Minutes of the ninth GBOG meeting

Teleconference held on 4 April 2011, 14:00 – 18:30

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Contents

1 Overview of the meeting

The telecon was held using the Adobe Connect Pro web-based e-meeting system. The system is free for the participants and was hosted by U. Heiter using the Uppsala University subscription, allowing to create the necessary virtual meeting room. Apart from a few problems related to microphones and presentation upload, the system was found to work well for the purpose of this meeting.

At the beginning of the meeting, E. Pancino suggested that Lukasz Wyrzykowski should replace Angela Bragaglia as CU5 GBOG representative, since he is involved in the second major GBOG programme related to photometric science alerts. This was approved by all. We thank Angela for her valuable contributions, and welcome Lukasz.

As usual, the first part of the GBOG meeting was devoted to presentations of activities and status of observing programmes in each CU. Then we had a discussion session on topics of general interest: ground-based validation activities for photometric science alerts, and response to the GAP call for Letters of Interest. Finally, the specific topic of the Ecliptic Poles catalogue (SEP observing programme) was discussed by a subgroup.

1.1 Participants

M. Altmannn (CU3), ARI – Heidelberg
A. Bragaglia (CU5), OABO – Bologna
Y. Frémat (CU8), ROB – Brussels
U. Heiter (CU8), Uppsala University
F. Mignard (DPACE), OCA – Nice
E. Pancino (CU5), OABO – Bologna
G. Seabroke (CU6), Mullard – London
R. Smart (CU3), OATO – Torino
C. Soubiran (CU6), LAB – Bordeaux
W. Thuillot (CU4), IMCCE – Paris
L. Wyrzykowski (CU5), IoA Cambridge

Apologies: P. Bendjoya (CU4), G. Clementini (CU7), E. Joliet (CU1)

1.2 Agenda

CU8 news by U. Heiter
CU7 update – slides by G. Clementini
CU6 report by C. Soubiran

CU5–DU13 report by E. Pancino
CU4 report by W. Thuillot
CU3 reports by M. Altmann and R. Smart
Discussion session
Splinter meeting

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_M09&instance=Gaia`

2.1 CU8 news by U. Heiter

This is an update concerning observations for AP reference stars – the set of calibration data for GSP (General Stellar Parametrizer). Since 2009, a joint CU6-CU8 programme is conducted with the NARVAL spectrograph at TBL (Pic du Midi). High-resolution spectra are obtained for GSP calibration stars in the field and in open clusters. In the current period, observations of stars in open clusters are scheduled for service mode execution. The analysis of the spectra obtained has not yet started.

The spectra for two benchmark stars observed with NARVAL in 2009 have been analysed by several different groups during the GREAT-ESF workshop on comparative spectrum modelling held in August 2010.

Soubiran and Heiter (CS-008) have conducted an archive search for high-resolution spectra of AP reference stars and report several hundred spectra in the UVES, HARPS, SOPHIE, ELODIE, and NARVAL archives. These spectra are now being examined for parameter coverage and quality. For example, the HARPS archive contained 326 spectra for 35 *faint* AP reference stars (G>10). These spectra were downloaded and multiple spectra co-added, resulting in single spectra with SNR>75 for 25 stars. These co-added spectra were stored in FITS format, with headers following the ICD for observed spectra (UH-002, with minor exceptions). They are stored in the GBOG storage space at ESAC (`/gbog/cu8/AP_faint_HARPS/`). For *bright* AP reference stars, the HARPS archive contained about 2700 spectra for 204 stars. It was not possible to download this amount of data from the ESO archive. A request to retrieve these data was sent to Nausicaa Delmotte at ESO, and they were delivered on 4 DVDs of 14.5GB (about 19000 files, including various calibration files). These data need to be examined, co-added when necessary, and stored. Documentation needs to be written for all HARPS archive spectra.

Next steps are a similar procedure for all other archives, cross-correlation with PASTEL to

check parameter coverage, and finally a homogeneous redetermination of parameters.

2.2 CU7 update by G. Clementini

GBOG activities in CU7 include four observing programmes and a contribution to the Gaia photometric science alerts.

