical model of the extended solar neighbourhood

Just Andreas(1)

1 - Astronomisches Rechen-Institut, Heidelberg University (Germany)

Many fundamental questions about the structure and evolution of the Milky Way disc are still under debate: What are the radial scale lengths of thin and thick disc? Why is there a thin-thick disc dichotomy? What is the star formation history in the solar neighbourhood? Has the thin disc grown inside-out? What is the origin of the dynamical heating of the stellar sub-populations? Is radial mixing important to understand the dynamical and abundance properties of the disc stars?

All these aspects are strongly correlated in any consistent physical model of the Milky Way.

I will present the status of our new self-consistent analytic disc model. It is based on laws for the star formation history, the dynamical evolution and chemical enrichment. The new model reproduces SDSS star counts towards the North Galactic Pole five times better than the TRILEGAL or the Besancon model. We work presently on an extension to a 6-D model in dynamics and radial extension including a more detailed chemical enrichment. Large spectral surveys which provide radial velocities and stellar parameters of large homogeneous sample including element abundance ratios can be combined with proper motions and distances to provide powerful tests of the Milky Way model.

16. Pre main sequence accretion: GES complemented by VPHAS Halpha photometry

Kalari Venu(1), Vink Jorick(1)
1 - Armagh Observatory (United Kingdom)

A spectroscopic approach to the study of pre-main sequence stars is used to determine properties such as the mass accretion rate (M_dot), age, and rotational velocities, as to understand the processes regulating their evolution. However, GES spectroscopy suffers from spatially varying nebulosity, common in star forming regions, and a limited magnitude and spatial target range, leading to selection effects. Recently, we found an agreement between M_dot from photometric Halpha equivalent widths (from IPHAS) and spectroscopic M_dot (Barentsen et al., 2011) in T Tauri stars.

Here we present M_dot results in the Carina nebula using the VPHAS Halpha photometric survey, aiming to validate our results against GES spectra currently being obtained in the region. Lithium abundances and rotational velocities serve as independent age and membership indicators to our VPHAS photometry.

17. The metal weak thick disc investigated by GES

Kordopatis Georges(1)
1 - Institute of Astronomy, Cambridge (United Kingdom)

We propose to investigate with the Gaia-ESO survey the existence of a metal-poor tail for the thick disc, like already proposed by for e.g. Carollo et al. 2010 & Ruchti et al. 2011. This will be done by selecting the stars by their positions, i.e. the ones lying at distances above the Galactic plane between 1 and 3 kpc. If the existence of such a structure is confirmed, its chemo-dynamical properties will put very important constraints on the formation scenarios of that Galactic structure. I will show preliminary results from RAVE on this topic, then complete these results with the ones that I will have obtained from the GES Dr1, containing roughly 10^4 stars.

Indeed, the atmospheric parameters coming from the GES, when projected on a set of isochrones, allow to obtain a measurement of the spectrometric distances, and, combined with proper motions from PPMXL and radial velocities then determine the 3d motions of the stars. Three dimentional positions, velocities, metallicities and alpha abundancies will then fully characterise that structure.

18. Extraction of diffuse interstellar bands from GES spectra

Lallement Rosine, Bonifacio Piercarlo, Babusiaux Carine(1), Zwitter Tomaz, Kos Janez, Puspitarini Lucky
1 - Galaxies, Etoiles, Physique, Instrumentation (France)

Automated adjustments of combined (i) synthetic stellar-, (ii) diffuse interstellar band (DIB) template- and (iii) telluric transmission- models to high-resolution stellar spectra will be presented, including to GES data. The application of the method to GES data in general will be discussed. A particular attention will be given to the Gaia diffuse band at 8620A detected with GIRAFFE. Comparisons with RAVE measurements of this DIB will be presented, and the DIB-extinction relationship will be further discussed.

19. Abundance ratios in old and intermediate-age open clusters

Magrini Laura(1)
1 - Osservatorio di Arcetri (Italy)

The thin disk of our Galaxy is believed to be formed by dissipation of star clusters, and thus, in principle, we expect that the abundance ratios of field stars and present-day open clusters should be similar. Several studies are however showing that the abundances of some elements behave in a different way in clusters and in the field (e.g., Friel et al. 2010; Carrera & Pancino 2011; Reddy et al. 2011), and, in addition, the abundance ratios might be different in clusters with different age and/or located at different Galactocentric distances. A possible explanation might be that the youngest clusters are still intact, while the oldest ones

may be totally disrupted, and consequently the field stars do not fully sample the age distribution of open clusters with the youngest stellar generations are under-represented by field star.
The GES survey is giving us, for the first time, the unique opportunity to analyse a large sample of cluster and field stars in a completely homogeneous way. The first three old and intermediate age open clusters observed within the GES survey, namely Trumpler 20, NGC4815, and NGC6705, allow us to give a first look not only to the metallicity but also to their abundance ratios. In this talk we will show the comparison with MW field stars considering elements of different origin, such alpha-, iron-peak, and neutron-capture elements.

