

# Resolutions adopted

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BIPM

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**B**ureau  
♦ **I**nternational des  
♦ **P**oids et  
♦ **M**esures





## Resolutions of the 26<sup>th</sup> meeting of the CGPM

- 1 On the revision of the International System of Units (SI)
- 2 On the definition of time scales
- 3 On the objectives of the BIPM
- 4 On the dotation of the BIPM for the years 2020 to 2023
- 5 On financial arrears of Member States and the process of exclusion



Watch the open session of the 26th meeting of the General Conference on Weights and Measures (16 November 2018):

<https://www.youtube.com/thebipm>

# On the revision of the International System of Units (SI)

## Resolution 1

The General Conference on Weights and Measures (CGPM), at its 26th meeting, **considering**

- ♦ the essential requirement for an International System of Units (SI) that is uniform and accessible world-wide for international trade, high-technology manufacturing, human health and safety, protection of the environment, global climate studies and the basic science that underpins all these,
- ♦ that the SI units must be stable in the long term, internally self-consistent and practically realizable being based on the present theoretical description of nature at the highest level,
- ♦ that a revision of the SI to meet these requirements was proposed in Resolution 1 adopted unanimously by the CGPM at its 24th meeting (2011) that laid out in detail a new way of defining the SI based on a set of seven defining constants, drawn from the fundamental constants of physics and other constants of nature, from which the definitions of the seven base units are deduced,
- ♦ that the conditions set by the CGPM at its 24th meeting (2011), confirmed at its 25th meeting (2014), before such a revised SI could be adopted have now been met,

**decides** that, effective from 20 May 2019, the International System of Units, the SI, is the system of units in which:

- ♦ the unperturbed ground state hyperfine transition frequency of the caesium 133 atom  $\Delta\nu_{\text{Cs}}$  is 9 192 631 770 Hz,
- ♦ the speed of light in vacuum  $c$  is 299 792 458 m/s,
- ♦ the Planck constant  $h$  is  $6.626\,070\,15 \times 10^{-34}$  J s,
- ♦ the elementary charge  $e$  is  $1.602\,176\,634 \times 10^{-19}$  C,
- ♦ the Boltzmann constant  $k$  is  $1.380\,649 \times 10^{-23}$  J/K,
- ♦ the Avogadro constant  $N_{\text{A}}$  is  $6.022\,140\,76 \times 10^{23}$  mol<sup>-1</sup>,
- ♦ the luminous efficacy of monochromatic radiation of frequency  $540 \times 10^{12}$  Hz,  $K_{\text{cd}}$ , is 683 lm/W,

where the hertz, joule, coulomb, lumen, and watt, with unit symbols Hz, J, C, lm, and W, respectively, are related to the units second, metre, kilogram, ampere, kelvin, mole, and candela, with unit symbols s, m, kg, A, K, mol, and cd, respectively, according to  $\text{Hz} = \text{s}^{-1}$ ,  $\text{J} = \text{kg m}^2 \text{s}^{-2}$ ,  $\text{C} = \text{A s}$ ,  $\text{lm} = \text{cd m}^2 \text{m}^{-2} = \text{cd sr}$ , and  $\text{W} = \text{kg m}^2 \text{s}^{-3}$ .

**notes** the consequences as set out in Resolution 1 adopted by the CGPM at its 24th meeting (2011) in respect of the base units of the SI and confirms these in the following Appendices to this Resolution, which have the same force as the Resolution itself,

**invites** the International Committee for Weights and Measures (CIPM) to produce a new edition of its Brochure entitled “*The International System of Units*” in which a full description of the revised SI will be given.

### **Appendix 1. Abrogation of former definitions of the base units**

It follows from the new definition of the SI described above that, effective from 20 May 2019:

- ♦ the definition of the second in force since 1967/68 (13th meeting of the CGPM, Resolution 1) is abrogated,
- ♦ the definition of the metre in force since 1983 (17th meeting of the CGPM, Resolution 1) is abrogated,
- ♦ the definition of the kilogram in force since 1889 (1st meeting of the CGPM, 1889, 3rd meeting of the CGPM, 1901) based upon the mass of the international prototype of the kilogram is abrogated,
- ♦ the definition of the ampere in force since 1948 (9th meeting of the CGPM) based upon the definition proposed by the CIPM (1946, Resolution 2) is abrogated,
- ♦ the definition of the kelvin in force since 1967/68 (13th meeting of the CGPM, Resolution 4) is abrogated,
- ♦ the definition of the mole in force since 1971 (14th meeting of the CGPM, Resolution 3) is abrogated,
- ♦ the definition of the candela in force since 1979 (16th meeting of the CGPM, Resolution 3) is abrogated,
- ♦ the decision to adopt the conventional values of the Josephson constant  $K_{\text{J-90}}$  and of the von Klitzing constant  $R_{\text{K-90}}$  taken by the CIPM (1988, Recommendations 1 and 2) at the request of the CGPM (18th meeting of the CGPM, 1987, Resolution 6) for the establishment of representations of the volt and the ohm using the Josephson and quantum Hall effects, respectively, is abrogated.

## Appendix 2. Status of constants previously used in the former definitions

It follows from the new definition of the SI described above, and from the recommended values of the 2017 special adjustment of the Committee on Data for Science and Technology (CODATA) on which the values of the defining constants are based, that effective from 20 May 2019:

- ♦ the mass of the international prototype of the kilogram  $m(K)$  is equal to 1 kg within a relative standard uncertainty equal to that of the recommended value of  $h$  at the time this Resolution was adopted, namely  $1.0 \times 10^{-8}$  and that in the future its value will be determined experimentally,
- ♦ the vacuum magnetic permeability  $\mu_0$  is equal to  $4\pi \times 10^{-7} \text{ H m}^{-1}$  within a relative standard uncertainty equal to that of the recommended value of the fine-structure constant  $\alpha$  at the time this Resolution was adopted, namely  $2.3 \times 10^{-10}$  and that in the future its value will be determined experimentally,
- ♦ the thermodynamic temperature of the triple point of water  $T_{\text{TPW}}$  is equal to 273.16 K within a relative standard uncertainty closely equal to that of the recommended value of  $k$  at the time this Resolution was adopted, namely  $3.7 \times 10^{-7}$ , and that in the future its value will be determined experimentally,
- ♦ the molar mass of carbon 12,  $M(^{12}\text{C})$ , is equal to  $0.012 \text{ kg mol}^{-1}$  within a relative standard uncertainty equal to that of the recommended value of  $N_A h$  at the time this Resolution was adopted, namely  $4.5 \times 10^{-10}$ , and that in the future its value will be determined experimentally.