2.2.1 CU7 GBOG programmes

- photometry of selected Cepheids to follow period changes (L. Szabados)
- spectra of Long Period Variables (Miras, Ir variables) in the spectral range of RVS at a resolution around 10000 (T. Lebzelter)
- photometry of short period variables based on Eddington fast-read CCDs (Laurent Eyer, Nami Mowlavi, Mihaly Varadi)
- photometry of the regions at the ecliptic poles (G. Clementini)

All these programs are progressing. Below are some news on the photometry of SEP and NEP variable star sources.

SEP photometry The study of the RR Lyrae stars in the Gaia SEP calibration field is based on K band photometry obtained by the VISTA-VMC survey and EROS II visual data. We are improving the period – luminosity relation in the K band (PLK) of the SEP RR Lyrae stars by fitting templates to the K-band light curves of the 111 RR Lyrae in the SEP field. The RR Lyrae PLK is known to be affected by metallicity effects, to further reduce its scatter we are considering whether to measure the metallicities of the SEP RR Lyrae stars from spectra to be obtained at ESO. We checked with Martin Altmann whether we could use the spectra he is collecting for Gaia in the SEP, but our sources are too faint (around $V \approx$19.5 mag), while Martin's magnitude limit is around 17. This may work for the SEP Cepheids which are very few (only 14) but brighter. Gisella will send the identification of the SEP Cepheids to Martin.

NEP photometry An e-mail was received on April 1, 2011, from Indrek Kolka of the Tartu Observatory (Estonia), offering to contribute to the characterization of the brightness variability in the V and I_c bands for the objects with $V < 14$ mag in the central one square degree around the NEP. This contribution would be a by-product of a long-term (2011–2014) project started at Tartu Observatory to gather photometric time series on selected luminous variables in different sky areas with the help of robotic telescopes in New Mexico and at Tartu Observatory. For objects near NEP it is proposed to study the variability in different time scales from days to

hundreds of days. Observations could be extended up to the end of the Gaia mission and could also foresee the addition of spectroscopic observations of NEP objects with local facilities. Contacts with Indrek are to be established to make further arrangements.

2.2.2 Gaia photometric science alerts

The CU7 network of small/medium size telescopes offered to contribute to the Alert system validation. An LoI from CU7 was given to Gaia Science Alerts (GSA) in November 2009. In this framework arrangements are being made with Lukasz Wyrzykowski, of CU5 DU17, to start a test phase based on alerts issued by the Catalina survey (CRTS, `http://crts.caltech.edu`). Four Italian telescopes have agreed on taking part to this test:

- 1.5m, Loiano, Italy (CU7 network)
- 1.82m reflector, Asiago, Italy
- robotic 80cm Ritchey-Chrétien (APT2), Serra la Nave, Catania, Sicily
- 72cm Ritchey-Chrétien, Teramo, Italy

Contacts are also being made with the REM robotic telescope in La Silla. Other telescopes of the CU7 network are involved in this test. See `http://www.ast.cam.ac.uk/ioa/research/gsawg/index.php/Verification_phase` for the complete list. Further arrangements and planning will be done during the Gaia Science Alerts workshop which will take place in Cambridge (UK) between 28th June and 1st July 2011.

2.3 CU6 report by C. Soubiran

2.3.1 News since GBOG M08

Two observing runs have been conducted, on CORALIE in November 2010, and on SOPHIE in January 2011.

A new manager for the CU6/CU8 database in Potsdam, Joris Gerssen at AIP, has been appointed. His task (maintenance and development of the database), has been added to the CU6 WBS.

Indrek Kolka from Tartu Observatory proposed to make some photometric follow-up and medium resolution spectroscopy ($\sim$10000) of the 34 NEP stars selected for CU6 validation purposes.

2.3.2 The status of RV standards for CU6

Figure 1 shows the number of new ground-based observations for the 1420 Gaia-RVS candidate reference stars performed as of February 2011. The goal is to obtain two pre-launch observations per star. Thus, before 2013, the figure should contain only light-colored points (no dark blue or red ones). As can be seen, this is almost the case for the northern hemisphere, and the northern programme is expected to be completed in 2011. For many stars in the South, still in red or dark blue, there are measurements available in the CORALIE archive. We have an agreement with Geneva Observatory to retrieve these measurements in order to avoid unnecessary observations.

