Minutes of the eighth GBOG meeting

Meeting held in Nice, France, on 4–5 November 2010

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Contents

1 Opening the meeting

As usual, the GBOG meeting starts with the presentation of activities and status of proposals in each CU. Then we have a discusion session on topics of general interest: a future GBOG livelink document, the relations with ESO, the storage and publication of auxiliary data. The MDB, IGSL and Xmatch are not treated this time due to the absence of E. Joliet and R. Smart. Specific topics are discussed in splinter meetings, such as the validation of Gaia alerts and the reducton of the SEP FLAMES spectra.

1.1 Participants

M. Altmannn (CU3), ARI – Heidelberg
P. Bendjoya (CU4), OCA – Nice
A. Bragaglia (CU5), OABO – Bologna
G. Clementini (CU7), OABO – Bologna
U. Heiter (CU8), Uppsala University
F. Mignard (DPACE), OCA – Nice
E. Pancino (CU5), OABO – Bologna
G. Seabroke (CU6), Mullard – London
C. Soubiran (CU6), LAB – Bordeaux
F. Thevenin (guest) – OCA – Nice
W. Thuillot (CU4), IMCCE – Paris

1.2 Agenda

CU3 status report by M. Altmann
CU4 status report by P. Bendjoya and W. Thuillot
CU5 status report by E. Pancino
CU6 status report by C. Soubiran and G. Seabroke
CU7 status report by G. Clementini
CU8 status report by U. Heiter
Discussion session
Splinter meetings

2 Status of activities

Each representative gave a presentation consisting of a few slides. The pdf files are available at:
`http://www.rssd.esa.int/wikiSI/index.php?title=GBOG_M08&instance=Gaia`

2.1 CU3 status report by M. Altmann

2.1.1 Ecliptic Poles Catalogue

The observations for both fields are nearing completion. The imaging for the NEP field has been completed in July, 2010, the imaging for the SEP will be completed in December, 2010. Thusfar one of the spectroscopy campaigns (using VLT+FLAMES+UVES) involving CU6 and CU8 has yielded data, with about 50% success rate for this run. The first attempt ended with no data, and a third proposal was awarded C-priority time to complete the spectroscopy. Given the unlikeliness that this will result in a significant amount of data, it was decided to submit a fourth proposal for ESO in P88. The amount of time to be asked for, will depend on the tentative completion of the current campaign. The SEP-imaging data (first epoch and multi-colour photometry) are almost completely reduced (They were to be released in summer 2010, but due to technical and methodical problems, this is delayed to late November), the available spectroscopy is pending and manpower is required to complete this. At current G. Seabroke is working on the data. In order to work on the spectroscopy and to teach spectroscopic reductions and analysis to members of the GBOG it has been agreed to hold a workshop on this matter in spring in Heidelberg (see also Section 4.1).

The NEP data is de-trended and will be analysed after the SEP data is released. The NEP field has no CU3 spectroscopic follow-up programme. It has still to be decided whether it is appropriate or useful to gather spectroscopic NEP observations from other CUs in a specific NEP catalogue (the same could be argued about the SEP).

All EPC imaging data should be released by end of 2011.

2.1.2 Ground Based Optical Tracking (GBOT)

Several aspects are becoming more and more important for the setup of the GBOT network. Therefore members of the GBOT-group have presented the project in several institutions and conferences. These include the P. Universidad Catolica, Universidad de Chile, CTIO, Gaia Science Alerts meeting (Cambridge), Observatory Hoher List and the GaiaFUN meeting in early December 2010. This activity will continue in 2011, with talks in Liverpool and Southampton already planned.

To foster the collaboration between the geographically distant members of the GBOT group, a workshop was held in early June in Paris. This workshop mainly focussed on the software development, but a session on the necessary database construction was also held. The next dedicated GBOT-meeting will be held in March or April. Meanwhile, monthly telecons have been found to be of great use, and these continue.

Contacts have been established to several observatories, and more are to come in the near future.

In order to simplify and standardise the efforts, we have compiled a set of standard tests and an information leaflet for prospective partners. We are also in contact with other groups within DPAC who rely on ground based data taken during the operational phase of the Gaia mission, to look for synergy effects and to exchange experience. Unfortunately many potentially suitable facilities are either facing closure or have a rather insecure future. The basic feasibility tests have mostly been completed. Now we are moving to more elaborate and long term test campaigns. Currently we are carrying out two such programmes at the Liverpool telescope:

- Asteroid observing campaign (PI: P. Tanga). This campaign went through the regular PATT OPC (therefore we had to present a convincing science case), and is a first long term campaign (2 semesters, but not nightly observations) leading to a large dataset, which we will use for the test of our system.
- Planck observing campaign. This was a more midterm observing campaign, which served two goals. Firstly Planck observations were requested by ESOC, secondly this was a real time observing test, close to how the observations will be during the operational phase.