## Appendix 3. The base units of the SI

Starting from the new definition of the SI described above in terms of fixed numerical values of the defining constants, definitions of each of the seven base units are deduced by taking, as appropriate, one or more of these defining constants to give the following set of definitions, effective from 20 May 2019:

- ♦ The second, symbol s, is the SI unit of time. It is defined by taking the fixed numerical value of the caesium frequency  $\Delta\nu_{\text{Cs}}$ , the unperturbed ground-state hyperfine transition frequency of the caesium 133 atom, to be 9 192 631 770 when expressed in the unit Hz, which is equal to  $\text{s}^{-1}$ .

- ♦ The metre, symbol m, is the SI unit of length. It is defined by taking the fixed numerical value of the speed of light in vacuum  $c$  to be 299 792 458 when expressed in the unit m/s, where the second is defined in terms of  $\Delta \nu_{\text{Cs}}$ .
- ♦ The kilogram, symbol kg, is the SI unit of mass. It is defined by taking the fixed numerical value of the Planck constant  $h$  to be  $6.626\,070\,15 \times 10^{-34}$  when expressed in the unit J s, which is equal to  $\text{kg m}^2 \text{s}^{-1}$ , where the metre and the second are defined in terms of  $c$  and  $\Delta \nu_{\text{Cs}}$ .
- ♦ The ampere, symbol A, is the SI unit of electric current. It is defined by taking the fixed numerical value of the elementary charge  $e$  to be  $1.602\,176\,634 \times 10^{-19}$  when expressed in the unit C, which is equal to A s, where the second is defined in terms of  $\Delta \nu_{\text{Cs}}$ .
- ♦ The kelvin, symbol K, is the SI unit of thermodynamic temperature. It is defined by taking the fixed numerical value of the Boltzmann constant  $k$  to be  $1.380\,649 \times 10^{-23}$  when expressed in the unit J K<sup>-1</sup>, which is equal to  $\text{kg m}^2 \text{s}^{-2} \text{K}^{-1}$ , where the kilogram, metre and second are defined in terms of  $h$ ,  $c$  and  $\Delta \nu_{\text{Cs}}$ .
- ♦ The mole, symbol mol, is the SI unit of amount of substance. One mole contains exactly  $6.022\,140\,76 \times 10^{23}$  elementary entities. This number is the fixed numerical value of the Avogadro constant,  $N_{\text{A}}$ , when expressed in the unit mol<sup>-1</sup> and is called the Avogadro number.
- ♦ The amount of substance, symbol  $n$ , of a system is a measure of the number of specified elementary entities. An elementary entity may be an atom, a molecule, an ion, an electron, any other particle or specified group of particles.
- ♦ The candela, symbol cd, is the SI unit of luminous intensity in a given direction. It is defined by taking the fixed numerical value of the luminous efficacy of monochromatic radiation of frequency  $540 \times 10^{12}$  Hz,  $K_{\text{cd}}$ , to be 683 when expressed in the unit lm W<sup>-1</sup>, which is equal to cd sr W<sup>-1</sup>, or  $\text{cd sr kg}^{-1} \text{m}^{-2} \text{s}^3$ , where the kilogram, metre and second are defined in terms of  $h$ ,  $c$  and  $\Delta \nu_{\text{Cs}}$ .

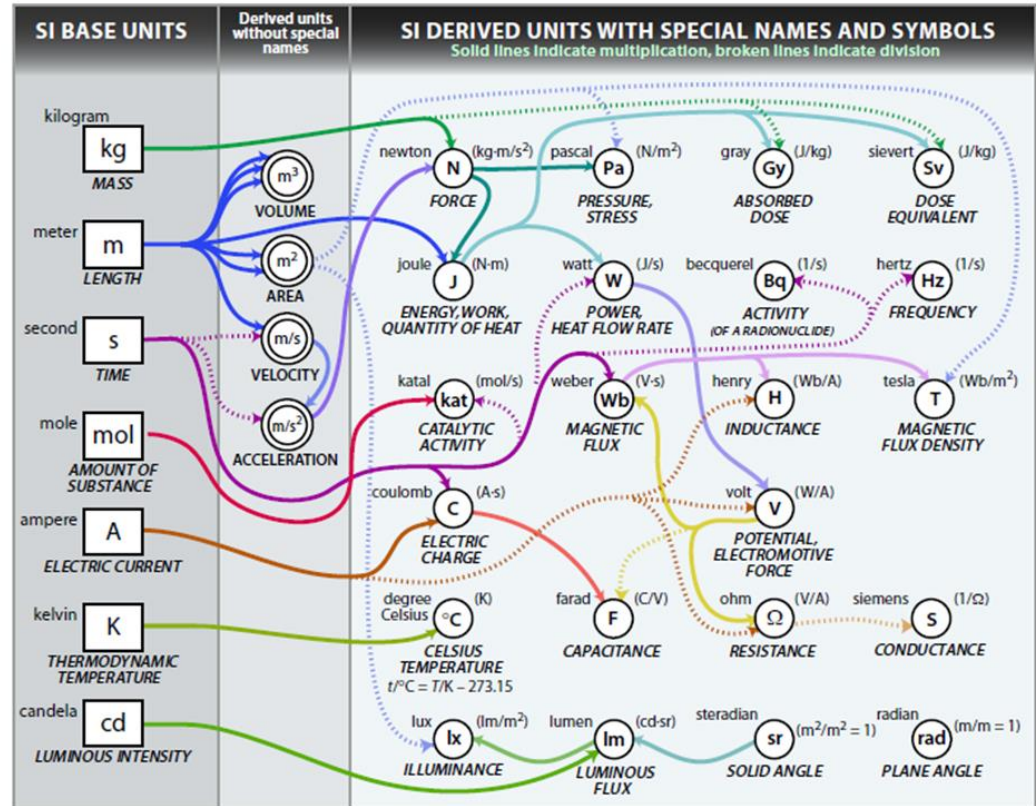
# The International System of Units (SI)



The 8<sup>th</sup> edition of the SI Brochure is available from the BIPM website.