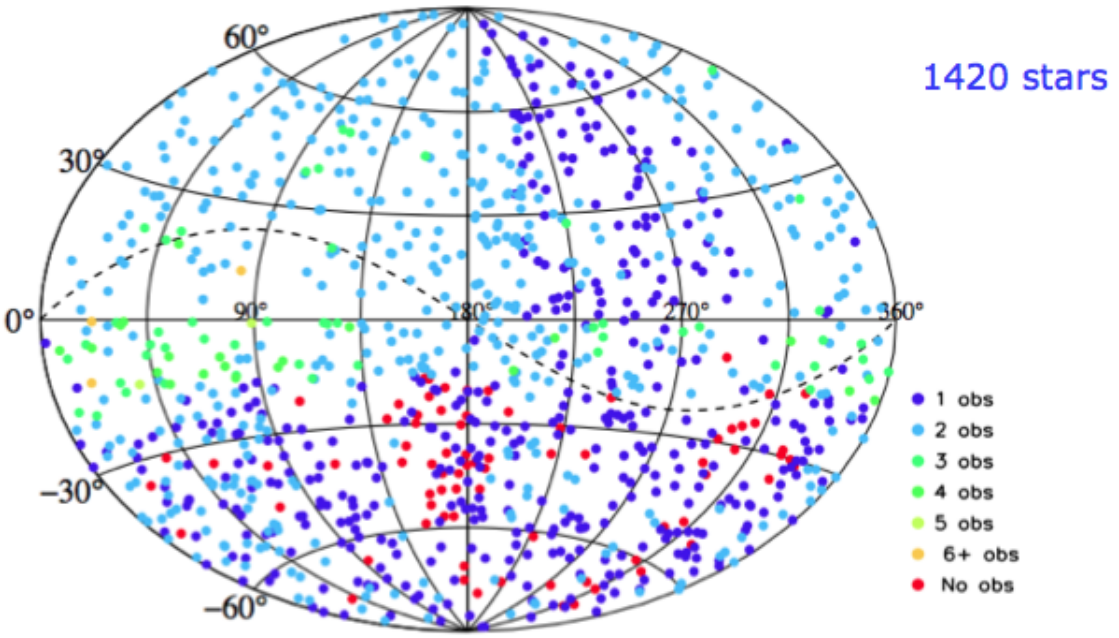

FIGURE 1: Number of new ground-based observations for the 1420 Gaia-RVS candidate reference stars performed as of February 2011.

A comparison of the measurements from different instruments with the Nidever et al. catalogue shows that the mean differences of RVs are between 25 and 124 m/s, with standard deviations between 36 and 48 m/s, for CORALIE (117 stars), HARPS (396 stars), NARVAL (41 stars), and SOPHIE (209 stars). A number of erroneous measurements with deviations of about -400 m/s have been identified in the Nidever et al. catalogue.

2.3.3 Next steps

The last northern pre-launch runs are scheduled for 2011, one run on SOPHIE in May, and two runs on CORALIE. Service mode observations on NARVAL continue for 34 Tycho 2 stars at the NEP, with two observations scheduled for each star. For the southern hemisphere, three more

runs are scheduled on CORALIE in 2012. Many RV measurements are still to be retrieved from the CORALIE archive. 40 stars at the SEP have been added in the CORALIE program.

The "Catalogue of RV standard stars for the Gaia RVS" should be published in 2012.

2.4 CU5–DU13 report by E. Pancino

The ground-based observations for the absolute flux calibration of Gaia are divided into two campaigns: the *main campaign*, dedicated to spectroscopy and absolute photometry, and the *auxiliary campaigns*, dedicated to the constancy monitoring of candidate spectrophotometric standard stars (SPSS) on short (1–2 h) and long (3 yr) term. We have currently obtained 324 observing nights since 2007 (on average, 38 per semester), mostly awarded in visitor mode. This large effort consists of proposal writing, observations summaries and preparation, carrying out the observing runs, backing up data and uploading them into our archive system.

The main campaigns are almost completed. We will carry out the (hopefully) last runs in May and June this year for a total of 25 visitor nights in Calar Alto (CAFOS@2.2m), San Pedro Martir (LaRuca@1.5m) and La Silla (EFOSC2@NTT). If these runs go well, we will only be dealing with relative photometry observations from the second half of 2011 onwards, with a minor effort on the Loiano and REM telescopes. This should free approximately 1 FTE or more, to dedicate to data processing.