20. Globular clusters chemical abundances from the GES data.

Marino Anna(1)

1 - Australian National University, Research School of Astronomy and Astrophysics (Australia)

I present an abundance analysis of red-giant branch (RGB) stars in the four globular clusters (GCs) NGC4372, NGC2808, NGC1851, and NGC5927 observed to date by the Gaia-ESO survey with Giraffe. These objects represent a benchmark sample to test the performances of the automated chemical abundance analysis for metal-poor giants employed in the GES survey. I compare spectroscopic temperatures and gravities obtained from SME with those expected from isochrones. This provides a useful quality test for any analysis based on the derivation of atmospheric parameters from spectral lines for metal poor giants. Furthermore, the GES data for GCs offers the opportunity to explore the chemical abundances in GCs in the context of the lively debate on multiple stellar populations. I present first results on chemical contents of different generations of stars in these clusters obtained from the survey data.

21. Testing the Chemo-Dynamical evolution of the Milky Way with the GES

Minchev Ivan(1)

1 - Leibniz-Institut fur Astrophysik Potsdam (Germany)

I will present a new chemo-dynamical evolution model built by the fusion between a high-resolution galaxy simulation in the cosmological context with Milky Way characteristics, and a detailed thin-disk chemical evolution model (Minchev, Chiappini and Martig 2012). This novel approach has made it possible to avoid current problems with chemical enrichment and star formation currently found if fully self-consistent simulations. I will show that this model is compliant with a range of observations, for example, the metallicity distributions of data at different proximity to the Sun (Adibekyan et al. 2012 and SEGUE DR9 G-dwarf samples), the observed bimodality in the [Fe/H]-[O/Fe] (Ramirez et al. 2013 high-resolution sample), the mean metallicity variation with distance from the disk plane (Schlesinger et al. 2012), and the scale-height distribution of mono-abundance subpopulations in the [Fe/H]-[O/Fe] plane (Bovy et al. 2012). Given the GES coverage, I will highlight possible signatures in the stellar abundances and kinematics that can help differentiate among different Milky Way formation scenarios.

22. Quantitative Chemical Tagging, Stellar Ages and the Chemo-dynamical Evolution of the Galactic Disk

Mitschang Arik(1)

1 - Macquary University Research Centre in Astronomy Astrophysics & Astrophotonics (Australia)

The first wave of data from the Gaia-ESO survey, along with the advent of the Australian HERMES instrument and the GALAH million star survey, represent major milestones in the quest to chemically tag the Galaxy. Yet this technique to reconstruct dispersed coeval stellar groups has remained largely untested until recently. I will describe the method we have developed which delivers an empirically-based chemical tagging probability function, from any number of input chemical dimensions. Using a heterogeneous cluster sample from our analysis, I will show that the chemical differences between clusters are large enough to identify coeval groups, but given the limited availability of high-resolution spectroscopic studies of open clusters, I will discuss the necessity of having a larger *homogeneous* cluster sample in order to calibrate

the probability function, and how Gaia-ESO provides exactly that. A blind chemical tagging experiment on a uniform sample of ~700 field stars reveals important information on the dimensionality of coeval group finding space, and illustrates some of the challenges and rewards awaiting larger experiments. In particular, I will show convincing evidence that we have identified true coeval groups in the solar neighbourhood, and that chemical tagging represents a powerful new stellar age determination technique, in addition to its role in probing the chemical enrichment and kinematic history of the disk.

23. Evolution of tidal substructures in the integral of motion space

Penarrubia Jorge(1)

1 - Institute for Astronomy, University of Edinburgh (United Kingdom)

Hierarchical theories of structure formation predict an abundance of dynamical fossils in the present-day integral-of-motion space of the Milky Way, a prediction that Gaia will put to a test. However, as the Galaxy evolves hierarchically, so does its overall gravitational potential. Under such circumstances, none of the integrals of motion remains constant. In this talk I will show that the construction of dynamical invariants, i.e. quantities that are conserved throughout the motion of stars, provide an ideal methodology for studying the evolution of unbound substructures in a time-dependent potential. I will also show that the formation of a smooth stellar halo is the natural consequence of the hierarchical growth of the Milky Way.

24. Vertical and radial chemical properties of the disc with GES Giraffe data

Recio-Blanco Alejandra(1)

1 –UMR Lagrange- Observatoire de la Cote d'Azur (France)

Vertical and radial gradients in global metallicity and [alpha/Fe], together with velocity measurements are explored to analyse the properties of the Thin and the Thick discs from around 7 000 GES GIRAFFE spectra. Particular attention is paid to the thin-thick disc transition. In addition, possible substructure in the chemical properties will also be carefully searched, as well as the presence of chemical anomalous populations.

25. Learning about the Galactic potential from Gaia ESO data

Rix Hans-Walter(1)

1 - MPI (Germany)

The large numbers of Gaia-ESO data, with precise abundances and radial velocities offer enormous promise to constrain the Galactic potential. Yes, the best practical way to get such constraints from large sets of discrete kinematic tracers, with a complex selection spatial function, only modest proper-motion constraints, considerable photometric distance uncertainties, is still an open issue. I show recent results from stringent dynamical modelling applied to the SEGUE main sequence stars, a very pertinent precursor to the disk surveys within Gaia-ESO.

26. Preparing the Besancon Galaxy Model for GES analysis

Robin Annie(1)

1 - Institut Utinam (France)

The purpose is to present the new developments of the Besancon Galaxy Model in relation to the Gaia-ESO survey analysis. They include the updates concerning the thin disc, thick disc, halo and bulge, on the point of view of densities, metallicities and kinematics.