## Prefixes

Factor	Name	Symbol	Factor	Name	Symbol
$10^1$	deca	da	$10^{-1}$	deci	d
$10^2$	hecto	h	$10^{-2}$	centi	c
$10^3$	kilo	k	$10^{-3}$	milli	m
$10^6$	mega	M	$10^{-6}$	micro	$\mu$
$10^9$	giga	G	$10^{-9}$	nano	n
$10^{12}$	tera	T	$10^{-12}$	pico	p
$10^{15}$	peta	P	$10^{-15}$	femto	f
$10^{18}$	exa	E	$10^{-18}$	atto	a
$10^{21}$	zetta	Z	$10^{-21}$	zepto	z
$10^{24}$	yotta	Y	$10^{-24}$	yocto	y



# Seven base units

## 3 definitions based on fundamental (or conventional) constants:

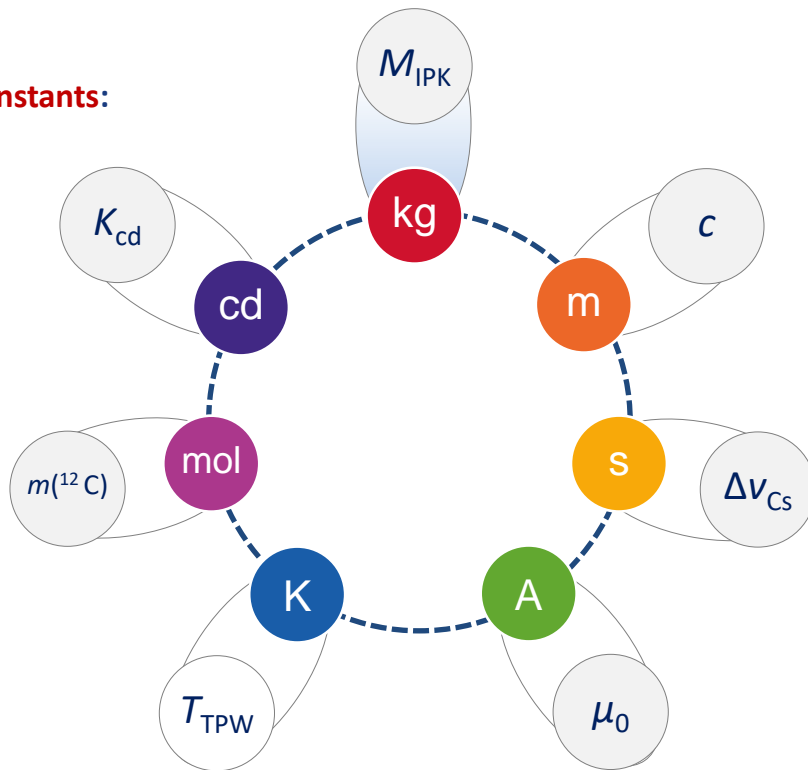
- metre (c)
- ampere ( $\mu_0$ )
- candela ( $K_{\text{cd}}$ )

## 3 definitions based on atomic or material properties:

- second ( $\Delta\nu_{\text{Cs}}$ )
- kelvin ( $T_{\text{TPW}}$ )
- mole ( $m^{12}\text{C}$ )

## 1 definition based on an artefact:

- kilogram ( $M_{\text{IPK}}$ )





# Seven base units

*The 26th CGPM agreed to change the definitions of four of them*

## 3 definitions based on **fundamental (or conventional) constants**:

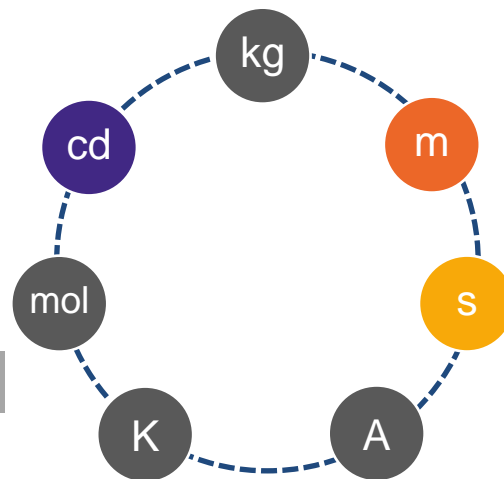
- metre (c)
- ampere - *Superseded by the 1990 convention*
- candela ( $K_{\text{cd}}$ )

## 3 definitions based on **atomic or material properties**:

- second ( $\Delta\nu_{\text{Cs}}$ )
- kelvin - *Implemented through the ITS-90 scale*
- mole - *definition is often misunderstood – depends on mass*

## 1 definition based on **an artefact**:

- kilogram - *artefact – may not be stable ?*



# Seven base units

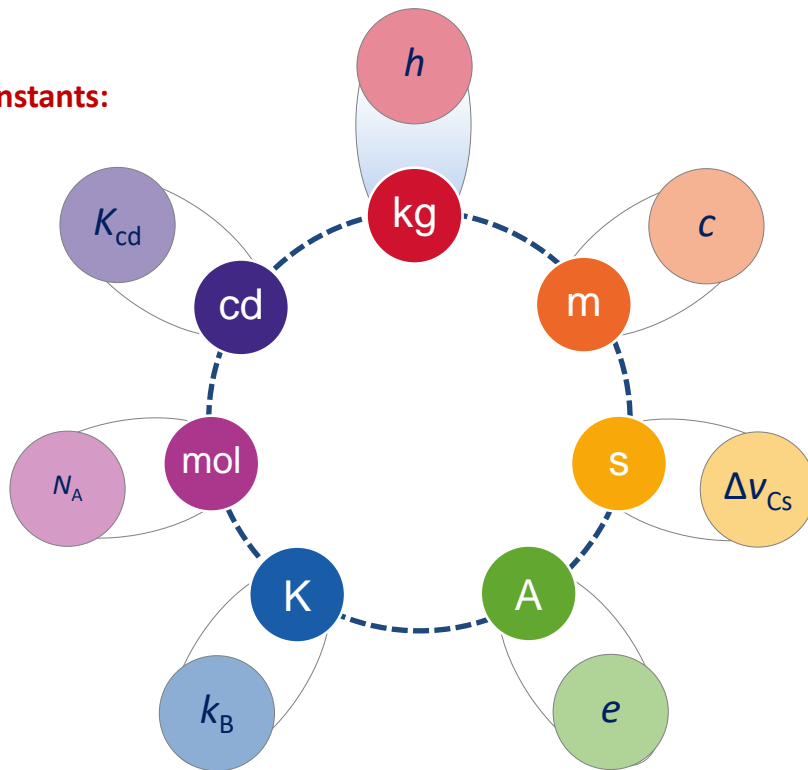
*We now have 4 new definitions*

6 definitions based on **fundamental (or conventional) constants**:

- metre ( $c$ )
- candela ( $K_{\text{cd}}$ )
- kilogram ( $h$ )
- ampere ( $e$ )
- kelvin ( $k_{\text{B}}$ )
- mole ( $N_{\text{A}}$ )

1 definition based on **atomic property**:

- second ( $\Delta\nu_{\text{Cs}}$ )



