Analysis Center of Saint Petersburg University

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Abstract This report briefly summarizes the activities of the Analysis Center of Saint Petersburg University during 2021 and 2022. The current status, as well as our future plans, are described.

1 General Information

The Analysis Center of Saint Petersburg University (SPU AC) was established at the Sobolev Astronomical Institute of the SPb University in 1998. The main activity of the SPU AC for the International VLBI Service before 2007 consisted of routine processing of 24-hour and one-hour observational sessions for obtaining Earth Orientation Parameters (EOP) and rapid UT1–UTC values, respectively. In 2008 we began submitting the results of 24-hour session processing. In 2021, Kalman filter processing was discontinued and we are currently in the process of upgrading the software and reprocessing our EOP series.

2 Staff

The assistant professor of Saint Petersburg University, Dmitriy Trofimov, was in charge of the routine processing of the VLBI observations. General coordination and support for the activities of the SPU AC at the Astronomical Institute were performed by the head of the chair of astronomy Sergey Petrov.

Sobolev Astronomical Institute of Saint Petersburg University

AI SPbU Analysis Center

IVS 2021+2022 Biennial Report

3 Current Status and Activities

Until December 2020, we processed 24-hour sessions in the OCCAM software version 6_2 [1] using the Kalman filtering method. Two series of EOP were supported. We planned to start a new series, based on a new catalog of radio sources, obtained by Kalman filtering. However, in the process of preparation, we decided to stop processing with the Kalman filtering method, switch to OCCAM version 6_3, and obtain a new series via the least-squares collocation method. At the moment, the existing observations from 1989 to 2022 are being reprocessed based on the least-squares collocation. We plan to complete it during 2023, after which we regularly update the new series.

Our experience and the equipment of the Analysis Center was used for giving lectures and practical work on the basics of radio interferometry to university students. As part of these workshops, the EOP were determined by the Kalman filtering method; this work is described in our old manual [2]. The next step is devoted to determining the coordinates of VLBI stations using the least-squares collocation method. In 2022, a manual on this work was prepared and we plan to publish it in 2023.

4 Future Plans

We plan to complete the processing of the series obtained by the least-squares collocation method, then submit the series on the IVS databases and start its regular addition. We are planning to publish our manual on determining the coordinates of VLBI stations using the OCCAM software. Lastly, we plan to increase the

amount of work performed by students in the framework of a special workshop.

References

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2. V. Vityazev, I. Guseva, V. Kiyaev, M. Mishchenko, O. Titov, A. Tsvetkov. Celestial and Terrestrial Coordinates (In Russian), Manual on Astrometry, p. 301, SPb University, 2011.