

## Physical Metrology: Secondment opportunities at the BIPM

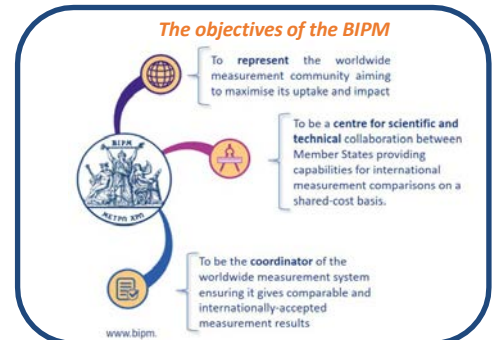
*Helping the development of new measurement capabilities for electrical and mass metrology to underpin uniform measurements worldwide*

**Bureau**  
International des  
**Poids et**  
**Mesures**

The International Bureau for 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 Physical Metrology Department. The secondments consist of working with BIPM staff to develop new methods and techniques for improving and extending the services the department provides in the fields of electrical and mass metrology.

These are opportunities for career development, which involve 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 worldwide uniform measurements in the fields of electricity and mass.

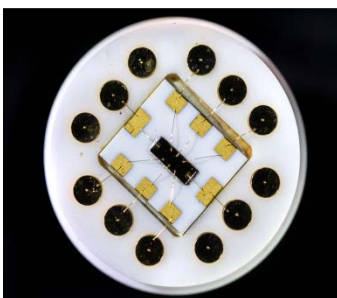


### ▪ About the Physical Metrology Department

In the field of electricity, the department's mission is to ensure that NMIs have continued access to means of comparing or calibrating their national primary standards with the lowest possible uncertainty. For these purposes, the department develops and maintains international reference facilities: transportable Josephson voltage standard, transportable quantum Hall resistance standard, calculable capacitor and associated measurement systems. In the field of mass the department provides traceability to the international prototype of the kilogram and will play an important role in ensuring the worldwide uniformity of dissemination of the kilogram after the redefinition of the kilogram.

### ▪ 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 within 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 – 2018/2019**

Index	Aim	Project	Duration*	Qualifications / experience needed
PMD-S1	Development of a primary standard of impedance	Development of the ac quantum Hall effect into an operational primary standard of impedance, to reduce the uncertainty of the realization of the farad.	6-12 months Starting date: 2019	Experience in using the quantum Hall effect for resistance metrology or in ac bridges
PMD-S2	Development of a calculable capacitor as a primary standard for capacitance	Finalization of the development of the BIPM calculable capacitor and related measurement systems and characterization of the instrument. Verification of $R_K = h/e^2$ .	6-12 months	Experience in calculable capacitors, ideally also in optics or interferometry
PMD-S3	Development of a future comparison protocol for ac Josephson voltage standards	Extension of the present on-site comparison of dc JVS to ac. Determination of the optimal measurement scheme to compare the BIPM ac PJVS (of NIST design) with that of an NMI.	6-12 months Starting date: around October 2019	Experience in using ac PJVSs and the differential sampling technique
PMD-S4	Improving the BIPM Kibble balance	Design, modelling and characterization of a mechanism which would be used as a precision guiding stage in the moving phase and as a force comparator in the weighing phase.	6-12 months Starting date: last quarter 2018 – early 2019	Mechanical engineer with experience in mechanical design studies in the context of a complex metrological experiment, ideally a Kibble balance.

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

▪ **How to apply**

Please contact the Department Director, Dr Michael Stock ([mstock@bipm.org](mailto:mstock@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.