# Seven base units

...same base units but different links

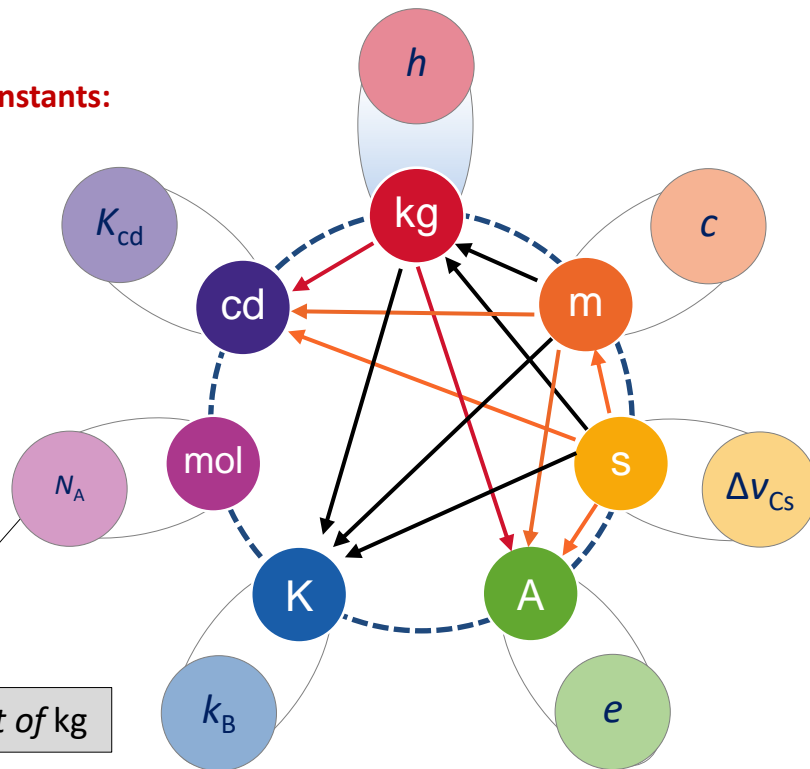
6 definitions based on **fundamental (or conventional) constants**:

- metre ( $c$ )
- candela ( $K_{\text{cd}}$ )
- kilogram ( $h$ )
- ampere ( $e$ )
- kelvin ( $k_{\text{B}}$ )
- mole ( $N_{\text{A}}$ )

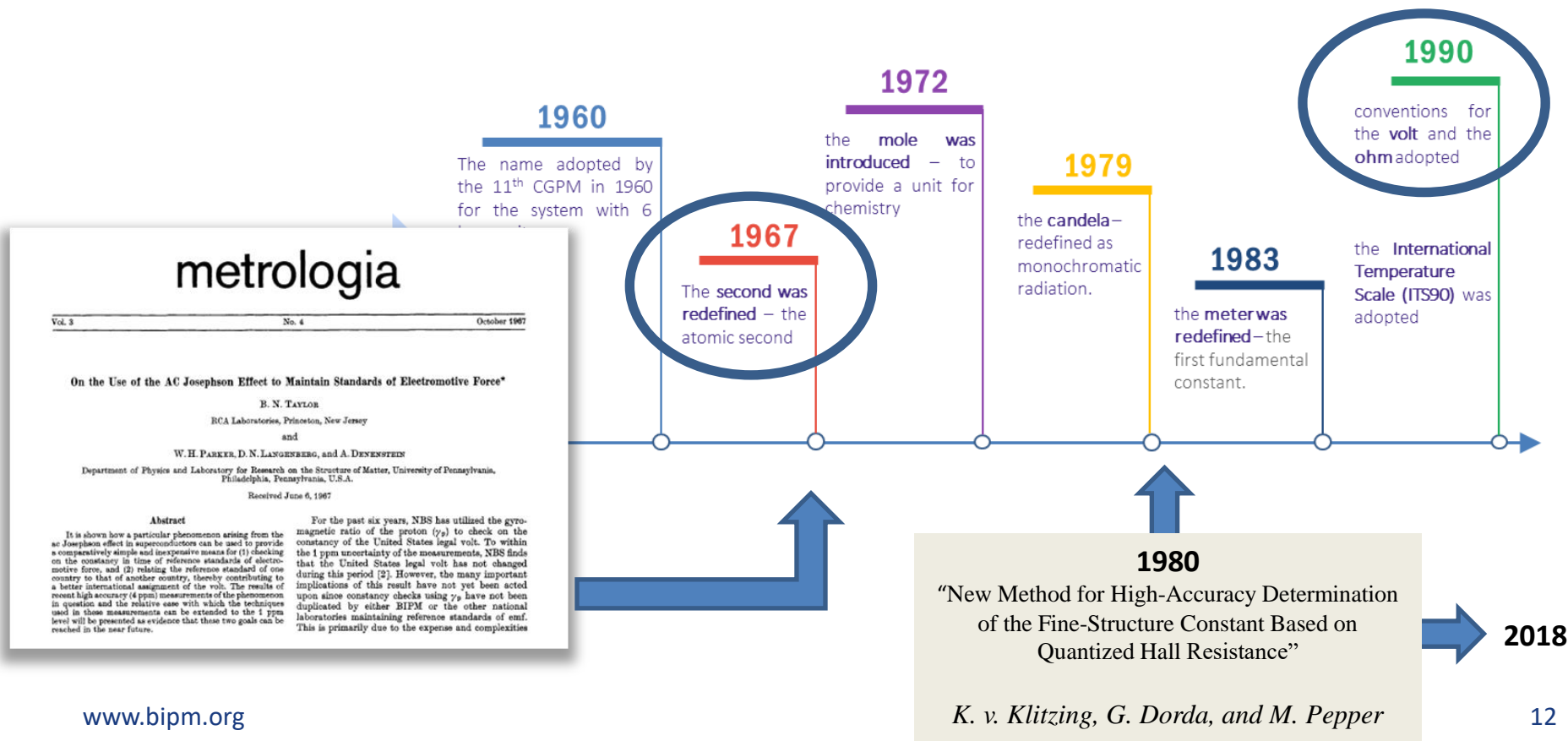
1 definition based on **atomic property**:

- second ( $\Delta\nu_{\text{Cs}}$ )

mol is now independent of kg



# Towards an “atomic” or “quantum” SI



# Implementation date is 20 May 2019



## Information for users about the proposed revision of the SI

The International System of Units<sup>1</sup>, the SI, which is based on the **second**, the **metre**, the **kilogram**, the **ampere**, the **kelvin**, the **mole** and the **candela** (the base units), is being revised to update the definitions of four of these units. In November 2018 revised definitions of the **kilogram**, **ampere**, **kelvin** and **mole** are expected to be approved by the General Conference on Weights and Measures (CGPM), the international body responsible for the global comparability of measurements. The revised definitions are expected to come into force on 20 May 2019.