Further tests and test campaigns will be done in 2011, using the LT and other partner telescopes. The astrometric analysis pipeline is being developed by S. Bouquillon and F. Taris from the Obs. de Paris, and was presented for the first time at the workshop in June. In its current state it is able to perform all steps needed. While is still needs to be optimised and stabilised, it will be exported to Heidelberg in November 2010. Most observatories deliver already de-trended data. However, a detrending pipeline is in the discussion. Since GBOT deals with a daily influx of large amounts of inhomogeneous data, a well designed and managed database system is mandatory. Moreover the data reduction steps need to be repeated after the first release of Gaia data. We have contacts with L. Nicastro, and are currently looking into our options for obtaining this database.

2.1.3 VLBI observations of optically-bright weak extragalactic radio sources (Input by G. Bourda)

The sample comprises about 450 candidates, which are being observed with VLBI in three steps during the years 2007-12. The first step – detection – has been completed to all objects; the second – VLBI imaging – is currently being tackled, with observing campaigns in March 2010, Nov. 2010 and Mar 2011. The final step will be VLBI astrometry and the first proposal for this will be submitted in 2011.

2.1.4 QSO catalogue for Gaia (input by A. Andrei)

The catalogue of QSOs has been increased by 75% to almost 175000 objects. These are being searched and analysed for their morphology and the signature of the host galaxy, by using DSS

images in 3 colours and Daophot PSF analysis. A sample of 14 bright long period QSOs is being monitored for photometric and resulting astrometric variability, affecting their properties as fiduciary points for the Gaia reference system.

2.2 CU4 status report by P. Bendjoya and W. Thuillot

2.2.1 The spectroscopic observations of asteroids as a support to the Gaia mission

This is a program of observations in which people involved are P. Tanga (PI), P. Bendjoya, A. Cellino , M. Delbo, F. Mignard, C. Ordenovic and L. Gallucio, all from OCA.

The aim of this program is to scan the different mineralogical classes of asteroids that are commonly admitted by the asteroid community. We want to get for each class a "master" spectrum from which a representative population can be generated and hence automatic classification algorithms can be tested. The chosen telescope for these observations is the TNG with the DoLoRes spectrometer, since the wavelength coverage is very close to the Gaia's one, and includes also blue wavelengths that traditionally have not been observed often (see Figure 1). Moreover, the observations are performed near the quadrature phase, in order to be as close as possible to the same configuration of the satellite observations.

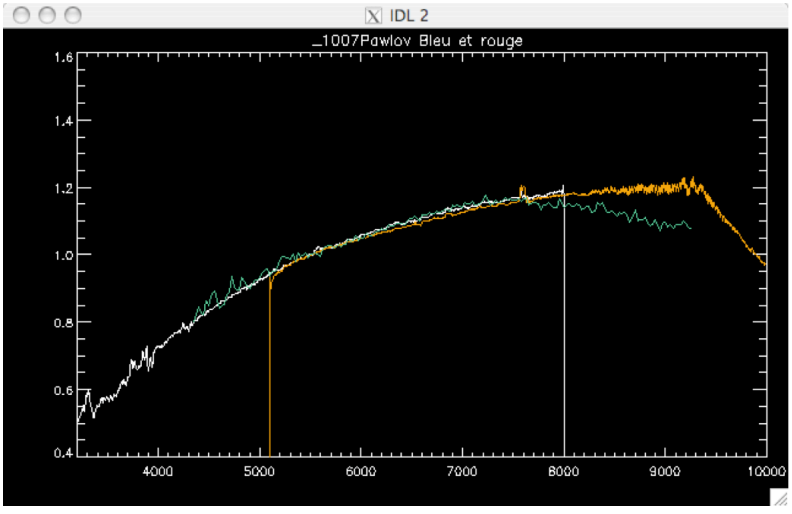

Figure 1: Sample of the spectrum of asteroid 1007 Pawlova; in white the blue part of the spectrum (Dolores Grism LR-B) in orange the red part of the spectrum (Dolores LR-R) in green the Bus and Binzel (2000) spectrum of the same object.

Two periods of 2 nights each (October 2008 and November 2010) have been awarded. The first period provided 26 main belt asteroid (MBA) spectra, sampling 18 taxonomic classes over the 25 classes defined by Bus and Binzel (2000). These spectra have been already reduced (see Figure 1). The second period allowed to get 25 more MBA spectra, leading to a global sampling

of 24 classes over the mentioned 25. These later spectra have just arrived and still have to be reduced.

2.2.2 The Gaia-FUN-SSO workshop

In CU4, DU459 is in charge to set up a network, labelled Gaia-FUN-SSO, dedicated to a ground-based follow-up of specific Solar System Objects. After several years for getting in touch with candidate observing locations, we need to ensure the observing capacity of the members of this network. The best way for this purpose is to organize a workshop and to get benefit from this face-to-face meeting to discuss pending organisational problems and to make this network active. This workshop is now organized and will be held in Paris from November 29 to December 1st. 41 participants from 14 countries have registered and are representatives for almost 16 observing sites. We intend to have discussions on the on-alert capacities of the observing sites, on the problems raised for this purpose and on the duty and benefits from each sides, the Gaia mission side and the observers side.

