April 10th. , 2019

Dear A1 commission member,

Following are four announcements concerning our commission.

Best regards,

Jean Souchay

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1. Astrometry of the past sky : the NAROO project at Paris observatory

Last astrometric techniques now use GAIA reference star catalogue due to its improvements in terms of positioning accuracy. However, a large set of observations were realized years ago, and reduced with old catalogues with a lower precision and different reference systems.

Observations were made for different purposes: constructing reference frames, understanding galactic dynamics, modeling solar system object motions, … All these tasks were made with the accuracy of the epoch, which decreases as far we are going in the past. In spite of this poor accuracy, some of these observations are still in use, mainly to ensure a sufficient time basis for understanding and modeling the evolution of moving objects. GAIA reference star catalogue allows us to perform a new astrometric reduction of these old observations, i.e. observing in the past with today accuracy. Old observations are observations realized and reduced before the availability of GAIA reference star catalogue. Imaging observations were realized with CCD's from now to the 1990's, and with photographic plates before.

The NAROO project (New Astrometric Reduction of Old Observations) has been developed at Paris observatory to digitize, analyze and reduce old observations. A brand-new sub micrometric digitizing machine is now available at Paris observatory for this purpose, and using GAIA reference star catalogue, we intent to:

- test the proper motion of stars modeled in the GAIA reference star catalogue for modeling the galactic dynamics.
- make pre-discoveries of many comets and asteroids (NEO, TNO) on old photographic plates at a time they were not known but available on observations among stars.
- observe the planets and natural satellites with the best accuracy on a large time span, allowing to quantify cumulative effects, signature of dissipation of energy as tides.

transmitted by J.E. Arlot and V. Robert (IMCCE/Paris observatory)

2. Astrometry at EWASS, Lyon, June 24-26, 2019

A special session of the EWASS (European Week of Astronomy and Space Science) entitled "Recovering an old sky : archive data at full accuracy by Gaia calibrations" will be held in Lyon, France on 24 – 28 June 2019. See: https://eas.unige.ch/EWASS2019/session.jsp?id=SS1

3. URAT results and next "first light" of the Deep South telescope

The USNO Robotic Astrometric Telescope (URAT) observing program terminated in June 2018. The last program of this 20cm aperture astrograph was focused on bright stars with a combination of objective grating and neutral density filter. Although a total of 13 billion observations (individual epoch star positions) were obtained over 2.5 years at Cerro Tololo Interamerican Observatory (CTIO), most of the data are now superseded by Gaia.

A catalog of most stars in the -1.5 to 7.0 magnitude range and south of Dec = -25 was produced with mean positions, parallaxes and proper motions derived only from URAT data plus the Hipparcos 1991.25 epoch positions. Data validation and external comparisons are in progress.

End of March 2019 the US Naval Observatory deployed a new 1-meter Deep South Telescope (DST) at CTIO. The PlaneWave PW1000 telescope was installed and operational within 1 day and 1 night. We are awaiting now the delivery of our 4k camera from Princeton Instruments and routine robotic operation is expected to begin in about 2 months. The first program for DST is high cadence observations of extragalactic reference frame sources in collaboration with Paris Observatory to investigate radio-optical position offsets seen from Gaia DR2 and VLBI data.

Transmitted by N. Zacharias

4. Colloquium "Journées" in October 7-8-9, 2019, deadline June 30th.

A colloquium entitled "***Journées 2019 : Astrometry, Earth Rotation and Reference Systems in the Gaia era***" will be held at Paris Observatory on October 7th, 8th and 9th, 2019. This symposium will be organized jointly by IAU commissions A1 and A2 (Rotation of the Earth). A large place will be devoted to our A1 commission topics. It will also be the occasion to celebrate the 100th birthday of commission A2 (formerly named commission 19).

Information and registration

People interested to participate are invited to register before June 30th. at:

https://syrte.obspm.fr/astro/journees2019