The data pre-reductions are in good shape, considering our chronical lack of approximately 0.5–1.0 FTE, depending on the year, compared to our initial request of 5 FTE/yr. All the pre-reduction protocols are finalized: we have refined them, prepared semi-automated pipelines whenever possible, applied them to at least one run per telescope, and drafts of the related documents are ready and open to comments, either on our local Wiki-Bo pages or on SVN. We have reduced approximately 20–30% of the already secured data, but routine processing has started a few months ago and we should be able to recover most of the delay within the end of 2011.

The data analysis protocols, with the only exception of the short-term monitoring pipeline, have only been applied once in the testing phase. For relative photometry, we have in fact finalized the pipeline to produce short-term constancy monitoring lightcurves and to analyze them. This means that, even if the procedures are well known in the literature, we still have a lot of work to do to extract the best out of our data, and to be able to start analyzing the data in a semi-automatic mode.

Finally, the agreements with the ASDC (ASI Science Data Center) for the archival of our SPSS data are under works, we had the kick-off teleconference in January, where we layed the foundations of our requirements documents and agreed to prepare a memorandum of understanding.

2.5 CU4 report by W. Thuillot

2.5.1 Spectroscopic observations of asteroids as a support to the Gaia mission

This is a program of observations started in 2008. People involved are P. Tanga (PI), P. Bendjoya, A. Cellino , M. Delbo, F. Mignard, C. Ordenovic and L. Gallucio, all from OCA. The program continued on the TNG with the DoLoRes spectrometer. 24 hours of observations have been obtained in addition to the previous 16 hours. 32 targets (Main Belt Asteroids) of a total of 120 (5–10 per main classes) have been observed. The wavelength range of the new spectroscopic data covers the near UV to near IR, including the blue spectral range that traditionally has not been observed often. Moreover, the observations are performed near the quadrature phase, in order to be as close as possible to Gaia's geometric conditions. Current activities include building raw spectra (a database for Gaia optics response) and tests of the Gaia algorithms for reduction and taxonomy classification.

2.5.2 The Gaia-FUN-SSO

In CU4, DU459 (W. Thuillot) is in charge to set up the Gaia-FUN-SSO – the ground-based Gaia Follow-up Network for the Solar System Objects. The Gaia-FUN-SSO workshop mentioned at the last GBOG meeting was held in Paris from 29 November to 1 December 2010. The SOC consisted of W. Thuillot (France), P. Tanga (France), J.-E. Arlot (France), J. Berthier, (France), A. Cellino (Italy), D. Hestroffer (France), F. Mignard (France), R. Teixeira (Brazil), Zheng Hong Tang (China). The focus was on CU4-DU459 objectives. This first meeting marked the activation of the network and made participants be informed about the different instrumentations. Discussions included the goals, the methods, the needs of the network, and the data policy. There were 33 communications, mainly on the status of the Gaia project, a DPAC description, the role of the follow-up, specificities of SSO observations, and the organization of the Gaia-FUN-SSO. The programme can be found on `http://gaia-fun-sso.imcce.fr/Gaia-FUN-SSO-Programme.pdf`.

2.6 CU3 reports by M. Altmann and R. Smart

2.6.1 Ecliptic Poles Catalogue

Imaging For the SEP field, second epoch data have been obtained with WFI in Nov 2010 and Jan 2011 (delivery of data is pending). This concludes the imaging for the SEP. The first epoch data (11/2007 and 01/2009) are reduced. EPC v2.0 was released in Feb 2011, but recently replaced by a new release, EPC v2.1, because a major flaw in RA was discovered. **Do not use EPC2.0, destroy all copies of EPC2.0, use EPC2.1!** The catalogue contains B, V, R, I, and Gaia magnitudes for about 450 000 objects. For comparison, the DENIS Catalogue toward Magellanic Clouds (Cioni et al. 2000, A&AS 144, 235) contains I, J, K, and B, R from USNO-

A2.0 for about 5 800 stars, the 2MASS All-Sky Catalog of Point Sources (Cutri et al. 2003) contains J, H, K for about 10 500 stars; the Magellanic Clouds Photometric Survey (Zaritsky et al. 2004, AJ 128, 1606) contains U, B, V, I for about 216 000 stars in the SEP field. Figure 2 shows the color-magnitude diagram for the SEP data. More diagrams can be found in the EPC folder at the DPAC svn. For the majority of objects, the errors in V magnitude are below 0.2 for $V > 22$, below 0.1 for $20 < V < 22$, and below 0.03 for brighter magnitudes. Astrometric errors are between 0.01 and 0.04 arcsec, depending on magnitude. The reduction of the U-band data is pending.