2.3 CU5 status report by E. Pancino

2.3.1 External flux calibration

During the last year, 11 proposals have been submitted at our six different telescopes, two in the Southern hemisphere (EFOSC2@NTT, ROSS@REM, La Silla) and four in the Northern one (DoLoRes@TNG, La Palma; CAFOS@2.2m, Calar Alto; BFOSC@1.5m, Loiano; LaRuca@1.5m, San Pedro Martir). Of these, only one has been rejected so far (the TNG spring request) on the basis that we are late with our data reductions, so we did not resubmit in autumn hoping that we can finish the Northern hemisphere with Calar Alto observations. We point out here that we cannot provide all the data reduced to the TNG TAC soon, since observations still use up more than 50% our all our available FTE, hence the decision of not resubmitting. In total, we have obtained approximately 245 observing nights at all our six telescopes starting in 2007, through more than 45 proposals (only 3 of which were rejected), at a rate of 50–60 observing nights in visitor mode per year, plus 20-30 nights in service mode. The observations are 70–75% complete as far as absolute photometry, spectroscopy, and short-term variability are concerned, with an estimated end of survey around the end of 2011, or beginning of 2012. The long term variability monitoring is 40% complete and we estimate to complete it in 2013–2014.

To ensure maximum homogeneity in data acquisition and treatment, strict observing and data reduction protocols are enforced, as well as an *Instrument Familiarization Plan* (IFP) that will characterize the instruments (shutter times, linearity, calibration frames stability, and so on) and find procedures to remove various instrument fingerprints (2^{nd} order contamintion, lamp flexures, fringing, CCD cosmetics) in the most accurate way. The IFP and data reduction protocols are being presently finalized, after an intense phase of testing of different procedures. End-to-end test reductions prove that we can easily meet the DPAC constraints (a few percent

in flux) and calibrate our SPSS spectra to $\simeq$1% relative flux accuracy (with respect to Vega and the three CALSPEC pillars), over most of the considered wavelength range. Routine mode reductions have started, we have pre-reduced approximately half of the collected imaging frames, which are also quality checked. Aperture photometry started (10% of the collected frames), and we have short-term variability light-curves for a few tens of our SPSS. For spectroscopy, pre-reductions are proceeding, with 20% of the collected frames extracted and wavelength calibrated, while the following analysis steps are under finalization.

More information on the ground based observations for the flux calibration can be found at our local Wiki pages: `http://yoda.bo.astro.it/wiki/index.php/Main_Page` (credentials: guest and gubana). Our local raw and reduced data archive can also be reached from the Wiki pages, but we are now negotiating with the ASDC (ASI Science Data Center) for more professional support (see also Section 3.5).

2.3.2 Flux based science alerts

Most of the effort in CU5-DU17 is presently devoted to the testing and implementation of the science alerts algorithms and pipeline. There will be ground based observations in the near future. In particular, the main aim of the Science Alerts Verification Phase (SAVP) is to verify the robustness of the issued alerts and confirm them with a dedicated network of follow-up telescopes operating in a Target of Opportunity (ToO) mode (see also Section 3.4). The verification observations should be carried out both photometrically (imaging) and spectroscopically in order to, e.g. confirm the presence of the detected new object, or to confirm or fine-tune the classification of the alert. The verification phase should reveal all necessary adjustments which have to be done to the detection and classification algorithms to assure the best and the most robust performance later on.

The verification phase could last for about 3 months and is planned to take place after around 3-6 months after receiving the first Gaia data to assure there is enough historical data available for most of the objects, and to allow for shake-down of the Gaia Initial Data Treatment (IDT). Some areas (close to the nodes of the scanning pattern) will have enough observations accumulated to allow for an earlier start of the alerting pipeline, as long as the Gaia data flow is operating smoothly. In principle, some pre-launch preparation could take place in the areas of very dense Gaia sampling. This could include gathering all useful information about the objects in these regions, both from existing catalogues and accompanied by new observations. This could include variability classification and spectral type classification to test recovery of known candidate (potential) transient sources, as well as likely contaminants.

The Science Alerts Verification Phase will be conducted mainly under umbrella of GBOG (Ground Based Observations for Gaia), however we encourage other groups of astronomers to join this effort as early as possible. Early involvement in the alerts observations can result in establishing a good connection with the Gaia alerts stream when they become fully public.

2.4 CU6 status report by C. Soubiran and G. Seabroke

2.4.1 CU6 calibration requirements

George Seabroke (GS) explained this was his first physical GBOG meeting so he introduced himself as Carlos Allende-Prieto's successor and therefore scientifically responsible for all MSSL CU6 workpackages: pre-processing, extraction, calibration and multiple transit analysis and representing CU6 in GBOG. Although RVS is a self-calibrating instrument using observations, it does require some external standards: RV standards (covered by C. Soubiran's talk) and flux standards (covered by this talk). Although CU8 are currently only considering normalised RVS spectra and thus may not use RVS flux-calibrated spectra to derive stellar parameters, there is a CU6 work package to provide flux calibrated spectra as a stand alone data product. Calibrating the RVS instrument response curve and the ADU counts to flux conversion would ideally be done simultaneously with RVS spectra of DA WDs. However, the best existing catalogue of DA WDs with derived logg and Teff to allow fluxed spectra to be generated from model atmospheres (Liebert, Bergeron & Holberg 2005) will be too noisy as RVS spectra to trace the instrument response curve. Therefore the plan is to use DA WDs to derive the absolute flux conversion zero-point and brighter continuum-dominated spectra to trace the relative response curve.