The revised definitions will be based on seven physical constants (for example the speed of light, the Planck constant and the Avogadro constant) and are therefore inherently stable. The quantities have been chosen so that the revised definitions will not need to be modified to accommodate future improvements in the technologies used to realize them. The revision of the SI in this way was foreseen in Resolutions of the CGPM adopted in 2011 and 2014<sup>2,3</sup>. Additional requirements contained in these Resolutions will ensure a smooth transition to the four revised definitions. Most users will not notice the change. A new edition of the SI Brochure<sup>1</sup> will provide essential information for users and will be available after the revised definitions are adopted formally. Guidance on the practical realization of the units will be available<sup>4,8</sup>.

## SUMMARY of IMPACTS

- **The kilogram ...** The uncertainties offered by NMIs to their calibration customers will be broadly unaffected.
- **The ampere...** Practitioners working at the highest level of accuracy may need to adjust the values of their standards and review their measurement uncertainty budgets.
- **The kelvin ...** No immediate effect on temperature measurement practice or on the traceability of temperature measurements.
- **The mole...** This uncertainty will be so small that the revised definition of the mole will not require any change to common practice

# Impact of redefinition?

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Voltage values will change  $\approx 0.1$  ppm

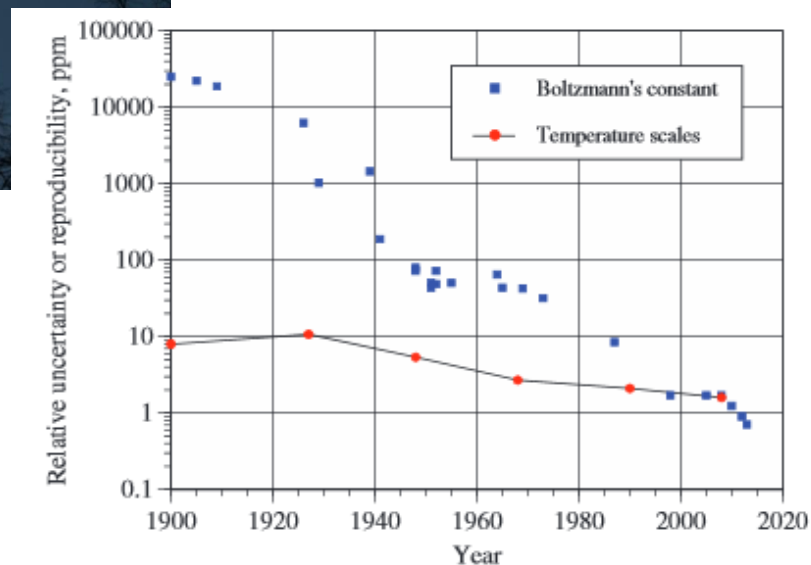
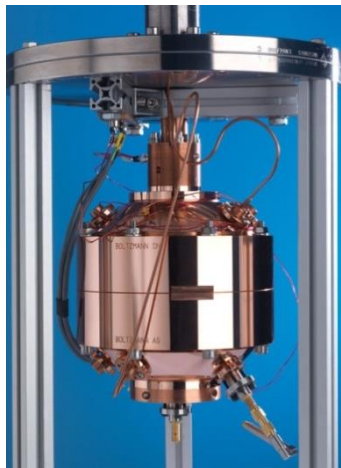
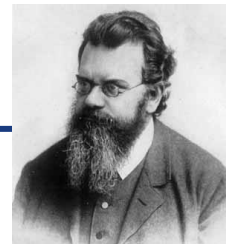
Resistance values will change by  $\approx 0.2$  ppm

ITS-90 will continue to be used

Very high and low temperature can be realized directly without reference to the Water Triple Point.

The mole follows the « momentum » and will have a clear definition

# Revision of the SI: Work behind...



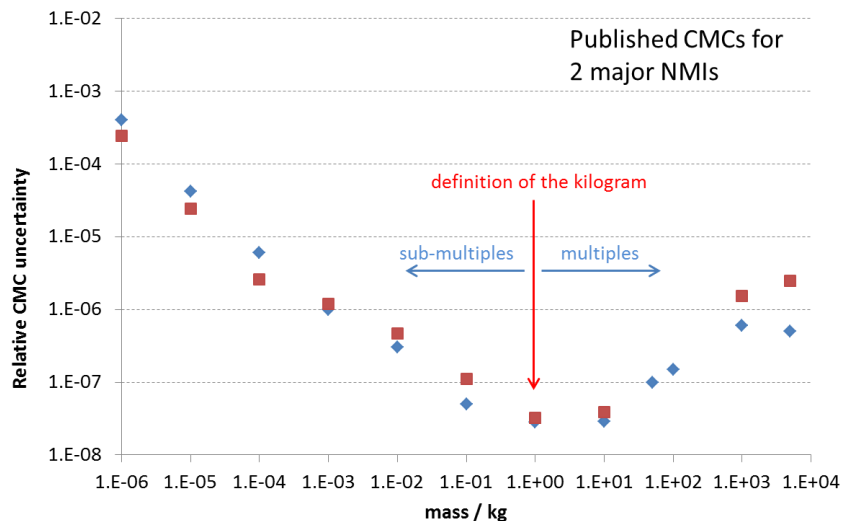
# Impact of redefinition?

Any NMI may potentially realize its own kilogram

Mass may be realized at any value

$$u(\text{IPK}) = 0$$

$$u(\text{kg}) \neq 0$$





**The new definitions use “the rules of nature to create the rules of measurement”.**

- ◆ They will tie measurements at the atomic (and quantum) scales to those at the macroscopic level.

**The new definitions will provide long-term stability**

- ◆ The realisation of units will be possible using new methods.

**The challenge in the future will be to maintain comparability of “primary realisations”**

- ◆ This is the same challenge that we have had with (all) other measurement units.