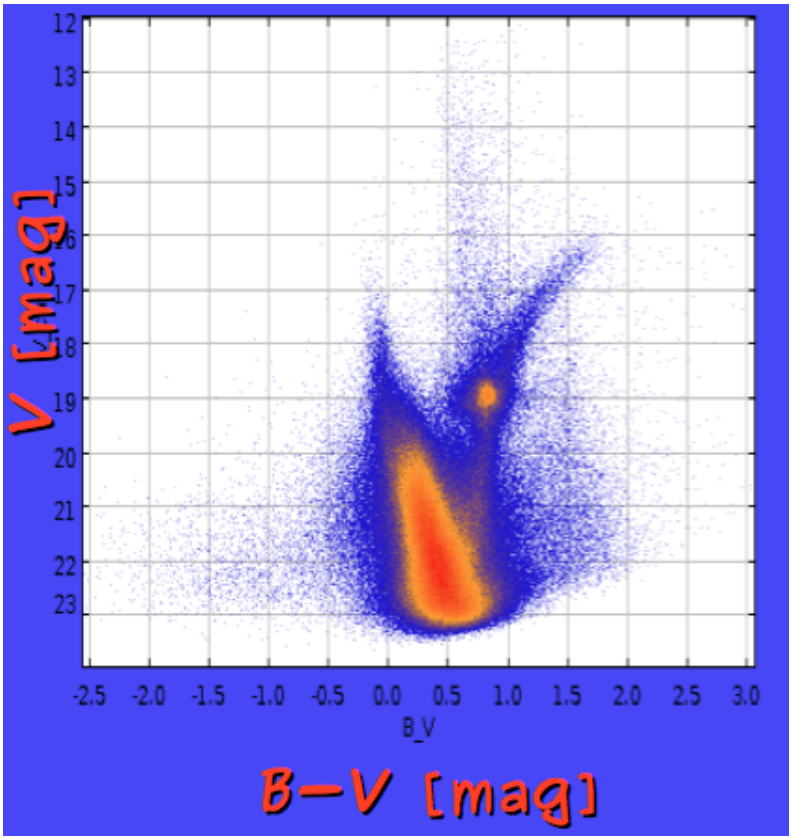

FIGURE 2: Color-magnitude diagram for stars in EPC2.1.

The imaging for the NEP field had already been completed in July 2010. The data are detrended, the final reduction is currently being done. The complete EPC imaging data should be released by end of 2011.

Spectroscopy For the SEP field, data for about 500 stars with varying S/N (about 100 good) has been taken in at ESO (using VLT+FLAMES+GIRAFFE-LR02,HR21+UVES-Red860) in period 84. 30 hours were allocated for period 86, and 60% of the observations were carried out between 10/2010 and 03/2011. A new and final proposal for period 88 was submitted.

If successful, the observations would be scheduled for 10/2011 to 03/2012. Several people are doing preliminary work on the reduction and analysis of the data. In order to work on the spectroscopic data in a coordinated way, and to teach spectroscopic reduction and analysis methods to members of the GBOG WG, a workshop will be held on this matter in Heidelberg, in the week of 27 June to 2 July 2011. The spectroscopic data will be released in a separate catalogue (since much less than 1% of the stars in the main EPC will have spectroscopy). The timeline for the release of this catalogue depends on progress with reduction and analysis.

The NEP field has no CU3 spectroscopic follow-up programme. Some spectroscopic NEP observations could be gathered from other CUs in a specific NEP catalogue. Indrek Kolka from Tartu Observatory (Estonia) has offered to contribute spectroscopic observations for NEP stars.

2.6.2 Ground Based Optical Tracking (GBOT) – activities since June

Communications and meetings The monthly telecons of the GBOT group continue. GBOT-related presentations were given at the Gaia-FUN-SSO meeting in Nov 2010, in Southampton (31 Jan 2011), and in Liverpool (2 Feb 2011) in order to raise awareness. Such presentations will become more and more important in the course of partner recruitment. A dedicated GBOT meeting was held in April 2011.

