PHYSICAL METROLOGY - MASS

The objective of the BIPM mass laboratory is to **ensure consistent mass measurements** within the BIPM's Member States. It achieves this by organizing measurement comparisons amongst National Metrology Institutes which realize the kilogram and by providing mass calibrations to those NMIs which do not realize the kilogram.

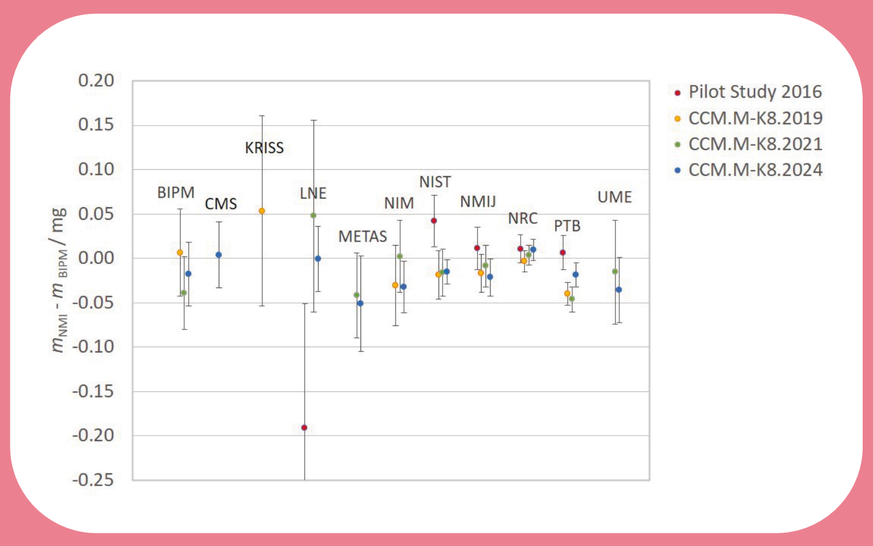
IMPACT

Calibrations traceable to the kilogram, offered by the BIPM, keep mass measurements consistent across NMIs world-wide. Key comparisons between kilogram realizations check the level of agreement and provide information for the calculation of the CCM's "consensus value".

KEY ACHIEVEMENTS SINCE 2022

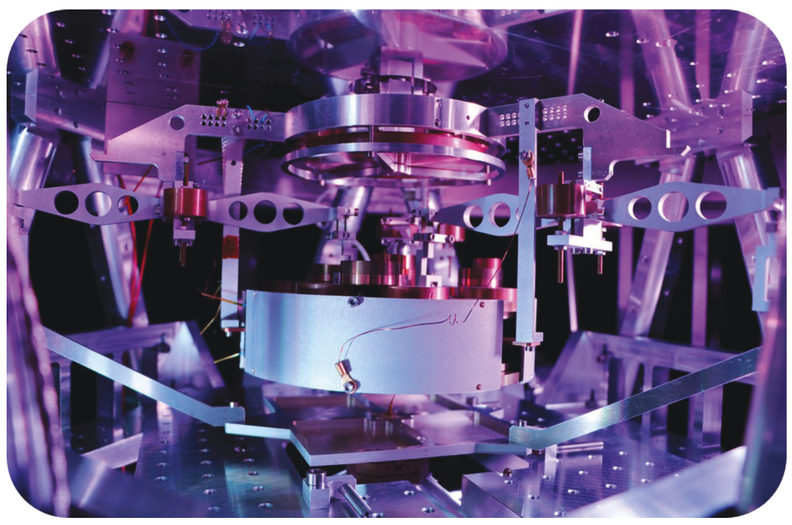
International comparison of kilogram realizations

- The BIPM coordinates the **series of international comparisons of kilogram realizations** (CCM.M-K8) to ensure uniform dissemination throughout the Member States.
- Since 2021 these comparisons determine the **"consensus value"** to disseminate the kilogram until sufficient agreement is achieved between independent realization methods.



Credit: BIPM

Development of the BIPM Kibble balance



Credit: BIPM

- The BIPM continued to maintain and improve **its Kibble balance as an international reference facility** providing traceability to the kilogram definition.
- Kibble balances continue to be of strategic importance in global metrology for realizing and maintaining the SI kilogram and to support new measurement capabilities in science and industry.

Providing mass calibrations to Member States

In 2023–2026, the BIPM provided **calibrations of 1 kg mass standards to 31 Member States**, traceable to the internationally agreed consensus value of the kilogram.



Credit: BIPM