Gaia: at the frontiers of astrometry
ELSA conference

7 - 11 June 2010

Invited talks: 20 minutes + questions
Contributed talks: 12 minutes + questions

Monday 7 June

9:00 – 9:15 **Welcome**

9:15 – 10:30 **ELSA and Gaia: context and status**

- ELSA and Gaia: Four years of fruitful European collaboration. L. Lindegren (20 min)
- General status of the mission and expected performance. T. Prusti (20 min)
- The Gaia satellite: presentation & status of development. P. Charvet (20 min)

Coffee break

11:00 – 12:30 **Modelling Gaia**

- Gaia data simulations: a powerful tool to prepare for scientific exploitation. X. Luri & C. Babusiaux (20 min)
- Testing instrument capabilities from simulations. D. Gardiol (20 min)
- Long term analysis for the BAM device. D. Bonino & D. Gardiol (12 min)
- Modelling the attitude: lessons learnt from Hipparcos. F. van Leeuwen (20 min)

Lunch

14:00 – 15:45 **Modelling Gaia (cont.). Detectors and radiations**

- Modelling the attitude of the Gaia satellite. D. Risquez (20 min)
- Radiation effects on Gaia CCDs. T. Prod'homme (20 min)
- Native and irradiated Charge Transfer Inefficiency characterization. J.F. Pasquier (20 min)
- Implementation of models for Charge Transfer Inefficiency (CTI) in the Gaia pixel-level data simulator. M. Weiler & C. Babusiaux (20 min)

Coffee break

16:15 – 17:30

Detectors (cont.)

- Next generation of light detectors in Astronomy. R. Kohley (20 min)

Gaia data processing: hardware and network side

- Hardware and networks for Gaia data processing. W. O'Mullane et al. (20 min)
- The CNES role in the GAIA data processing. X. Passot & O. La Marle (12 min)

18:00 **Welcome drink**

19:15 **Dinner with dessert talk**:

- The Depth of Heavens: belief and knowledge during 2500 years (E. Høg)

Tuesday 8 June

9:00 – 10:40

Processing massive data flows

- Processing massive datasets in genomics. F. Artiguenave (20 min)
- Gaia data analysis and mutual dependencies between the three data flows. F. Mignard (20 min)
- Java-based communication in a High Performance Computing environment. A. Fries (20 min)

Gaia astrometry

- The astrometric solution of Gaia: A hard problem. L. Lindegren (20 min)

Coffee break

11:10 – 12:40 **Gaia astrometry (cont.)**

- Monitoring the quality of the astrometric solution. A. Bombrun (20 min)
- Characterizing the astrometric errors in the Gaia catalogue. B. Holl et al.(20 min)
- News on Seeking Gaia's Astrometric Core Solution with AGIS. U. Lammers & L. Lindegren (12 min)
- Global Sphere Reconstruction in the Astrometric Verification Unit. U. Abbas (20 min)

Lunch

14:15 - 15:40

Space astrometry: from milli- to micro-arcsec astrometry

- Nano-JASMINE: use of AGIS for the next astrometric satellite. Y. Yamada (20 min)
- Space Interferometry Mission (SIM)-Lite Status. M. Shao et al. (12 min)
- The Joint Milli-Arcsecond Pathfinder Mission. R. Gaume et al. (12 min)

Gaia photometry

- Gaia photometry (G and BP/RP): methods, performance and problems. C. Jordi et al. (20 min)

Coffee break

16:15 – 18:00 **Gaia photometry (cont.) and variability analysis**

- Gaia photometry calibration and comparison to ground-based systems. C. Cacciari (20 min)
- The variable Universe through Gaia's eyes. L. Eyer et al. (20 min)
- Study of short period variables and small amplitude periodic variables. M. Varadi & L. Eyer (20 min)
- Real-time classification of astronomical transients. A. Mahabal (20 min)