Observatory recruitment The aim is to operate with 4–6 partners worldwide. Contacts have been established with Liverpool Telescope (LT, La Palma), La Luz Observatory (Guanajuato, Mexico), Leopold Figl Observatory (Vienna, Austria), Faulkes Telescopes (Mt. Haleakala, Hawaii and Siding Spring, Australia), Hoher List Observatory (Bonn, Germany), Observatoire de Haute-Provence (OHP, France), MEO, Montreal. Contacts are planned with Geneva (1.37m telescope at La Silla) and CTIO. The problem remains that many suitable facilities are either facing closure (e.g. Hoher List) or have a rather insecure future (e.g. LT). We are also in contact with the groups working on photometric science alerts (CU5, CU7) and on asteroids (CU4) 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.

Observing tests Test observations of the Planck spacecraft have been performed with the Liverpool Telescope and reduced with the GBOT pipeline. A comparison of 90 observations during 50 minutes with calculated ephemerides from ESA show a mean offset in RA of 290 mas and in DEC of 40 mas, with a standard deviation of 35 mas. Further tests and test campaigns are ongoing.

Software development The astrometric analysis pipeline being developed by S. Bouquillon and F. Taris from the Obs. de Paris is about 60–70% complete, and is routinely used for ongoing

reductions (assuming detrended data). Once finished, the pipeline will be completely open and publicly available.

2.6.3 Initial Gaia Source List

The IGSL2 is delivered and hopefully being used. A discussion about X-match is ongoing. For the next IGSL version, it is planned to include the EPC, OGLE, and other catalogues.

2.6.4 QSO Catalogs

An article on modelling the photometric/astrometric submas variability has been published. Groups in Porto, Paris, and Rio are independently working on a morphology database. Double entries are being checked with better positions from recent catalogues.

3 Discussion topics

3.1 Photometric science alerts

Preliminary note: F. Mignard pointed out that in the context of GBOG-CU5, one should always refer to "photometric science alerts" (to be distinguished from others, e.g. "astrometric science alerts", which are considered in the Gaia-FUN-SSO organized by CU4-DU459), see Minutes of the twelfth DPACE meeting, RD-029.

As a reminder, the detailed plans for photometric science alerts are described in the Whitebook[1] and at the wiki of the Science Alerts Working Group[2]. Ground-based observations related to photometric science alerts are divided into *verification* and *follow-up* observations. The GBOG WG is only concerned with the *verification* observations, which were discussed during the meeting.

L. Wyrzykowski from CU5-DU17 presented the current status. A strong motivation for organizing a verification observing campaign within DPAC is that the science alerts will be the first Gaia data made public, and thus they have to be reliable. The current plan is that the Science Alerts Verification Phase (SAVP) will take place between day 90 and 180 after mission start. Thereafter, alerts will be made public. Currently there are no plans to do alerting on the Ecliptic Poles observations in Cycle 0. The verification observations will consist in photometric and spectroscopic follow-up to confirm and classify an alert. The alerts and follow-up data will be disseminated via SkyAlert.org, a system based at CalTech, which has proven to be very useful. The setup of this system for science alert verification is ongoing. The verification observations

[1] http://www.ast.cam.ac.uk/ioa/research/gsawg/images/7/7d/Postgsaw_wb.pdf
[2] http://www.ast.cam.ac.uk/ioa/research/gsawg/

will be carried out as a GBOG activity by volunteering telescopes.

Science alert targets are those which have at least 10 photometric Gaia detections by day 90, and in addition at least two detections between days 90 and 180. Figure 3 shows an example for the fraction of the sky to be observed during the photometric science alerts verification phase. The actual sky coverage will depend on the actual scanning law, which is not yet known.