CU6's calibration strategy is to fix the RVS LSF early in the mission (before radiation damage) and then only apply (not derive) these calibrations throughout mission. CU6 plan to use giant stars to derive the RVS LSF during the commissioning phase (ecliptic pole scans). The majority of the observed ESO-FLAMES South Ecliptic Pole spectra are fainter (V>12) than CU6 calibration requirements (G_{RVS}<10) so G. Seabroke volunteered to use his access to proprietary RAVE spectra (9<I<12) to check on RAVE SEP coverage and the number of potential LSF calibration stars in the SEP and, if required, request that RAVE observes a dedicated SEP field for inclusion in the EP Catalogue database. Lastly, G. Seabroke informed GBOG that he was responsible for the now-reactivated CU6 Science Alerts work package and that the ground-based science verification of both flux (CU5) and RVS (CU6) science alerts would likely overlap and in any case should be co-ordinated by GBOG.

2.4.2 The list of RV standard star candidates for RVS and the NEP stars

A paper entitled "Towards a new full-sky list of radial velocity standard stars" by Crifo, Jasniewicz, Soubiran et al. is in press in A&A (2010arXiv1010.0613C) and describes how 1420 star candidates have been selected for the calibration of the zero-point of the RVS and initialization of the wavelength scale. To be used as RV standard stars, these candidates must have a stability better than 300 m/s until the end of the mission. Two pre-launch and one post launch measurements are organized on SOPHIE, NARVAL and CORALIE, with help of the ELODIE and HARPS archives. A future paper will present the observing programme and give the new measurements.

The programme on SOPHIE at OHP started in 2006. Up to now 44 nights have been allocated by the french Programme National Cosmologie and Galaxies (3 nights scheduled in January 2011). Nearly 1000 RV measurements have been obtained with the on-line pipeline and there are still 200 stars to be observed a second time in the North (> -15DEG). Four nights have been requested in May 2011 and should be enough to complete the northern pre-launch program. Observations at NARVAL Pic du Midi started in 2007. Twelve nights were allocated by the french Programme National de Physique Stellaire, together with 24 nights for the CU8 program on AP stars. The status of large program was obtained in October 2010 for 4 semesters. A set of 98 spectra was obtained for the RV-STD catalogue showing that the telescope is not fast enough for this all sky program on bright stars. The obervations now focus on the NEP catalogue (34 stars). NARVAL is important because it covers the RVS range providing templates and a variety of stars for tests of the CU6 pipeline. Observations at CORALIE on the Swiss telescope at La Silla started in 2008 with the equivalent of 9 nights allocated. 688 RV measurements have been done, but the spectra are not provided. 1057 measurements of 292 stars, spanning 1995 to 2006, have been retrieved from the ELODIE archive, as well as 1290 measurements of 122 stars, spanning 2003 to 2009, from the HARPS archive. Fig. 2 shows the number of observations available per star.

Number of ground−based observations of Gaia−RVS reference stars performed as of September 2010

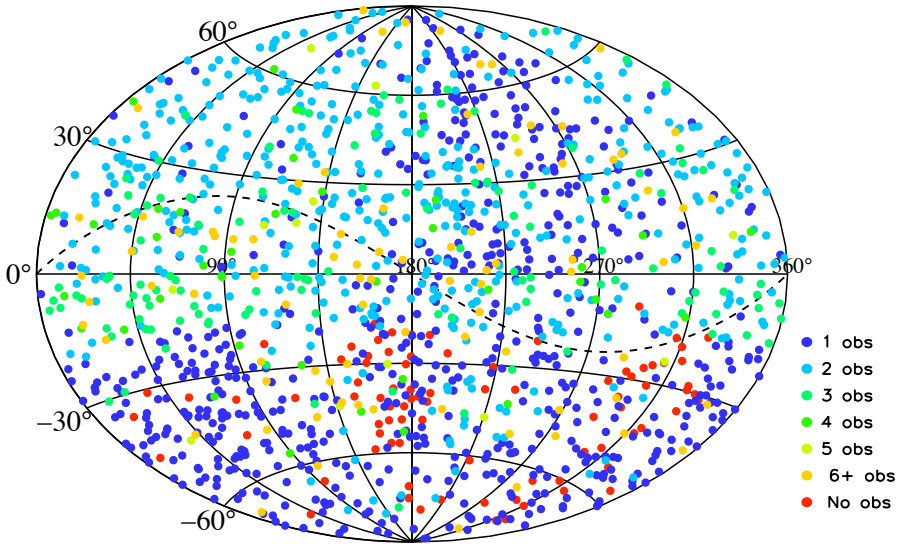

Figure 2: Distribution of the 1420 candidates on the sky, in equatorial coordinates, with color codes corresponding to the number of observations already available from our programmes on SOPHIE, NARVAL and CORALIE, and from the ELODIE and HARPS archives. For the detailed status, see Chemin et al., 2010arXiv1010.0615C.