# Celebrating the revision of the SI !



[https://www.youtube.com/watch?v=V7myhT\\_CwYc](https://www.youtube.com/watch?v=V7myhT_CwYc)

#siredefinition

# On the definition of time scales

## Resolution 2

The General Conference on Weights and Measures (CGPM), at its 26th meeting, **considering** that

- ♦ Resolution 1 adopted by the CGPM at its 14th meeting (1971) requested the CIPM to define International Atomic Time (TAI),
- ♦ no complete self-contained definition of TAI has been provided officially by the CIPM,
- ♦ the Consultative Committee for the Definition of the Second (CCDS) proposed in its Recommendation S2 (1970) a definition which was extended by a Declaration of the CCDS in 1980,
- ♦ the CGPM at its 15th meeting (1975) noted that Coordinated Universal Time (UTC), derived from TAI, provides the basis of civil time, and strongly endorsed this usage,

**recognizing** that

- ♦ the mission of the BIPM is to ensure and promote the global comparability of measurements, including the provision of a coherent international system of units,
- ♦ the International Astronomical Union (IAU) and the International Union of Geodesy and Geophysics (IUGG) with the International Association of Geodesy (IAG) are responsible for defining reference systems for Earth and space applications,
- ♦ the International Telecommunication Union Radiocommunication Sector (ITU-R) is responsible for coordinating the dissemination of time and frequency signals and making relevant recommendations,
- ♦ the International Earth Rotation and Reference Systems Service (IERS), a service of the IAU and IUGG, is responsible for providing information required to relate terrestrial and celestial reference systems, including time-varying measurements of the Earth's rotation angle, UT1 – UTC, the low-precision prediction of UT1 – UTC for time signal broadcasts, DUT1, and for deciding and announcing leap second insertions,

**noting** that

- ♦ Resolution A4 (1991) of the IAU defined, in Recommendations I and II, the Geocentric Reference System as a system of space-time coordinates for the Earth within the framework of general relativity, and, in Recommendation III, named the time coordinate of that reference system “Geocentric Coordinate Time” (TCG),
- ♦ Resolution A4 (1991) of the IAU further defined, in Recommendation IV, Terrestrial Time (TT) as another time coordinate in the Geocentric Reference System, differing from TCG by a constant rate; the unit of measurement of TT being chosen to agree with the SI second on the geoid,
- ♦ Resolution B1.9 (2000) of the IAU redefined TT to be a time scale differing from TCG by a constant rate:  $dTT/dTCG = 1 - L_G$ , where  $L_G = 6.969\,290\,134 \times 10^{-10}$  is a defining constant (the numerical value of  $L_G$  was chosen to conform to the value  $W_0 = 62\,636\,856.0 \text{ m}^2\text{s}^{-2}$  for the gravity potential on the geoid as recommended by Special Commission 3 of the IAG in 1999),
- ♦ the redefinition of TT in 2000 introduced an ambiguity between TT and TAI as the CCDS had stated in 1980 that TAI was to have “*the SI second as realized on the rotating geoid as the scale unit*” while the definition of TT does not refer to the geoid,

**states** that

- ♦ TAI is a continuous time scale produced by the BIPM based on the best realizations of the SI second, and is a realization of TT as defined by IAU Resolution B1.9 (2000),
- ♦ in the transformation from the proper time of a clock to TAI, the relativistic rate shift is computed with respect to the conventionally adopted equipotential  $W_0 = 62\,636\,856.0 \text{ m}^2\text{s}^{-2}$  of the Earth’s gravity potential, which conforms to the constant  $L_G$  defining the rate of TT,
- ♦ as stated in the IAU Resolution A4 (1991),  $TT - TAI = 32.184 \text{ s}$  exactly at 1 January 1977, 0h TAI at the geocentre, in order to ensure continuity of TT with Ephemeris Time,

- ♦ UTC produced by the BIPM, based on TAI, is the only recommended time scale for international reference and the basis of civil time in most countries,
- ♦ UTC differs from TAI only by an integral number of seconds as published by the BIPM,
- ♦ users can derive the rotation angle of the Earth by applying to UTC the observed or predicted values of  $UT1 - UTC$ , as provided by the IERS,
- ♦ UTC provides a means to measure time intervals and to disseminate the standard of frequency during intervals in which leap seconds do not occur,
- ♦ traceability to UTC is obtained through local real-time realizations " $UTC(k)$ " maintained by laboratories contributing data to the calculation of UTC, identified by " $k$ ",

**confirms** that

1. International Atomic Time (TAI) is a continuous time scale produced by the BIPM based on the best realizations of the SI second. TAI is a realization of Terrestrial Time (TT) with the same rate as that of TT, as defined by the IAU Resolution B1.9 (2000),
2. Coordinated Universal Time (UTC) is a time scale produced by the BIPM with the same rate as TAI, but differing from TAI only by an integral number of seconds,

and **recommends** that

- ♦ all relevant unions and organizations consider these definitions and work together to develop a common understanding on reference time scales, their realization and dissemination with a view to consider the present limitation on the maximum magnitude of  $UT1 - UTC$  so as to meet the needs of the current and future user communities,
- ♦ all relevant unions and organizations work together to improve further the accuracy of the prediction of  $UT1 - UTC$  and the method for its dissemination to satisfy the future requirements of users.

# On the objectives of the BIPM

## Resolution 3

The General Conference on Weights and Measures (CGPM), at its 26th meeting,  
**considering**

- ♦ the world-wide use of the metric system – now the International System of Units (SI),
- ♦ Resolution 3 adopted by the CGPM at its 21st meeting (1999), which considers that all States, not only those that are Parties to the Metre Convention, engage in measurements which are related to trade and need to be traceable to the SI,
- ♦ Resolution 4 adopted by the CGPM at its 22nd meeting (2003), which considers the desirability of extending the number of Member States or Associates so as to increase the impact and benefit of participation in the Mutual Recognition Arrangement (CIPM MRA) drawn up by the International Committee for Weights and Measures (CIPM),
- ♦ that best practice in communication, transparency and governance has been implemented following adoption of Resolution 10 by the CGPM at its 24th meeting (2011), on the role, mission, objectives, long-term strategy and governance of the International Bureau of Weights and Measures (BIPM),
- ♦ Resolution 4 adopted by the CGPM at its 25th meeting (2014) on the Dotation of the BIPM for the years 2016 to 2019, which urges Member States, as well as international organizations, private organizations and foundations to maintain the provision of additional voluntary support of all kinds to support specific BIPM mission-related activities, particularly those that facilitate participation in the activities of the BIPM by those States with emerging metrology systems,

**noting**

- ♦ the importance of the use of the SI for innovation, industrial and societal needs,
- ♦ the continuing role of the BIPM following the revision of the International System of Units (SI),

- ♦ the success of the CIPM MRA and the implementation of the recommendations following its recent review,
- ♦ the core role of metrology within the international Quality Infrastructure and the importance of international recognition of measurements for conformity assessment,
- ♦ the growing interest in participation in the activities of the BIPM, particularly from States with emerging metrology systems,

