IVS2016

Sunday 13 March 2016 - Saturday 19 March 2016

Conference Scientific Programme

1: Advances in VGOS Stations and Technology

Conveners: Gino Tuccari and Evgeny Nosov. VGOS is the new VLBI network, evolving under the auspices of the IVS, that is expected to provide unprecedented accuracies for station positions (1 mm) and station velocities (0.1 mm/yr), continuous observational time series for station positions and Earth orientation parameters, and fast turnaround time from observation to geodetic results. These features will foster new science and applications. In this session we will concentrate on the evolution of the network and the implementation of new observation techniques as well as technological developments. Network topics may include, but are not limited to, reports on new sites, strategies to transition from the current network to the VGOS network, new schedule generation algorithms, and simulations of expected performance. The technology developments for VGOS may cover broadband receivers, digital backends, recording systems, e-VLBI, software correlation, RFI excision techniques, and automation of operations, among others.

2: VGOS Strategies and Expected Results

Conveners: Bill Petrachenko and Arthur Niell. The VGOS network of next-generation VLBI antennas continues to grow. The new network is expected to provide unprecedented accuracies for station positions (1 mm) and station velocities (0.1 mm/yr), continuous observational time series for station positions and Earth orientation parameters, and fast turnaround time from observation to geodetic results, fostering new science and applications. This session will concentrate on the observing strategies to be implemented for VGOS and on what results could be expected.

3: Stations, Correlators, and Operations Centers

Conveners: Ed Himwich and Fengchun Shu. This session focuses on the present and near-term future activities at VLBI networks, stations and correlators. Presentations about issues that relate to improving VLBI data quality in general are solicited. Also welcome are submissions concerning the GGOS project's contributions to local surveys to determine the spatial vectors from the radio telescopes to co-located geodetic instruments. Legacy station status reports should be submitted to this session.

4: Data Structures and Analysis Strategies in the VGOS Era

Conveners: John Gipson and Ludwig Combrinck. IVS data are collected at the IVS Data Centers and analyzed by the IVS Analysis Centers and researchers located at universities and research institutions. In this session, we call for contributions related to the IVS Data and Analysis Centers' activities and plans for the future. We solicit contributions from the IVS Data Centers concerning data flow, services for users, reliability and timeliness of data exchange between the primary Data Centers. Analysis Centers of the IVS are invited to contribute papers related to their current activities, development and comparison of models and software used for the data analysis, and assessment of the errors and accuracy of VLBI results. We expect VLBI data to increase dramatically (by at least a factor of 10, and maybe a factor of 100) in the near future because of VGOS. As a result of this, we are especially interested in the planned strategies of Data and Analysis Centers related to automation of data collection, processing and analysis. Presentations related to the comparison and development of analysis strategies are welcomed, as are changes and new strategies that need to be considered due to VGOS and existing or new user requirements.

5: Geodetic and Astrometric VLBI Results

Conveners: Johannes Böhm and Stas Shabala. The analysis of VLBI observations produces time series, long-term average positions and rates, and values of physical parameters. We seek contributions in topics such as the use of VLBI results in modeling geophysical fluids from the atmosphere to the core, improvement of the precession-nutation model, investigation of the Earth rotation variations at different time scales (from minutes to decades), inner and outer core nutations, refinement of the terrestrial and celestial reference frames, detection and interpretation of the motions of specific sites and radio sources, atmospheric studies (both the troposphere and the ionosphere), relativity tests, and other scientific uses of geodetic and astrometric VLBI data and their impact on astrophysics and cosmology. Also important topics are the comparison, validation, and combination of VLBI with other space geodetic techniques, and the integration of the techniques within the framework of IAG's Global Geodetic Observing System (GGOS). Special attention is expected to be given to the assessment of the actual accuracy and systematic errors of the VLBI-derived results, and, in particular, to the errors caused by deficiencies of the models used in data processing.

6: VLBI Observations of Space Vehicles

Conveners: Vincenza Tornatore and Rüdiger Haas. In this session we seek contributions for ideas for new uses of the VLBI technique, especially concepts which leverage interactions with other techniques. For example, tying VLBI to optical astrometry from the Gaia mission, data combinations with GNSS and other space geodetic techniques so as to strengthen solutions and expose systematic errors. VLBI is the only space-geodetic technique that precisely measures positions of distant radio sources at radio frequencies. It is the current underlying technique for the realization of the ICRF. With the recent start of the GAIA mission, a competitive realization at the optical wavelengths will be available in the next years, which has to be linked to the ICRF in the radio domain carefully. The ITRF is based on data from all four space-geodetic techniques (GNSS, SLR, DORIS, and VLBI). The somewhat independent generation of the two frames (CRF and TRF) may result in inconsistencies in the CRF-TRF-system, which may also impact the interlinking Earth orientation parameters (EOP). In this session we seek contributions about new ideas for the VLBI technique and its interrelation with other techniques. The new concepts include VLBI observations of satellites (e.g., GNSS satellites or dedicated co-location satellites) and improved combination techniques. New horizons for VLBI include any prosperous employment of the VLBI technique, as e.g. recent developments in VLBI spacecraft tracking and its use for planetary explorations. We invite talks on ideas for using the VLBI technique on sources besides quasars: pulsars, inter-planetary spacecraft, GNSS satellites etc. We encourage contributions on VLBI at non-standard frequencies such as K-, Ka, and Q and W-bands and their potential benefits in studies of source structure and core shift.