

EMPIR Work Programme

Call Scope – Fundamental metrology (2020)



Document: P-PRG-GUI-070
Approved: EMPIR Committee

Version: 1.0
2019-11-20

Research at the frontiers of metrology is critical to major advances in science, and vice-versa, and the take-up of excellent science from outside the National Metrology Institutes and Designated Institutes (NMIs and DIs) is a key element in the long-term development of metrological capabilities.

The call scope of TP fundamental scientific metrology:

- encourages excellent science, exploring new techniques or methods for metrology and novel primary measurement standards, and
- fosters collaboration between the best scientists in Europe and beyond, whilst exploiting the unique capabilities of the NMIs and DIs.

The call on fundamental scientific metrology does not predefine specific technical topics. However, it is expected that the R&D will include high-risk research proposals on topics such as

- Novel approaches to overcome noise limits and reduce the invasiveness of measurements.
- Determination of fundamental constants.
- Fundamental metrology on quantum systems.
- Basic research on the interaction between radiation and matter, on novel materials, and on new material structures with revolutionary properties.
- Generic theoretical and mathematical methods relevant for metrology.
- Underpinning interdisciplinary metrology between different disciplines – physical, chemical, biological.

The prioritisation and selection of Potential Research Topics will be based on scientific excellence.

With respect to quantum effects EURAMET wishes to focus on the exploration of fundamental phenomena that may be suitable for the development of primary measurement standards. This is underpinned by the recent redefinition of the SI base units, sometimes even called the “Quantum SI”, that allows for the development of primary measurement standards based on quantum effects with unprecedented accuracy. Projects funded under EMPIR shall strategically complement projects funded under other national and European funding schemes such as through the Quantum Flagship Programme.

The involvement of scientific excellence from research institutions outside the NMIs and DIs, and the user community such as industry, and standardisation and regulatory bodies, as appropriate, is strongly encouraged. Proposals will be preferred which aim at the development of a joint, sustainable, and coordinated European landscape of metrology capabilities.