#### **welcomes**

- ♦ the revised strategy and objectives for the BIPM, agreed by the CIPM, allowing planning beyond the four-year cycle of the BIPM Work Programme and leading to best use of resources, including investment in people, infrastructure and equipment,
- ♦ the development of a long-term strategic view which, together with a consolidated planning process, underpins the development of the BIPM Work Programme in consultation with Member States,
- ♦ the continuous efforts of the BIPM to engage more States in its activities,
- ♦ the recognition of a common definition for the Quality Infrastructure by the World Bank and the ten international and intergovernmental organizations that form the network on metrology, accreditation, standardization and conformity assessment for developing countries (DCMAS Network), including the BIPM,

#### **Confirms**

that the objectives of the BIPM are to:

- ♦ represent the world-wide measurement community, aiming to maximize its uptake and impact,
- ♦ be a centre for scientific and technical collaboration between Member States, providing capabilities for international measurement comparisons on a shared-cost basis,

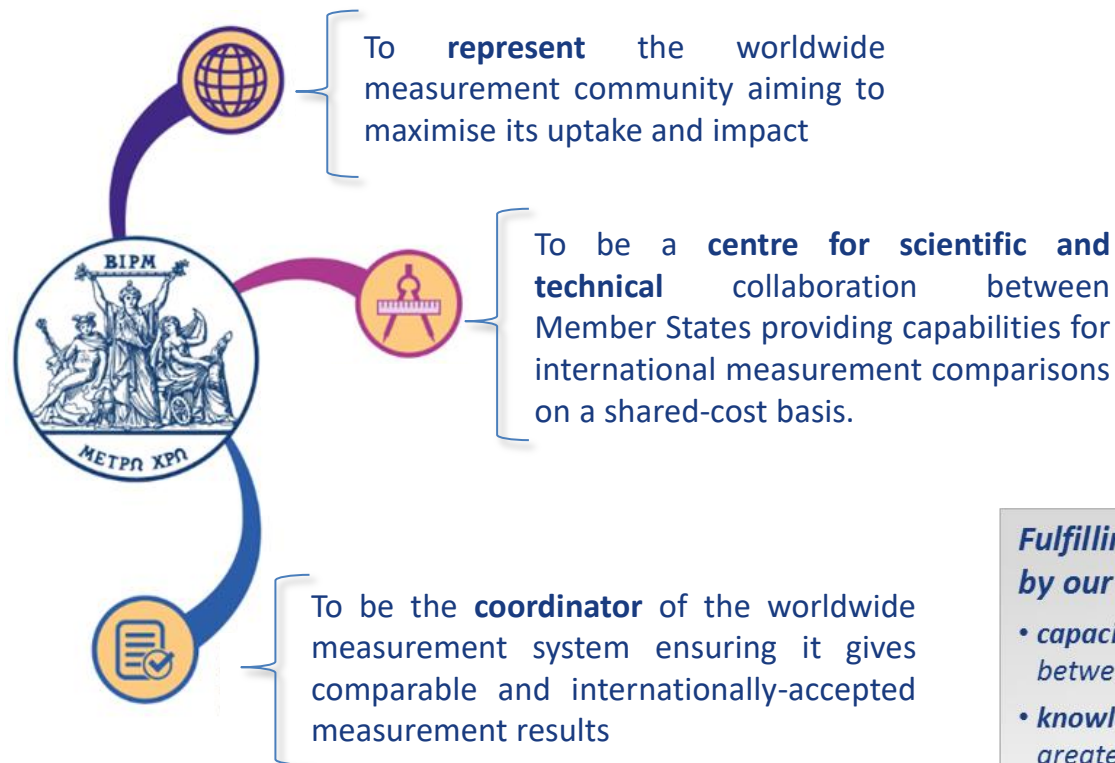
- ♦ be the coordinator of the world-wide measurement system, ensuring it gives comparable and internationally accepted measurement results,

that fulfilling the BIPM mission and objectives is complemented by its work in:

- ♦ capacity building, which aims to achieve a global balance between the metrology capabilities in Member States,
- ♦ knowledge transfer, which ensures that the work of the BIPM has the greatest impact.



# The objectives of the BIPM



***Fulfilling our mission and objectives is underpinned by our work in:***

- ***capacity building***, which aims to achieve a global balance between the metrology capabilities in Member States.
- ***knowledge transfer***, which ensures that our work has the greatest impact.

# On the dotation of the BIPM for the years 2020 to 2023

## Resolution 4

The General Conference on Weights and Measures (CGPM), at its 26th meeting,  
**considering**

- ♦ the increased importance of the work of the International Bureau of Weights and Measures (BIPM) to international trade, to industrial innovation, to monitor the global environment, to human health and medicine, to food and forensic science in all Member States,
- ♦ the recognition of the BIPM as the scientifically expert intergovernmental organization in metrology and the added value and cost efficiency it provides to all Member States in technical and economic terms,
- ♦ the manner in which the BIPM continues to adopt best management practice and to improve the efficiency of its operation,
- ♦ Resolution 7 adopted by the CGPM at its 16th meeting (1979) establishing a principle for the determination of the base dotation,

**noting**

- ♦ the current world financial situation and the financial constraints that Member States continue to experience,

**welcomes**

- ♦ the support of all kinds provided to the BIPM by National Metrology Institutes, in particular by way of secondment of staff to the BIPM, and support for the BIPM Capacity Building and Knowledge Transfer programme,

**decides that**

- ♦ the annual dotation of the BIPM, as defined in Article 6 (1921) of the Regulations annexed to the Metre Convention, will be set in such a way that, for those States that are Parties to the Metre Convention at the time of the 26th meeting of the CGPM, it shall be:

