



Draft Resolution B

On the future definition of the second

**28th meeting of the
General Conference on
Weights and Measures
(2026)**



The documents presented to the General Conference on Weights and Measures (CGPM) are prepared in English as well as French.

Please note, however, that the official version, particularly of the Resolutions voted by the CGPM, is the French one.

Version history

Version 1	2026/01/13	Publication of Draft Resolutions
Version 2	2026/01/30	Draft Resolution C: effective date of continuous UTC set on 20 May 2027
Version 3	2026/03/30	Draft Resolution D: need to use conventional values fixed by international organizations and to consider the role of the BIPM
Version 4	2026/06/30	Draft Resolution D: “the realization of lunar reference time scales” replaced by “the realizations of the lunar reference time scale” in the “further recommends” section, to reflect the aim of the draft resolution to state that there must be a unique lunar reference time scale, even if there may be several realizations
Version 5	2026/07/13	Draft Resolution V: amounts for the proposed dotation added

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On the future definition of the second

The General Conference on Weights and Measures (CGPM), at its 28th meeting,

recalling that

- the CGPM at its 13th meeting (1967) defined the second as “the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom”,
- the CGPM at its 26th meeting (2018) revised the definitions of the base units of the SI including the second, to be defined by taking the fixed numerical value of the caesium frequency $\Delta\nu_{\text{Cs}}$, which is 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 s^{-1} ,
- the CGPM at its 27th meeting (2022) adopted Resolution 5 “On the future redefinition of the second”, which encouraged the International Committee for Weights and Measures (CIPM) to bring proposals for the choice of the preferred species, or ensemble of species for a new definition of the second, and for the further steps that must be taken for a new definition to be adopted at the 29th meeting of the CGPM (2030),

noting that

- Member States have supported extensive activities on optical frequency standards (OFS) using different species and transitions, with the best devices surpassing the accuracy achievable by the realization of the current definition by a factor of up to 100,
- the reliability and uncertainty of the related time and frequency transfers are improving thanks to the development of transportable OFS and of national and international infrastructure,
- these advances are likely to lead to improvements in the realization and the dissemination of time scales, particularly of Coordinated Universal Time (UTC), with the potential for it to be more accurate than the time scales based on the current definition of the second,

further noting that the Consultative Committee for Time and Frequency (CCTF) in its work to serve current and future needs in time metrology has

- analysed various possibilities for a new definition of the second and has updated a roadmap of the steps needed for the CGPM to be able to agree a new definition,
- defined mandatory criteria and appropriate indicators to monitor progress towards the adoption of a new definition of the second,
- identified critical issues for the fulfilment of some mandatory criteria, especially for the evaluation and validation of OFS accuracy budgets, and the contribution of OFS to the International Atomic Time (TAI) calibration as secondary realizations of the current definition, and defined the relevant mitigation actions,

considering that

- a change in the definition of the second, its realization and dissemination are major challenges with associated scientific, technological and operational requirements that will need state-of-the-art instruments and infrastructure as well as mastering the relativistic effects at the appropriate uncertainty level,
- a consensus has not been reached despite active scientific debate on the choice:
 - of a single species or an ensemble of species for the new definition, and
 - of the preferred species for each option,
- it is important to ensure a robust and long-lasting basis for the choice, and the international acceptability, of the new definition of the second,
- there are noticeable inconsistencies in some comparisons of optical frequency standards and in the global set of frequency ratio measurements involving OFS,
- some of the mandatory criteria are not yet fulfilled, for example the contribution of OFS to the calibration of TAI; however, these could realistically be fulfilled by 2030 through international coordinated efforts supported by the CCTF,

requests the CIPM

- to continue to promote the importance of achieving the objectives agreed in the roadmap for the definition of the second,
- to encourage all parties to continue to work toward a consensus on the new definition of the second,
- to work towards a proposal for the new definition of the second to be presented at the 29th meeting of the CGPM (2030) and a proposal for the date of its implementation,

and **encourages** Member States to support activities aimed at fulfilling the mandatory criteria, by the provision of the human and financial resources needed to ensure the improved realization and dissemination of the unit of time and of time scales.

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