27. Preparing N-body Simulations for Gaia

Roskar Rok(1)

1 - University of Zurich (Switzerland)

Simulations are invaluable tools for studying the dynamical processes that shape the stellar populations of disk galaxies like the Milky Way. They hold the key to uncovering the history of our Galaxy by providing a framework for the interpretation of upcoming observational surveys. However, assessing the importance of physical mechanisms found in simulations by comparing models to data is problematic. The first and most obvious issue is the difference in scale. While the resolution elements of a simulation represent stellar masses on the order of open clusters at best, observations are clearly geared toward individual stars. On the other hand, some of the signatures of important dynamical effects can be subtle; therefore, understanding the selection functions of observational surveys and assessing their impact on the trends found in simulations is critical. This latter issue of sample selection in particular is often neglected when theoretical models are projected onto the observational plane. I will demonstrate the importance of these considerations and argue that they need to be addressed adequately in order to compare N-body models to data such as that coming from the Gaia-ESO survey. I will also show some of our early results in attempting to construct observational samples from a 9-dimensional model distribution function and outline some strengths and limitations of these approaches.

28. Elemental Abundance Ratios from the UVES Spectra of Milky Way Field Stars

Ruchti Gregory(1)(2)

1 - Lund Observatory (Sweden), 2 - Lumba GES Node (Sweden)

The Gaia-ESO Survey (GES) presents an unprecedented sample of stars to study the different Milky Way components in the vicinity of the Sun. In the Lumba node, we have utilized the spectral synthesis code SME to derive stellar parameters and elemental abundances (e.g., for alpha, iron peak, light-z, and neutron-capture elements) for a large portion of the Milky Way field stars observed so far with UVES in GES. We have further augmented these results with distances derived from fits to evolutionary tracks. These distances combined with kinematic information allow us to categorize the field stars into different Milky Way components (e.g., thin disk, thick disk, and halo). I will present the resultant abundance trends for the different Milky Way components in the locale of the Solar neighborhood and contrast our findings with previous results found in the literature.

29. Chemodynamical Distribution Functions

Sanders Jason(1)

1 - Rudolf Peierls Centre for Theoretical Physics, University of Oxford (United Kingdom)

The link between chemistry and dynamics can tell us much about the formation and evolution of the Galaxy. From large spectroscopic surveys it is now possible to explore in detail the chemodynamical structure of the Galaxy. We discuss methods and tools for tackling this problem with particular focus on extending fully dynamical distribution functions to account for chemistry. Action-based distribution functions have proved successful in modelling the dynamics of the Galaxy, so we use these a basis to consider two routes for including chemistry: the classical thin and thick disc decomposition is extended by including analytic correlations between the dynamics and the chemistry, and the proposal of Bovy et al. (2012) is put on a firm dynamical footing by assigning each mono-abundance population a distribution function. With such distribution functions we are able to fit some observations from the RAVE survey and then to test the model by predicting other observations. In this way we determine which approach is most appropriate. We plan to do the same with the Gaia-ESO data.

30. The status of DR1 analysis in WG11

Smiljanic Rodolfo(1)

1 - Nicolaus Copernicus Astronomical Center (Poland)

The deadline for the analysis of the first set of UVES spectra of FGK-type stars is the 15th of Feb. This first data set (DR1) includes data taken up to 24 Jun. 2012 (Runs A-G). The results of this analysis will be part of the first annual release of advanced data products, currently expected for June 2013. In this talk, I will present a general overview of this analysis run and of the results that were delivered. I will also discuss the work done within WG11 towards preparing the list recommended atmospheric parameters that will be part of the June release.

31. GES Open Clusters as benchmarks for stellar evolutionary models

Sordo Rosanna(1), Vallenari Antonella(1), Cantat-gaudin Tristan(1)

1 - INAF - Padova Observatory (Italy)

GES dataset, with its homogeneously derived chemical abundances, offers a unique opportunity to test stellar evolutionary models. The selected Open Clusters span crucial ages from the stellar evolution point of view, with observations covering both the upper main sequence and evolved star While there is a general agreement among stellar models, still there are open issues, concerning for example the treatment of the mixing or the calibration of Red Clump as function of age and metallicity. It is of the uttermost importance to test prediction of models on different evolutionary stages at the same time, and at varying ages and chemistry. In this talk, we set up the framework of our tests and present preliminary results on a set of Open Clusters.

32. Elemental abundances in pre-main-sequence clusters: the cases of Gamma Velorum and Chamaeleon I

Spina Lorenzo(1)(2)

1 - INAF Arcetri (Italy), 2 - Università di Firenze (Italy)

Pre-main-sequence clusters with ages 1-30 Myr are excellent tracers of the chemical composition of the Galactic disc and of its evolution. Since older clusters or field stars have moved through the disc, these young environments have likely originated in their present location. Abundance measurements in these clusters hence represent a unique tool to describe the chemical pattern of the solar neighborhood and to infer possible evidence of chemical enrichment within individual regions, which would provide an independent tool to test triggered star formation scenarios. With its large and homogeneous set of abundance determinations in young clusters, the Gaia-ESO Survey represents an unique opportunity to make a step forward in this field. Gamma Velorum (age ~ 7 Myr; d ~ 350 pc) and Chamaeleon I (age ~ 1-3 Myr; d ~ 160 pc) are the first two pre-main-sequence clusters observed by the GES. In the talk, I will discuss the early results from the membership analysis of the UVES targets, focusing on the metallicity and abundance pattern for cluster members.