*12 356 526 euros in 2020*

*12 480 091 euros in 2021*

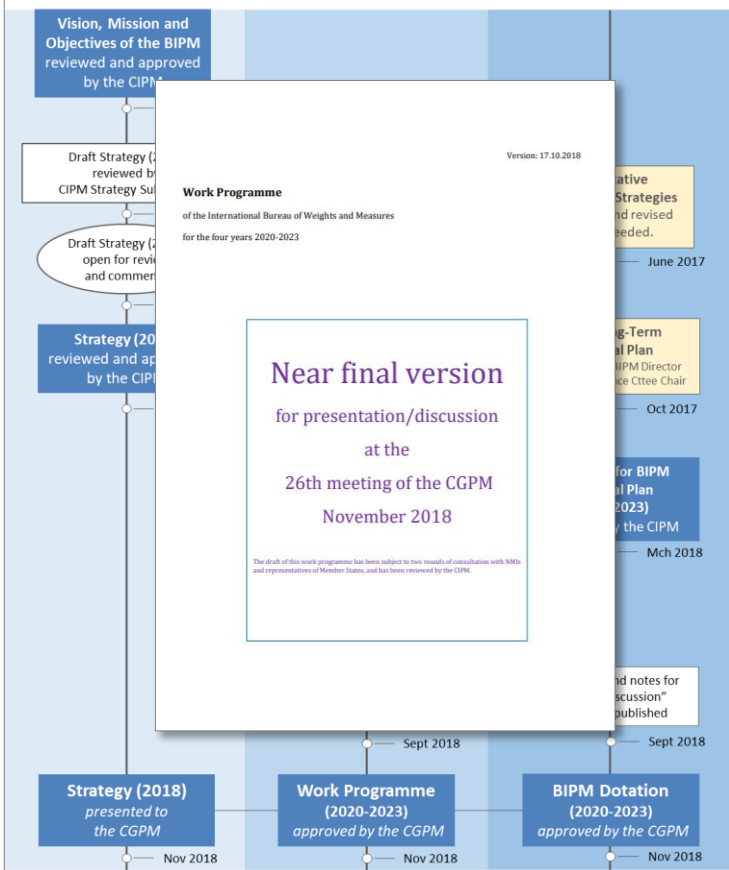
*12 604 892 euros in 2022*

*12 730 941 euros in 2023*

**encourages**

- ♦ Member States, as well as international organizations, private organizations and foundations to maintain the provision of additional voluntary support of all kinds to support specific BIPM mission-related activities, particularly those that facilitate participation in the activities of the BIPM by those countries without well-developed metrology infrastructure.

## Timeline for development and agreement of the BIPM Strategy and Work Programme for the 26<sup>th</sup> CGPM (2018)



# BIPM Strategy and Work Programme

## *The BIPM work is directed to support its Member States*

- *BIPM Strategic Plan aims to implement the BIPM vision, mission and objectives*
- *The strategy documents of CCs are subject to review and comment by Member State Representatives and NMI Directors*
- *BIPM Strategic Plan is complementary to the strategic plans developed the Consultative Committees, and is subject to review and comment by Member State representatives and NMI Directors*
- *BIPM Work Programme is built on the interactions with NMI Directors and Member State representatives, and has been the subject of specific consultation with the Member States*
- *The BIPM Work Programme is presented to the CGPM alongside the BIPM strategy and requested 'dotation'*
- *Progress against the Work Programme is reviewed annually by the CIPM*

**Draft Work Programme of the BIPM for 2020-2023 is now available for comments at**  
<https://www.bipm.org/utis/en/pdf/CGPM/BIPM-work-programme.pdf>

# On the financial arrears of Member States and the process of exclusion

## Resolution 5

The General Conference on Weights and Measures (CGPM), at its 26th meeting, **recalling** that

- ♦ Article 6 paragraphs 6 to 8 (1921) of the Regulations annexed to the Metre Convention reads as follows:

*« 6. Si un État est demeuré trois années sans effectuer le versement de sa contribution, celle-ci est répartie entre les autres États, au prorata de leurs propres contributions. Les sommes supplémentaires, versées ainsi par les États pour parfaire le montant de la dotation du Bureau, sont considérées comme une avance faite à l'État retardataire, et leur sont remboursées si celui-ci vient à acquitter ses contributions arriérées.*

*7. Les avantages et prérogatives conférés par l'adhésion à la Convention du Mètre sont suspendus à l'égard des États déficitaires de trois années.*

*8. Après trois nouvelles années, l'État déficitaire est exclu de la Convention, et le calcul des contributions est rétabli conformément aux dispositions de l'article 20 du présent Règlement. »<sup>1</sup>*

- ♦ Resolution 8 adopted by the CGPM at its 23rd meeting (2007) on financial arrears of Member States sets a procedure concerning States who fail to fulfil their financial obligations,

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<sup>1</sup>English translation for easy reference of the authoritative French version:

6. If a State remains three years without paying its contribution, the said contribution is distributed among the other States pro-rata to their own contributions. The supplementary sums thus paid by these States to make up the dotation of the Bureau are considered as advances made to the State in arrears, and are reimbursed to them in the event that it repays its arrears of contributions.

7. The advantages and prerogatives conferred by accession to the Metre Convention are suspended for those States in arrears by three years.

8. After three more years, the State in arrears is excluded from the Convention and the calculation of contributions is re-established in accordance with the provisions of Article 20 of the present Regulations.

**observing** that

- ♦ paragraphs 6 and 7 of Article 6 of the Annexed Regulations foresee that whilst the advantages and prerogatives of Member States are suspended for those States in arrears by three years, their contributions remain due,
- ♦ historical practice has always been to apply paragraphs 6 and 7 of Article 6 of the Annexed Regulations,

**noting** that

- ♦ historical practice has been at variance with the provisions of paragraph 8 of Article 6 of the Annexed Regulations by not excluding Member States when they have defaulted on their contributions for more than six years and by not re-establishing the calculation of contributions,
- ♦ historical practice has resulted in certain Member States remaining in a state of suspension for periods considerably exceeding the three-year period envisaged in the Annexed Regulations, leading to the accumulation of their arrears and the consequent distribution of their contributions among all other Member States,
- ♦ Resolution 8 adopted by the CGPM at its 23rd meeting (2007) introduced a procedure for the exclusion of a defaulting Member State that requires a decision of the CGPM, and consequently, the period of suspension prior to exclusion depends on the scheduling of CGPM meetings and thus defaulting Member States may not be treated equally,
- ♦ Resolution 8 (2007) partly addressed the issues raised by historical practice,

**further recalling** that

- ♦ procedural clarity and fair treatment of Member States are matters of good governance and are beneficial to all parties,
- ♦ the International Committee for Weights and Measures (CIPM), as the permanent supervisory organ of the BIPM, could apply Article 6 paragraph 8 of the Annexed Regulations in a timely manner,

**decides** that

- ♦ the CIPM shall implement Article 6 paragraph 8 of the Annexed Regulations,
- ♦ the CIPM shall address the situation where historical practice has resulted in the accumulation of arrears,

**confirms** that

- ♦ the CIPM shall notify the French Ministry for Europe and Foreign Affairs of any exclusion, which shall accordingly inform the excluded State and all other Member States,
- ♦ an excluded Member State may only again accede to the Metre Convention if its remaining arrears have been paid,
- ♦ pursuant to Article 11 of the Metre Convention, that such a Member State shall pay an entrance contribution equal to its first annual contribution.

*Thank you ... and visit the talks from the CGPM on  
You Tube*

<https://www.youtube.com/thebipm>

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