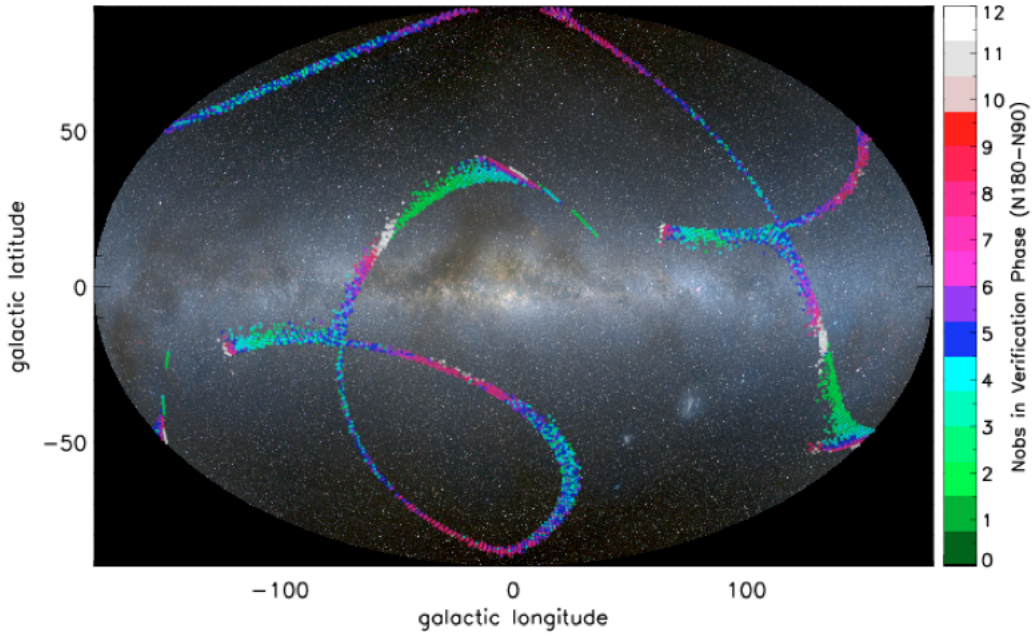

FIGURE 3: Indication for the fraction of the sky to be observed during the photometric science alerts verification phase. Colors indicate numbers of Gaia observations between days 90 and 180 for targets with at least 10 observations before day 90. The actual sky coverage will depend on the actual scanning law, which is not yet known.

Photometric science alerts will also be classified using Gaia BP/RP spectra. For verification purposes, this requires a pre-launch library of low-resolution spectra of transient sources. Such sources include supernovae, novae, dwarf novae, cataclysmic variables, Miras, blazars, Be stars and flares. Such a spectral library may be built up by a spectral follow-up of alerts from SkyAlert.org, mainly from the Catalina Real-Time Survey (`http://crts.caltech.edu`). Y. Frémat notes that for Be stars, a spectral library is being assembled by CU8. Observatory archives should also be queried for useful spectra.

The second Gaia Science Alerts workshop will be held in Cambridge between 29 June and 1 July 2011[3]. It will focus on alert verification and follow-up.

[3] `http://www.ast.cam.ac.uk/ioa/research/gsawg/index.php/Workshop2011:main`

3.2 Participation in Gaia Archive Preparation (GAP)

The GAP working Group has been set up to formulate the DPAC approach to the archive (CU9). We have one GBOG representative in GAP, G. Seabroke. ESA had published a call for Letters of Interest related to GAP[4]. We discussed a possible answer by the GBOG WG to the call. To begin with, there were some questions as to the purpose of the Letter of Interest, as this was not completely clear from the call text. F. Mignard made a clarification, after which all GBOG WG members agreed that a Letter of Interest should be sent. The main points were to express the importance of a public archive for auxiliary data, and that the GBOG WG would be willing to assist in the preparation of this part of the Gaia archive. After the meeting, E. Pancino wrote and circulated a draft for the letter. A revised version (3 pages) was sent to ESA on 14 April 2011. The core statement is the following:

> The GBOG WG therefore wishes to express the need of having some CU9 task dedicated to the publication of auxiliary data. Moreover, the GBOG WG contains representatives of all the groups which are currently dealing with observations, processing, documentation, interpretation, and storage of those data, so we believe we are the right people to make the auxiliary and calibration data available to the community.

4 Splinter meeting on SEP spectroscopic data

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

4.1 Status and next steps

The status report is included in the CU3 report by M. Altmann (see Section 2.6.1). Note that the positioning of the FLAMES observations is based on Version 1 of the EPC, i.e. object numbers and coordinates from EPCv1.1. Version 2 (EPCv2.1) contains more (accurate) photometry (B and V in addition to R and I), but also a new astrometric solution and a different identification system. Photometry will be important to estimate parameters for the stars in the spectroscopic programme. According to M. Altmann, it is possible to cross-match EPCv1.1 and EPCv2.1 by coordinates, using a search radius of 0.5 to 0.6 arcsec. As mentioned in Section 2.6.1, the Co-Is of the FLAMES proposals will meet in Heidelberg at the end of June, for a data analysis workshop. In advance of the workshop, the team will hold two telecons for preparation.