There is now a sufficient number of stars measured in common with the various instruments to estimate their offsets and standard deviations, although this has to be done more carefully with the asteroids systematically measured. A trainee student analysed all the RV of asteroids obtained from the begining and showed that the O-C residuals are larger when the Moon has a

high illumination and when the angle Target-Observer-Moon is small. The standard deviation of the O-C is still better than 50 m/s on average and enough to establish the common zero point of the ground-based RVs with the ephemerides of asteroids.

As part of the EP catalogue to be used in the commissionning phase, a list of 34 stars selected in the Tycho-2 catalog has been established and is currently being followed-up with NARVAL. The aim is to characterize the spectral type and spectroscopic variability of the selected stars, with 3 observations before launch. It is also foreseen to built a kind of atlas of RVS-like spectra of OBA stars with NARVAL. NARVAL observations are also used to compare RV measured in the RVS range and in the optical.

2.5 CU7 status report by G. Clementini

The letter of intents to contribute with the CU7 telescope network to the validation of the Gaia Alert System (GAS) was acknowledged by CU5 DU17, and mentioned in the White-book compiled after the Alerts workshop held in Cambridge in June 2010. G. Clementini presented an update of the CU7 ongoing observing projects. They include:

- Analysis of existing data-bases to follow period changes in selected sample of Classical Cepheids (person in charge: L. Szabados, in progress)
- Analysis of spectra obtained with the 2m Coude spectrograph at the Ondrejov Observatory (CU7 network), in the wavelength region covered by the RVS, of 15 bright Galactic Miras (person in charge: T. Lebzelter, in progress)
- Photometry of short period variables with the 1.2 Belgian Mercator telescope in Canary Islands (CU7 network, persons in charge: L. Eyer, N. Mowlavi, M. Varadi). Observations of DT Lyn, a bright B subdwarf were obtained in December 2009 and March 2010 and reduced by M. Varadi. Several known frequencies were identified in the de-trended dataset thus demonstrating that this telescope can be used for the verification of Gaia short period candidate variables, if needed.
- Photometry of RR Lyrae and Cepheids in the Gaia EP calibration fields (person in charge: G. Clementini) Time-series K-band photometry of RR Lyrae stars and Cepheids in the Gaia South eclipsing pole calibrating field, was obtained as part of the VISTA VMC survey (observations completed on April 2010) and combined with visual-band light curves from EROS II. The data are being used to check the period search, mode classification, Fourier parameter definition algorithms developed within the CU7 RR Lyrae and Cepheids workpackage, and to build multiband PL relations of RR Lyrae stars and Cepheids which are used to remove outliers etc.

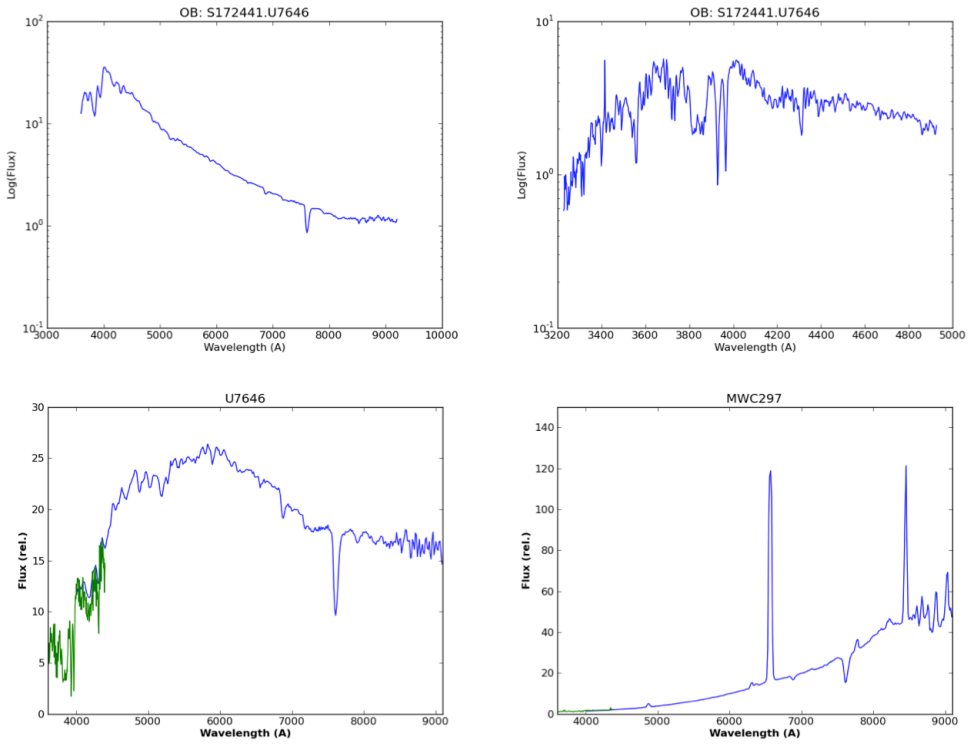

Figure 3: Top row: Spectra of a normal star before flux calibration (left: GR1, right: GR14). Bottom row: Sample flux calibrated EFOSC2 spectra of a normal (U7646) and a Be-type star (MWC297).