Wednesday 9 June

9:00 - 10:40 **Gaia spectroscopy and stellar parameter determination**

- The Gaia spectroscopic instrument (RVS): a technical challenge. M. Cropper & D. Katz (20 min)
- Gaia spectroscopy: methods, performances and scientific returns. D. Katz et al. (20 min)
- Ground-based RVS standard stars. G. Jasniewicz et al. (20 min)
- The Catalogue Gaia and the optical-IR interferometry of the future. F. Thévenin (20 min)

Coffee break

11:10 – 12:30 **Ground-based spectroscopy**

- Hunting for stellar streams in the solar neighbourhood with the SDSS and GSC-II kinematic survey. P. re Fiorentin (20 min)
- Tests of MATISSE on large spectral datasets from the ESO archive. C.C. Worley et al. (12 min)
- Prospects for wide field multi-object spectroscopic instrumentation. K. Freeman (20 min)
- GYES, a multifibre spectrograph for the CFHT, and the European context. P. Bonifacio et al. (15 min)

Lunch

14:00 – 15:30 **Solar system objects**

- New perspectives in Solar System science: Gaia in the 2015 context. P. Tanga & F. Mignard (20 min)
- Inverse methods for asteroid orbit computation. D. Oszkiewicz et al. (20 min)
- Complementary ground-based observations for Solar System applications. W. Thuillot & D. Hestroffer (20 min)

Coffee break

Visit: Department of the definition of the atomic time, BIPM (20 people max)

19:00: buses leave for the gala dinner

Thursday 10 June

9:30 – 10:45 **Stars: basic elements of the Universe (1)**

- New perspectives in stellar physics: Gaia in the 2015 context. Y. Lebreton (20 min)
- Perspectives for determining stellar surface parameters. H. Ludwig (20 min)
- Stellar rotation and the age of star determination. L. Santoro (20 min)

Coffee break

11:15 – 12:30 **Stars: basic elements of the Universe (2)**

- Limits in astrometric accuracy induced by surface brightness asymmetries. E. Pasquato et al. (20 min)
- Variable stars, powerful tools for galactic structure ad evolution. G. Clementini (20 min)
- Astrometry and Exoplanets: the Gaia Era, and Beyond. A. Sozzetti (20 min)

Lunch

14:00 – 15:30 **The Galaxy and its neighbours (1)**

- The Galaxy with Large Surveys: Successes and Future Analysis Challenges. M. Juric (20 min)
- Prospect for dynamical modelling of the Galaxy: Gaia in the 2015 context. D. Pfenniger (20 min)
- The chemical evolution of the Galactic thick and thin disks. C. Chiappini (20 min)
- A New Mechanism for Galactic Disc Mixing: Implications to the Milky Way Evolution. Minchev I. (12 min)

Coffee break

16:00 – 17:30 **The Galaxy and its neighbours (2)**

- Preparing the Besancon Galaxy Model for the comparison with Gaia data. M.A. Czekaj et al. (20 min)
- Can we use the nearby velocity distribution to constrain the properties of the bar and the spiral arms of the MW? Gaia capabilities. T. Antoja et al. (12 min)
- Gaia: new perspectives in understanding the galactic bulge. C. Babusiaux (20 min)
- Dynamical inference from a kinematic snapshot. J. Bovy & D. Hogg (12 min)

Friday 11 June

9:00 – 10:40 **The Galaxy and outside**

- New perspectives in understanding the galactic halo. A. Helmi (20 min)
- Modelling stellar populations in galaxies resolved in stars by Gaia. M. Belcheva et al. (20 min)
- Synthetic and Observed Spectra of Stars and Stellar Populations as Templates for Gaia. T. Saguner et al. (20 min)
- The unresolved galaxies with Gaia. M. Kontizas et al. (20 min)

Coffee break

11:10 – 12:45 **Gaia and beyond**

- QSO survey and reference frame with Gaia. P. Charlot (20 min)
- How I expect to access the GAIA catalogue. D. Hogg (20 min)
- Gaia outreach features available to the scientific community. C. Blasco (15 min)
- Concluding remarks. A. Brown (20 min)

Lunch

16:00 – 17:30

Visit of Paris Observatory: the historical building, Bâtiment Perrault, by Dr Suzanne Débarbat