33. CNO abundances in open clusters

Tautvaisiene Grazina(1), Drazdauskas Arnas, Mikolaitis Sarunas, Chorniy Yuriy, Puzeras Eduardas

1 - Vilnius University, Institute of Theoretical Physics and Astronomy (Lithuania)

Several open clusters already have been observed with the UVES spectrograph. A preliminary determination of atmospheric parameters of stars was performed during the first round of analysis (summer/autumn 2012). We homogenised the values of atmospheric parameters of stars obtained from 9 nodes and investigated possibilities to determine C, N and O abundances. The first results will be presented in this contribution.

Poster sessions

1. Physical parameters from Stromgren photometry of NGC6705

Balaguer-nunez Lola(1), Jordi Carme(1), Masana Eduard(1), Casamiquela Laia(1)
1 - University of Barcelona (Spain)

The systematic study of selected open clusters by our team, has led to the production of the best set of Stromgren photometry ever obtained for the rich open cluster NGC6705. We discuss the results of our INT WFC CCD uvby-Hbeta intermediate-band photometry, covering an area of about 34'x34' down to V~20. The stars of the area selected as cluster members are classified into photometric regions and their physical parameters determined, using uvby-Hbeta photometry and standard relations among colour indices for each of the photometric regions of the HR diagram. That allows us to determine reddening, distances, absolute magnitudes, spectral types, effective temperatures, gravities and metallicities, thus providing a preliminary astrophysical characterization. Our aim is to investigate their comparison with the GES results to assess the quality of the photometric determinations.

2. Metallicities and ages of stars in GES: clusters and the Milky Way field

Bergemann Maria(1)
1 - Max-Planck-Institute for Astrophysics, Garching (Germany)

One of the principal aims of the Gaia-ESO survey is to understand the formation history of the Galactic components based on the ensemble properties of their stars. For this, accurate characterization of stars in terms of their evolutionary stage and population membership is indispensable.
We determined masses, ages, and distances for a large sample of evolved and un-evolved stars in the solar neighbourhood, open and metal-poor globular clusters. The input parameters of stars were determined from the high-resolution Gaia-ESO UVES spectra. The accuracy of spectroscopic solutions is verified against other methods including IR photometry. A novel Bayesian method is used to derive the evolutionary parameters of stars.
The resulting catalogue is the first dataset, which provides homogeneous and accurate information about evolutionary characteristics of stars and their detailed chemistry for all stellar populations in the Milky Way. Here we analyse these results, also referring to the abundances of the key elements (e.g., Li, O, alpha-group) and other parameters (rotation, binarity, activity), compare with previous studies, identify remaining problems and delineate potentially interesting cases

3. FLAMES observations of blue stars with excesses in NGC6611

Bonito Rosaria(1), Prisinzano Loredana(2), Guarcello Mario(3), Micela Giusi(2)
1 - Universita' di Palermo - INAF - Osservatorio Astronomico di Palermo (Italy), 2 - INAF - Osservatorio Astronomico di Palermo (Italy), 3 - Smithsonian Astrophysical Observatory (United States)

The young open cluster NGC 6611 candidate members include a class of peculiar objects with interesting properties: the blue stars with infrared excesses, i.e. stars showing optical colors typical of field stars.
Therefore it is important to confirm their membership using new spectroscopic observations to investigate their physical origin. We aim at explaining if the observed colors are intrinsic or altered by the presence of the disk and by the accretion and outflow processes.
We analysed the FLAMES spectroscopic data obtained for a subsample of these blue stars focusing on the study of the H alpha mission line, of the Li absorption line, and of the radial velocity.
From the FLAMES data it is possible to discriminate between stars with active or inert disk, to derive the presence of accretion and outflow processes, to investigate the binarity of some of the blue stars and their membership to the cluster. We obtained that more than half of the sample are confirmed members of the cluster.

4. Gaia-ESO Survey and the Galactic rotation curve

Chemin Laurent(1), Soubiran Caroline(2)
1 - OASU/LAB (France), 2 - OASU/LAB (France)

The quest of the rotation curve of the Milky Way disk has long been a challenge. One still lacks a detailed rotation curve for the Galaxy with similar extent and quality as those of nearby spiral galaxies, because it is difficult to get accurate velocities and/or distances of sources. Our objective is to investigate the possibility of using the Gaia ESO Survey data to constrain part of the disk rotation curve from the low Galactic latitudes target field-of-views.

5. A linelist for the analysis of the Gaia-ESO Survey high resolution spectra using equivalent widths

Delgado Mena Elisa(1), Adibekyan Vardan(1), Santos Nuno(1), Sousa Sérgio(1)
1 - Centro de Astrofisica, Universidade do Porto (Portugal)

We describe a procedure that allows defining the best choice of lines to be used by an EW method to derive accurate spectroscopic parameters. The final linelist should be valid for different types of stars, from metal-poor to metal-rich regimes and also for dwarfs and giant stars. The initial large linelist was prepared within the survey and was fixed for the synthesis spectral analysis and should also be taken as the base linelist to be used with the EWs method to derive the spectroscopic parameters. While for the synthesis analysis all the lines in this large list should be used, in the EWs method it is necessary a careful selection of the lines. The selection of these lines for the EWs method, which is used by different nodes, was not defined and we propose a procedure that allows us an optimum compilation of the best line-list for using this method.