[4] http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=48463

4.2 First results from LR02 data

Y. Frémat presented his work on the LR02 data, which cover a wavelength interval of about 395 to 455 nm ($R = 6400$). The first step consists in removal of cosmic ray features and other artifacts by a σ-clipping algorithm in 1D. Future reductions should do the removal in 2D. Next, a classification of the observed spectra was done, using a simple grid of synthetic spectra, resulting in effective temperatures for all objects. The results depend somewhat on the initial radial velocity used, and better results are achieved with fixed RV. The distribution of $T_{\rm eff}$ gives about 90% of the stars at 3000–4000 K, and the remainder at 6000–8000 K. Normalization is problematic. Radial velocities were determined from the LR02 spectra using an optimized mask for $T_{\rm eff}$=3500 K, resulting in about 800 cross-correlation functions for about 400 stars (all stars were observed twice). The resulting RV histogram agrees with the one determined from HR21 observations by M. Altmann (which used one observation per star), except for the relative numbers of objects in the Milky Way and LMC peaks. Thus, a cross-correlation of targets observed with both gratings needs to be done, to allow a direct comparison of RVs from the two gratings, star-by-star. Further steps are to identify binary stars and remove them from the statistics, and to improve the synthetic spectrum grids and continue with spectrum fitting for parameter classification (with fixed RV).

4.3 Coordination with RAVE

G. Seabroke (as a member of the RAVE collaboration) presented the status of past and planned Radial Velocity Experiment (RAVE) observations of stars in the SEP field. The RAVE input catalogue ($9< I <12$) contains 134 stars in the southern EPC region (selected from the DENIS survey), of which 18 have been observed (23 spectra). The RAVE RV distribution for these stars shows a peak at RV=0, in agreement with the FLAMES HR21 and LR02 preliminary results. Most of the RAVE SEP RVs have internal errors $\leq$2 km/s, while nine out of the 23 spectra have internal RV errors $\leq$1 km/s (in agreement with the error distribution of all of the more than 300 000 RAVE spectra). The external errors seem to be less or equal to the internal errors (according to the RAVE DR3 paper, Siebert et al. 2011, accepted). Thus, there are 116 stars in the SEP field that RAVE could still observe (all brighter than I=12, or $G \approx$12.5). For 45 of these stars the RV errors are expected to be below 1 km/s. According to the RAVE stellar parameter estimation the RAVE SEP stars contain an equal number of dwarf and giant stars. In conclusion, the most accurate RAVE RVs could be used to supplement the SEP catalogue, and/or provide an external verification of the SEP RVs. The outcome of a short discussion was that the RAVE RVs would provide useful, but not critical complementary information. It was decided that G. Seabroke should ask for an increase of the priority of RAVE targets in the SEP field.

Feedback from D. Katz and F. Crifo on these results (email 20/4/11): "ground-based RV-standard program includes NEP: 34 stars SEP: 40 stars. These are 'bright' stars $6 \leq V_t \leq 11.5$. *The intent is to use these stars for calibrating the instrument during the first months of*

the mission." Therefore, there is no need to supplement the SEP catalogue with (bright) RAVE observations because the bright end of SEP catalogue is not required to calibrate RVS.

5 Actions and next meeting

5.1 Actions for CU representatives

- E. Pancino – write and send Letter of Interest for GAP to ESA – done;
- U. Heiter – prepare minutes – done;
- All GBOG reps – review and revise GBOG M09 minutes – done;
- G. Clementini – send identification of the SEP Cepheids to Martin and add them to the lists on the CU3 EPC Wiki page (see link on GBOG Wiki page) – done;
- M. Altmann – continue organizing the Heidelberg workshop;
- All GBOG reps attending the Heidelberg workshop – prepare for the spectroscopic analysis of SEP data;
- G. Seabroke – interact with the RAVE staff to increase the priority of RAVE targets in the SEP field. *Not required due to feedback received after meeting.*

5.2 Next meeting

The next meeting will be a face-to-face meeting, taking place in Brussels in October 2011.