

Time Metrology: Secondment Opportunities at the BIPM

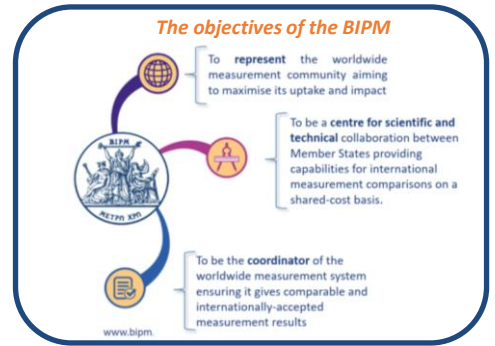
Helping the development of new time transfer methods and their optimal use to improve the world-wide time scale UTC.

The International Bureau of Weights and Measures (BIPM) is an international organization established by the Metre Convention, through which Member States act together on matters related to measurement science and measurement standards.

The BIPM has a number of vacancies for short-term secondments in the Time Department. The secondments consists of:

- Working with BIPM staff to develop new methods and techniques for improving the quality of the international time reference UTC and its rapid realization UTCr, to support the national time laboratories, and the needs of time and frequency metrology at the international level.

These are opportunities for career development, working with scientists from the BIPM and colleagues from national metrology institutes, helping to deliver the BIPM Work Programme, and contributing to the international measurement system that underpins the need of synchronization and precise time and frequency comparison for scientific and industrial applications.



About the Time Department

The Time Department computes and disseminates the international reference time scale Coordinated Universal Time (UTC), and provides traceability to the International System of Units (SI) to local realizations of UTC maintained in national institutes. For this work, the Time Department collaborates with about 80 Time laboratories world-wide, develops algorithms and specific software and has a laboratory appropriately equipped for the calibration of time transfer equipment in the participating institutes. It has a staff of seven scientists and specialist technicians.

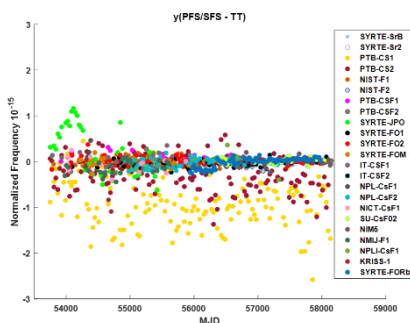


Working on secondment at the BIPM

The BIPM offers a unique environment for a secondment. It is located in Sèvres, on the outskirts of Paris (France) and has an international staff of about 75. There is a wide range of accommodation available nearby, including furnished apartments. There is an excellent public transport network to central Paris and the international airports are in easy reach.

Terms and conditions

Applications are welcome from employees of a national measurement institute, a designated institute or a relevant international organization. You would not be employed by the BIPM and would remain an employee of your institute. The BIPM will normally pay an allowance to cover your additional living expenses. Help will be given in finding local accommodation for the duration of the secondment.



Experience needed

The experience needed depends on the project.
A good level of English or French (spoken and written) is essential.



▪ **Secondments –**

Index	Aim	Project	Duration*	Qualifications / experience needed
T-S1	Optimal use of GNSS in UTC time transfer	Testing whether and how new GNSS or multi-GNSS techniques could improve upon or complement the currently used GPS PPP technique.	6- 12 months	Experience in GNSS processing, especially for time/frequency uses. Experience with different software for GNSS PPP analysis is a plus.
T-S2	Improvement of the IPPP technique and its use for frequency comparisons	Optimize the current implementation of Integer ambiguity PPP with GPS and Galileo products. Investigate other implementations or other types of products for IPPP. Apply IPPP to compare frequency standards with past or new data.	6- 12 months	Experience in GNSS processing, especially with integer ambiguity resolution. Experience with python is a plus.
T-S3	Use of primary and secondary frequency standards in TAI and TT(BIPM)	Studying possible improvements in algorithms or for practical use of present algorithm.	6 month	Experience in time scale algorithm and software development
T-S3	Improvement of the algorithm for the calculation of the UTC time scale	Testing application of the Kalman Filter to UTC generation to reduce the impact of time link noise.	6 -12 month	Experience in algorithm development and knowledge of the Kalman filter technique
T-S4	Improvement of the time link performance in UTC calculation	Investigating the introduction of redundant time links in the computation of UTC	6- 12 month	Experience in algorithm development and time transfer analysis
T-S5	Automatic detection of time steps and outliers in data input of UTC and UTCr calculation	Studying possible improvement of automatic data treatment for UTC and UTCr generation	6 month	Experience in algorithm and software development

**The duration of the projects is flexible, to meet your requirements*

▪ **How to apply**

Please contact the Department Director, Dr Patrizia Tavella ([patrizia.tavella AT bipm.org](mailto:patrizia.tavella@bipm.org)) to discuss the project and confirm whether the secondment opportunity is still available. If you decide you would like to go ahead, please forward a copy of your CV so that the BIPM can confirm that the project would be suitable. The BIPM will then send a copy of a Secondment Contract which should be signed by the authorized person at your organization.

If the secondment opportunity is no longer available or the project is not suitable, the BIPM would be pleased to discuss opportunities for a secondment in the future.