6. Testing Methods to Improve Sky Subtraction Efficiency.

Dobson Amy(1), Jeffries R.(1), Jackson R.(1)
1 - Keele University (United Kingdom)

I have been working directly with Gaia-ESO data as part of my Ph.D. research. The Keele data reduction pipeline has been running alongside the Cambridge pipeline, particularly to compare and improve the radial velocities measured by the Gaia-ESO survey. I have been paying particular attention to sky subtraction within the pipeline. I have developed and tested several sky subtraction methods in order to both reduce the contamination of skylines, particularly around H alpha and other emission lines, and to reduce errors in the equivalent widths. I have tested these methods on both the Gamma Vel and Chamaeleon clusters, the first two clusters observed with the survey, and will continue these tests on other young clusters. Here, I will show results of the sky subtraction methods which have been developed and tested at Keele on the Gaia-ESO data. I will highlight the differences in sky subtraction efficiency using several different subtraction techniques, in helping to determine the intrinsic level of stellar emission.

7. Rotation, Chromospheric emission and Accretion in Gamma2 Vel and ChaI

Frasca Antonio(1)
1 - INAF- Osservatorio Astrofisico di Catania (Italy)

Preliminary results on the distribution of the projected rotational velocity (vsini) and the chromospheric radiative losses for the members of the young open clusters/associations gamma2 Vel and ChaI are presented. The methods used for deriving vsini and chromospheric flux in the H-alpha and H-beta lines, which are based on the use of non-active and slowly rotating templates (both synthetic spectra and real stars), are shortly described. Signatures of mass accretion, both based on emission lines and veiling, are also detected in a few members of these clusters.

8. On Atomic Diffusion in NGC6752

Gruyters Pieter(1)

1 - Uppsala University (Sweden)

Atomic diffusion in stars can create systematic trends of surface abundances with evolutionary stage. Globular clusters offer useful laboratories to put observational constraints on this theory as one needs to compare abundances in unevolved and evolved stars, all drawn from the same stellar population. I will show the results of an abundance study of stars in the globular cluster NGC6752 which shows weak but systematic abundances trends with evolutionary phase for Fe, Sc, Ti and Ca. The trends are best explained by a stellar structure model including atomic diffusion with efficient additional mixing. The model allows to correct for sub-primordial stellar lithium abundances of the stars on Spite plateau, and to match it to the WMAP-calibrated Big-Bang nucleosynthesis predictions to within the mutual 1-sigma errors.

9. VPHAS photometry for open clusters Trumpler 23 and Pismis 18

Hatzidimitriou Despina(1), Drew Janet(2), Kontizas Mary(1), Dapergolas Anastasios(3), Bellas-velidis Ioannis(4), Kontizas Evangelos(4)

1 - University of Athens, Faculty of Physics, Department of Astrophysics, Astronomy and Mechanics, Athens (Greece), 2 - Centre for Astrophysics Research, STRI, University of Hertfordshire, United Kingdom (United Kingdom), 3 - Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing,Athens (Greece), 4 - National Observatory of Athens, Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, Athens (Greece)

As part of the Gaia-ESO project we have constructed colour-magnitude diagrams and two-colour diagrams for two relatively poorly studied open clusters in our Galaxy, Trumpler 23 and Pismis 18, with the purpose of selecting targets for the scheduled observations. We present here the resulting diagrams along with estimates of the age, reddening and structural parameters of the clusters.

10. Benchmark stars - defining a standard for abundance analysis

Jofre Paula(1), Heiter Ulrike(2)

1 : Laboratoire d'Astrophysique de Bordeaux (LAB), Bordeaux I, 2 : Uppsala University

Unlike in the field of photometry or radial velocities, stellar spectrum analyses up to now lacks a clearly defined set of standard stars. The Sun has always been the single common reference point for spectroscopic studies of FGK-type stars. Estimating stellar parameters by comparison of observed and synthetic spectra is affected by inaccuracies in input data and assumptions made in the model atmospheres. Also, the analysis method used can have a significant effect on the absolute values of the derived stellar parameters. We have set out to compile a sample of reference objects, for which atmospheric parameters and element abundances are known with highest possible precision. In this presentation, we discuss the fundamental parameters of the sample of candidate FGK-type benchmark stars. In the first part (by Ulrike Heiter), we focus on effective temperature and surface gravity, which have been derived with basic methods, e.g. from angular diameter measurements. The second part (by Paula Jofre) describes our new metallicity determinations, based on a library of observed high-resolution spectra and several analysis methods applied by Gaia-ESO survey members. The final set of benchmark stars will for the first time provide the possibility to calibrate spectroscopic astrophysical parameters for large and diverse samples of stars.