2.6 CU8 status report by U. Heiter

2.6.1 Calibration stars for ESP (Extended Stellar Parametrizer)

Low-resolution spectra for about 90 stars were obtained with EFOSC2 on the NTT during four nights in August 2009. The observed stars were mainly hot and peculiar stars (O-, B-, A-types, Wolf-Rayet) and emission line stars (all types). Three "normal" stars in the open cluster IC 4651 were also observed. Each target was observed two to three times. The data are now reduced and flux calibrated. For the relative flux calibration, sensitivity curves were derived from observations of two flux standard stars. Since the sensitivity curves for the two stars were very similar to each other and similar for each of the four nights, a curve averaged over the four nights was used.

Fig. 3 shows the spectra of one of the cluster stars before flux calibration, for the two grisms used (GR1 and GR14), and after flux calibration (both grism spectra overplotted), as well as a flux calibrated spectrum of a Be-type star. More figures of flux calibrated spectra for all targets can be found at ftp://omaftp.oma.be/dist/astro/gaia/esofigures.tar.gz. Remaining reduction steps

to be done are: assess the accuracy of the flux calibration, remove telluric features, merge GR1 and GR14 spectra for each target, and, where or if needed, average multiple exposures.

2.6.2 Calibration stars for GSP (General Stellar Parametrizer)

For ESP as well as GSP-calibration stars, we are conducting a joint CU6–CU8 programme with the NARVAL spectrograph at the TBL (Pic du Midi) since 2008. High-resolution spectra are obtained for radial-velocity standard stars (low SNR sufficient for RV determination), and for peculiar and AP reference stars for spectrum modelling and abundance analysis (high SNR). In 2008, 35 ESP calibration stars were observed. In 2009, 15 benchmark stars for AP calibration were observed. The spectra for two cool giants were used for a spectrum modelling experiment at an ESF-funded GREAT workshop in 2010. In 2010, a number of AP reference stars were observed. 30 stars were selected from the PASTEL database (those with more than 10 parameter determinations, which did not already have spectra in the NARVAL archive). These have $6 < V < 10$. Also, 23 stars in four open clusters were observed (Coma Ber, Collinder 350, NGC 6811, NGC 6940). These have $7 < V < 11$, and the spectra have $70 <$ SNR < 160. In Fig. 4, we show two example spectra at the RVS wavelength region.

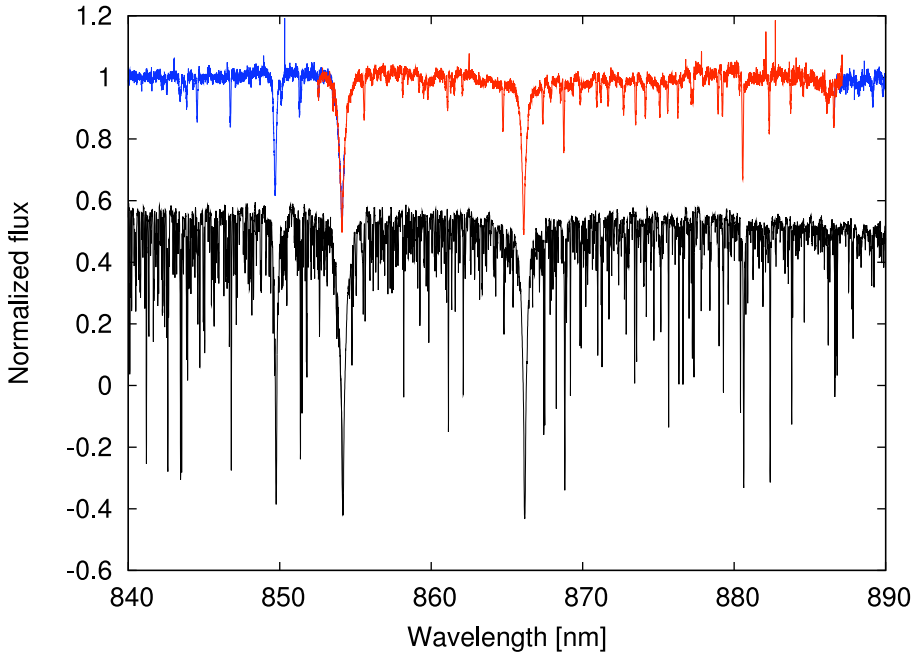

Figure 4: Two NARVAL example spectra in the RVS region. Top: G dwarf Coma Ber No. 97, bottom: K giant Collinder 350 No. 5 (shifted by -0.5 in flux for clarity).