11. Kinematic study of Open Clusters

Jordi Carme(1), Balaguer-nunez Lola(1), Muinos Jose Luis(2), Casamiquela Laia(1)

1 - University of Barcelona (Spain), 2 - Real Observatorio de la Armada (Spain)

High quality proper motions on an extended area of a selection of Open Clusters (OCs) will let us study their kinematics and in particular their coronas with unprecedented accuracy. We are in the process of obtaining astrometry with the Meridian Circles of San Fernando CMASF at El Leoncito (Argentina) and the

CTA at La Palma of an area few times the known radius (from Webda) of a selection of OCs. We will make use of Stromgren wide-field photometry to complement their characterization.
The acquired data provides modern high-precision positions that can be used for positioning the FLAMES fibres. In addition, we derive proper motions by using POSS-I positions as first epoch, which can be used to reject clear non-cluster members.
Up to now, 30 cluster have been completed up to a magnitude of r'~17 and 8 are being observed. We present preliminary results for NGC2682, NGC1817, NGC2509 and NGC2264 and a comparison with previous determinations of proper motions. These high-precision proper motions and radial velocities from GES will allow completing the kinematic analysis of the selected clusters.

12. Globular clusters as GES calibrators

Lardo Carmela(1)
1 - INAF-Bologna Observatory (Italy)

We present a number of tests on the parameters and metallicities of Galactic globular clusters observed by GES, both by the Bologna node with the classical method and by other nodes in DR1. The tests explore comparisons between UVES and GIRAFFE, or abundances derived from GES DR1 results and archival data, with literature data and isochrones. The tests serve both the purpose of exploring the systematics within the GES results and to set the basis for the early science project on multiple populations within Galactic Globular Clusters.

13. Astrophysical Parameters of A-stars in the Young Open Clusters NGC 3293 and NGC 6705

Lobel Alex(1), Blomme Ronny(1), Fremat Yves(1)
1 - Royal Observatory of Belgium (Belgium)

We present a comparative analysis of A-type stars (Teff=7-12 kK) observed with VLT-Giraffe in young open cluster NGC 3293 (~20 Myr) and intermediate-age open cluster NGC 6705 (~220 Myr). The astrophysical parameters Teff, logg, vmic, vsini, and [Fe/H] of 133 stars in NGC 3293, and 140 stars in NGC 6705 are determined with 1-D LTE spectrum synthesis calculations. In NGC 3293 we chiefly observe low-luminosity pre-MS A-stars (L* < 320 Lsun) of intermediate mass (1.5 Msun < M* < 4 Msun from PMS evolutionary tracks) that are gravitationally contracting onto the ZAMS over K-H timescales below 20 Myr. We find that the variance of [Fe/H] rapidly decreases and approaches the solar value towards the earlier A-type stars. In NGC 6705 we observe a larger number of A-stars that have already arrived on the ZAMS. We find an average of [Fe/H]~-0.5+-0.2 in NGC 6705, independent of the projected rotation velocity vsini < 200 km/s. Towards the earliest A-stars the average [Fe/H] increases, possibly indicating these stars have already spent some time on the ZAMS.

14. Constraining Milky Way formation and evolution from SDSS survey

Machado Murtinheira Martins André(1), Robin Annie(2)
1 - CNRS, Besançon Observatory, Université Franch-Comté (France), 2 - CNRS, Besançon Observatory, Université Franch-Comté (France)

We present a comparative study of stars taken from the low latitude plates of SDSS database with recent simulations from the Besancon galaxy model. For the comparison we use a photometric (dr9) sample and spectroscopic data (dr8). We compare simulations from the Besancon Galaxy model and from the revised version (Czekaj et al, 2013) with photometric and spectroscopic data in order to constrain the IMF (extending the covered mass range for masses between 0.5 and 1.5 solar masses), using main sequence stars, in different directions close to the Galactic plane. In a near future the techniques that are being developed with the SDSS survey will be applied to the Gaia Eso survey.

15. Neutron Capture Elements in the Bulge

Maiorca Enrico(1)
1 - INAF-Osservatorio Astrofisico di Arcetri (Italy)

Abundance measurements of three neutron capture elements (Y, Zr and Ce) are presented in 32 giants of the Milky Way Bulge. Two nuclear processes are responsible for the production of the above elements: 1) the s (slow)-process, mainly occurring in AGB stars with M .

16. Metallicity trends in evolved stars

Maldonado Jesus(1), Villaver Eva(1), Eiroa Carlos(1)
1 - Universidad Autonoma de Madrid (Spain)

In this contribution we present the results of a high-resolution spectroscopic survey of a large sample of evolved (subgiant and red giant stars). The sample includes a significant fraction of stars known to host a planetary companion. First results show that the metallicity distribution of planet hosting subgiant and giant stars with stellar masses larger than 1.5 solar masses fits well in the core-accretion scenario. However, giant planet hosts with masses lower than 1.5 solar masses do not show metal-enrichment, a fact that is hard to explain in current models of planet formation.

17. The joint impact of dynamics and metallicity on the structural properties of dense young star clusters

Mapelli Michela(1)
1 - INAF - Osservatorio Astronomico di Padova (Italy)

The early evolution of a dense young star cluster (SC) depends on an intricate connection between the stellar evolution of its members and the dramatic dynamical processes that take place at this stage. Thus, N-body simulations aimed to tackle this issue must account with sufficient accuracy for both dynamics and (metallicity-dependent) stellar evolution. In this talk, I present N-body simulations of intermediate-mass young SCs with three different metallicities (Z=0.01, 0.1 and 1 Zsun), including metallicity-dependent stellar evolution recipes and metallicity-dependent prescriptions for stellar winds and remnant formation. I show that mass-loss by stellar winds influences the reversal of core collapse and the expansion of the half-mass radius. In particular, the post-collapse re-expansion of the core is weaker for metal-poor SCs than for metal-rich SCs, because the former lose less mass (through stellar winds) than the latter. As a consequence, the half-mass radius expands faster in metal-poor SCs. The difference in the half-light radius between metal-poor SCs and metal-rich SCs is (up to a factor of two) larger than the difference in the half-mass radius. I discuss how these simulations can be compared with the GES data to give us a clue to understand the early evolution of young SCs.