As reported at the 7th GBOG meeting, additional reduced spectra for up to 500 AP reference stars have been located in the ESO Advanced Data Products archive for the UVES, HARPS and GIRAFFE instruments, and in the archives of three French telescopes (ELODIE, SOPHIE, NARVAL instruments). For a detailed description, see Soubiran & Heiter (Gaia technical note

GAIA-C8-TN-LAB-CS-008-1, issued 9 Sep 2010).

Next steps are to assess the parameter coverage of available spectra (archive and new observations) and to continue NARVAL observations in gap regions. We are also developing the abundance analysis procedure to be used for different spectra and different types of stars.

3 Discussion topics

3.1 Coordination of telescope networks

After a brief discussion, CU4 and CU7 agreed that no special coordination is needed for now. See also Section 3.4 for the coordination of science alerts validation and the L.o.I. by CU7.

3.2 Relations with ESO

We re-discussed the GBOG needs concerning ESO telescopes, listed in the GBOG status report (sent to ESO in March this year), in view of the forthcoming ESA-ESO bliateral agreement meeting, which will be attended by T. Prusti. The status summary is:

- The SPSS observations for flux calibration of G-band and BP/RP should be completed within 2011, if the December run (P86) and the proposed observation for P87 will be carried out successfully;
- The SEP observations did not receive as much support as we hoped for; we got C priority and some bad weather; we decided to re-apply for these observations, specifying clearly that they are vital, and that P88 will be the last period before launch;
- The program for variability monitoring by CU7 has not been carried out because existing or planned obsevations (EROS-II, MACHO, VMC and OGLE-IV) should cover entirely the Gaia needs both in terms of area and number of variables;
- The EFOSC2 programme for SEDs of peculiar stars across the HR diagram has been successfully completed;
- A new need for RVS flux calibration might arise (see Section 4.2), so it should be mentioned in all future communications with ESO;

A summary e-mail was prepared by C. Soubiran and all, and sent to T. Prusti immediately after the discussion.

3.3 GBOG report 2010 for Livelink

C. Soubiran prepared a draft of a Livelink document that summarizes the status of GBOG observations and activities in 2010, following and expanding on the ESO report of GBOG activities sent in March this year. A preliminary draft was discussed by all and we agreed on the general document structure, and on the responsible persons for each section. The deadline for editing the document is 15 December 2010, with the aim of submitting it to Livelink in January 2011 at the latest.

3.4 Science alerts validation

G. Seabroke participated to the Science Alerts Workshop in Cambridge in June, so he illustrated the resulting Whitebook[1]. The discussion then focussed on the need of a clear distinction between the science alerts *validation* and the *follow-up* observations. The former are needed to test and tune the science alerts software and therefore should fall under the GBOG umbrella (see also Section 2.3.2), while the latter is a scientific task that has to be carried out by the astronomical community after the alerts are released.

The science alert group has issued a call for Letters of Intent to organize both the verification phase and also the scientific follow-up. It is felt, in fact, that if the DPAC does not give some input to the community, there is the risk that the community will not be ready to effectively exploit the Gaia alerts. Apparently they received two letters of intent. G. Clementini and CU7 sent one of the two letters, offering the variability telescope network contacts for the science alerts verification phase.

There is probably some miscommunication between the flux based science alert team (CU5-DU17) and GBOG (and, indirectly, with DPACE). We agreed that we will try again to involve somebody from the group in the GBOG. In this phase DU17 is extremely busy with software writing, but later one of their team should partcipate to GBOG meetings and one of the two CU5 representatives should be from CU5-DU17 (at the moment, A. Bragaglia and E. Pancino are both from CU5-DU13). G. Seabroke will soon start a RVS based science alerts WP in CU6, and therefore he will provide an additional link to the flux based science alert team, and could represent their needs and views in GBOG as well. F. Mignard proposes to futher discuss the science alerts also at the DPACE level.

3.5 Archiving and publication of GBOG data

We all agreed that we should use the opportunitity offered by E. Joliet and CU1 to save our raw (and reduced) data on the ESAC 4 Tb disk space offered for the purpose.

[1] Available at http://www.ast.cam.ac.uk/research/gsawg/index.php/Workshop2010:main

For reduced data and more advanced archiving features, some groups are already organized enough, while other groups expressed the need of more support. What emerged is not only the need for setting up an archive, in some cases with an attached database that allows for refined browsing tools, but also the need for continuous support by dedicated/expert staff. The critical areas appear to be: CU3 which needs an archive for the forthcoming GBOT observations, and is taking contact with L. Nicastro in this sense; CU5 which already has a simple archive, but is in need of a more sophisticated archive/database combination, with browsing capabilities, and has contacted the ASDC (ASI Science Data Center, http://www.asdc.asi.it/), which will hopefully provide the expertise and continuative support to their project; CU6 which used to have their archive person, but are now left without support and are presently looking for a solution.

The modalities of publication have also been discussed, and we all agree that eventually, when the Gaia catalogue will be released around 2020, also all the auxiliary data for the calibration of Gaia data should somehow be released. For raw data, it would be nice to store them in case the need of full reprocessing should arise, for data products, different ways of publication could be organized depending on the characteristics of each group and dataset. While it is probably premature to try and define further such issues at present, it appears clear to all that we should keep in close contact with the CU1 team that is now planning the Gaia archive preparation in view of the activation of CU9 by ESA and the DPACE. It is probably advisable that a WP dedicated to auxiliary data be present in CU9.