18. Fine tuning GES pipelines with the help of asteroseismology : the case of Liege node

Miglio Andrea, Morel Thierry, Valentini Marica(1)
1 - Université de Liège (Belgium)

Asteroseismology provides precise gravities (logg) for solar-like pulsating dwarf and giant stars (precision below ~0.05 dex) by using scaling relations that use only the seismic observables (and also the temperature, but with a very weak dependence).
The Gaia ESO survey (GES) has already observed a small sample (13) of CoRoT red giants. The Liege node used this small sample (together with some stars of the calibration set that possess asteroseismic observations) for fine tuning the pipeline for deriving atmospheric parameters and abundances.
The poster illustrates the increase in accuracy and precision reached by the pipeline by fixing the logg to the seismic value.

19. Searching for new members of stellar kinematic groups: kine-chemical tagging FGK stars with GES/UVES data

Montes David(1), Tabernero Hugo(2), González Hernández Jonay(3)

1 - Dpto. Astrofísica, Facultad de CC. Fisicas, Universidad Complutense de Madrid (Spain), 2 - Dpto. Astrofísica, Facultad de CC. FiÌsicas, Universidad Complutense de Madrid (Spain), 3 - Instituto de Astrofísica de Canarias (Spain)

Using the large amount of data provided by the Gaia ESO Survey (GES) we intend to perform a chemical and kinematic analysis of the FGK field stars of the Milky Way observed with UVES. Using the radial velocities provided by the survey, the astrometry available in the literature and an estimation of the distance using our derived spectroscopic stellar parameters (Teff, log g, [Fe/H]) we will make a first kinematic selection of possible members to stellar kinematic groups (moving groups and associations) of difference ages. For these subsamples of stars we will perform a detailed differential abundance analysis (chemical tagging) and use additional information derived from the spectra (rotational velocities, Lithium abundance and chromospheric activity) that will allowed us to discern between real physical structures of coeval stars with a common origin (debris of star-forming aggregates in the disk) and field-like stars (structures formed by resonance interactions, associated with dynamical resonances (bar) or spiral structure).

20. Can we constrain the initial conditions of stellar systems with kinematic data ?

Moraux Estelle(1), Becker Christophe(1)

1 - Institut de Planétologie et d'Astrophysique de Grenoble (France)

We performed a large number of N-body numerical simulations of the early (<10Myr) dynamical evolution of low-N stellar systems (N<=100), starting with various initial conditions. The results show that the scatter around the average evolution of the cluster radius, density, velocity dispersion, etc. is large, revealing the high level of stochasticity in the 2-body interactions. However, combining spatial distribution with kinematic data of the cluster members may help us to constrain the initial cluster density under the assumption that the velocity measurement accuracy is much better than ~1km/s. Gaia and GES data may therefore allow us to bring strong constrain on star cluster formation and evolution theories.

21. The DANCe project (Dynamical Analysis of Nearby ClustErs)

Moraux Estelle(1), Bouy Herve(2), Bertin Emmanuel(3), Sarro Baro Luis Manuel(4)

1 - Institut de Planétologie et d'Astrophysique de Grenoble (France), 2 - Centro de Astrobiologia (Spain), 3 - Institut d'Astrophysique de Paris (France), 4 - Dpt. de Inteligencia Artificial (Spain)

The DANCe project is a ground-based proper motion survey of young nearby clusters and associations meant to prepare and complement the Gaia mission i) down to the planetary mass regime and ii) in regions of high extinction. The main objectives of the DANCe group is to derive a complete census of various star forming regions and young stellar clusters down to a few Mjup based on kinematics, and study their internal dynamics and dynamical evolution.

In this contribution, we will present preliminary results of the analysis of the Pleiades cluster taken as a test case. The proper motion accuracy that we achieve is better than 1mas/yr down to i~22mag, corresponding to ~0.6km/s and ~35Mjup at the age and distance of the cluster.

We will also discuss how the DANCe project can be useful for the scientific analysis of the Gaia-ESO Survey by refining the membership criteria of cluster members that will be (have been) observed with FLAMES. Moreover, combining accurate proper motion from DANCe with radial velocity from the GES will allow us to start investigating the cluster dynamics and early evolution as well as the galactic disk dynamics, in preparation to the Gaia mission. Statistical tools are also being developed in the framework of the DANCe project to analyse cluster kinematic data, and shall be applied and extended to the Gaia database.

22. Tracing Galactic structure with red supergiants

Negueruela Ignacio(1), Dorda Ricardo(2), Gonzalez-Fernandez Carlos(2)

1 - Universidad de Alicante (Spain), 2 - Universidad de Alicante (Spain)

We have conducted a survey of the Galactic Plane to search for red supergiants towards Galactic longitude between 24 and 30 degrees, a region where a large number of massive open clusters have been found. We obtained intermediate-resolution spectroscopy around the Ca triplet for about 1500 stars selected as candidates to red luminous stars. We find a large number of red supergiants in this direction tracing two major structures, which are not easy to explain. There is a huge concentration of sources between l=26 and 28 with similar LSR velocities, at values smaller than the expected terminal velocity in this direction. In addition, there is an apparent diagonal structure in the same are, which also appears to be traced by HII regions, that cannot correspond to any spiral arm. The first structure could correspond to a starburst region at the location where the Galactic Long Bar intersects the Scutum Arm.

23. Comparison of different technical methods for membership in the young cluster Gamma 2 Velorum

Prisinzano Loredana(1), Damiani Francesco(1), Micela Giusi(1), Bonito Rosaria(2)

1 - INAF-Osservatorio Astronomico di Palermo (Italy), 2 - Dipartimento di Fisica-Universita' di Palermo (Italy)

We used Gaia-ESO survey spectra taken in the region of the young open cluster Gamma 2 Velorum to evaluate comparatively the effectiveness of different membership criteria. In particular, we used DAOSPEC to measure with an automatic procedure, the equivalent widths of the lithium line and the width of the Halpha line at 10% of the peak, when in emission.

We used these data together with the radial velocities and literature X-ray detections, to select candidate cluster members.
In addition, we used gravity-sensitive sets of lines to distinguish pre-main sequence stars from giant and MS stars (see Damiani et al. 2013, this meeting) and to improve our member selection.
This enabled us to compare statistically the different samples selected by using the adopted membership criteria to establish limits, efficiency and complementarity of the different methods usually adopted to select cluster members.

24. Atmosphere parameters of stars in open clusters determined from UVES spectra

Puzeras Eduardas(1), Tautvaisiene Grazina(1), Mikolaitis Sarunas(2), Chorniy Yuriy(1)

1 - Vilnius University, Institute of Theoretical Physics and Astronomy (Lithuania), 2 - Observatoire de la Côte d'Azur (France)

Homogenization of preliminary cluster analysis results obtained during the first round of analysis (summer/autumn 2012) is presented. The results from 9 nodes were summarized after quality control procedure using a simple variation of k-nn (k-nearest neighbour) algorithm. We propose the k-nn algorithm based procedure for the quality control and the final atmospheric parameter determination. The final atmospheric parameters of stars in open clusters were compared with the evolutionary isochrones in order to check the cluster membership of stars and agreement of results with evolutionary models.

25. Bulge GES DR1 fields analysis

Rojas Alvaro(1)

1 –UMR Lagrange - Observatoire de la Cote d'Azur (France)

Despite its importance as the only galactic spheroid fully resolved in stars, our knowledge of the galactic bulge has been historically quite poor. In the last years, especially with the introduction of 6-8 m class telescopes and multifibre spectrographs a huge step forward has been done in our understanding of this important galactic structure. Now is clear that the bulge is no more a single stellar population but a complex system with a complex structure, kinematic and chemical patterns . Very important are the studies relating kinematical and chemical patterns for stars because they are the necessary ingredient to constrain

the different models proposed to explain the bulge formation, helping to understand the mechanism, or mechanisms involved, and their relative contributions.
In this context, we will examine the GES data, first in the context of other published data (BRAVA, ARGOS, Zoccali et al. papers) to quantify the performances that we can expect from the GES survey of the bulge, and then proceed to make first quantitative statements about the inter-relation of dynamics and chemistry in the 5 fields already included in GES DR1.

26. Membership and Dynamics of the Chamaeleon I Star Forming Region

Sacco Germano(1)
1 - INAF - Osservatorio Astrofisico di Arcetri (Italy)

The investigation of the physical mechanisms driving the formation of clusters by the analysis of precise radial velocities represents one of the top level goals of the Gaia-ESO Survey. Chamaeleon I is the first cluster in the 1-3 Myr age range that has been fully observed by the Survey and one of the closest star forming regions that contains both a recently formed stellar population and the molecular gas of the parent cloud.
In the talk, I will present early results from the selection of members and the analysis of the radial velocity distribution of the cluster members.

27. Determination of the fundamental parameters of hot stars in NGC 3293 and NGC 6705

Semaan Thierry(1), Morel Thierry(1), Gosset Eric(1), Frémat Yves(2)
1 - Institut d'Astrophysique de Liège - ULG (Belgium), 2 - Observatoire royal de Belgique (Belgium)

The two young open clusters NGC 3293 and NGC 6705 have been observed with GIRAFFE in the framework of the Gaia-ESO survey. We present a preliminary tentative to determine the fundamental parameters of the B stars in these two clusters. Several stars in NGC 3293 have also been analysed in the context of the 'VLT-FLAMES survey of massive stars' (Evans et al. 2005). We shall also discuss how our results compare with those obtained by this survey.

28. Looking for multiple stellar populations in the massive cluster M11

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Multiple stellar populations have recently been found in globular clusters. Several observational evidences seem to suggest that self-pollution is active in massive clusters. Recently chemical dishomogenity have been detected in a massive open cluster, NGC 6791, even if this is still object of discussion.
In this scenario, several points remain to be properly understood, in particular the nature of the polluters producing the abundance pattern in the clusters and the mass range where self-pollution can be active.
M11 is a very massive object (M> 11,000 Mo) and it is a suitable candidate for multiple population detection. We propose to investigate chemical dishomegeneities in this object, using the large sample of UVES spectra from which the elements usually involved in the correlations and anti-correlations in massive clusters can be detected.