3.6 Coordination on SEP/NEP observations

We all agreed that we should exchange coordinate lists of our spectroscopic targets around the NEP and SEP regions. Everyone sent e-mails with their NEP/SEP target lists (and related Livelink documents, when applicable) to M. Altmann. A link to the NEP/SEP Wiki page has been added to the GBOG Wiki page, with a dedicated section to the target lists overlaps. G. Seabroke asks if the literature and archive searches have been completed for these regions, M. Altmann replies that some basic search has been done, but certainly the work is not complete yet.

Also, G. Seabroke proposed that, since he is part of RAVE, he could check the status of past and planned observations around the SEP, and report back to GBOG. The present agreement between the DPAC and RAVE is still informal, but it could become a very useful collaboration.

4 Splinter meetings

4.1 SEP spectroscopic data reductions

People attending this splineter meeting: M. Altmann, A. Bragaglia, U. Heiter, E. Pancino, G. Seabroke, C. Soubiran, F. Thevenin.

M. Altmann asked for the help of all in the data reduction of the FLAMES SEP data collected so far (and of the eventual data from P88 planned observations). The data collected so far are not complete, but generally they are taken with GIRAFFE using the HR21 and LR2 setups, a few hundreds of stars. Bright targets were also observed with the UVES fiber link. Pre-reductions are partially done since all the observed data immediately became public and entered the Meudon GIRAFFE archives. Some discussion on possible cross-talk among fibers ended with the suggestion that we contact M. Nonino who is an expert on this.

It has been agreed that we will take one week around April 2011 (after the ESO proposal deadline) to meet in Heidelberg and start a hands-on data reduction workshop, organized by M. Altmann. Those who are expert in spectroscopic abundance analysis will share their methods and expertise, and train others. We will start with a limited set of UVES and GIRAFFE stars, and decide how to proceed with the rest (U. Heiter will take care of dwarfs and E. Pancino of giants). In particular, U. Heiter will provide her knowledge of SME (Spectroscopy Made Eesy) a semi-automatic software for spectral synthesis, E. Pancino will provide help with DAOSPEC and MOOG for a more traditional abundance analysis based on EW (Equivalent Widths). F. Thevenin recalls that G. Jasniewicz from CU6 volunteered to determine the radial velocities. M. Altmann will circulate well in advance a few spectra for testing. Further discussion and decisions will take place at the meeting.

4.2 RVS flux calibration

People attending this splinter meeting: M. Altmann, A. Bragaglia, U. Heiter, E. Pancino, G.Seabroke, C. Soubiran.

During the meeting, G. Seabroke told us that a WP in CU6 for the flux calibration of RVS has been activated and assigned to himself. While we all agreed that a flux calibration of RVS spectra could be interesting to have, we could not remember a compelling reason to provide it. We asked Carlos Allende-Prieto (the former CU6 representative) and he provided: *(a)* a better T_{eff} determination and *(b)* check for consistencies among instruments. We decided that G. Seabroke should further investigate into this.

Assuming that a calibration of RVS data will be performed, we considered two possible approaches. The former concerned the use of SPSS from CU5, but the risk is that they are not sufficiently sampled in wavelength (GAIA-C5-TN-UG-ST-002). The latter concerned the use of higher resolution spectra, and we ended up noting that some of the SEP observations by CU3 could be indeed used as flux standards, although we probably need new observations, and of

course the CU6/CU8 spectra databases should also be explored further. Again, G. Seabroke will look further into this and come back to the GBOG to see if CU6 needs more observations, and if they can be combined with other existing GBOG programmes.

5 Closing the meeting

5.1 Actions for CU representatives

- All GBOG reps – contribution to the Status Summary of GBOG activities in 2010 by 15 December 2010;
- C. Soubiran – finalize the GBOG status summary for 2010, to be submitted in January at the latest;
- C. Soubiran – send mail to T. Prusti with an update of the GBOG needs concerning ESO telescopes;
- All GBOG reps – send contribution to the GBOG M08 minutes to E. Pancino;
- E. Pancino – prepare minutes;
- E. Pancino and G. Seabroke – contact again the flux based science alerts team (CU5-DU17) to increase communication;
- All GBOG reps – add their CU target lists for the NEP/SEP regions in the CU3 Wiki by M. Altmann;
- M. Altmann – send a few SEP spectra to E. Pancino and U. Heiter, and organize the Heidelberg spectroscopic analysis workshop around April 2010;
- U. Heiter – explore the use of teleconference software different from Marratech, and organize the next GBOG teleconf;
- G. Seabroke – interact with the RAVE staff to see what observations have been done, or are planned, around the SEP.

5.2 Next meeting

We agreed that the next meeting should be a teleconference. U. Heiter will explore the software to use, since a few of us could not install Marratech on their computers. We will have the teleconference between April and June 2011.