

Towards a continuous UTC

P. Tavella¹, Judah Levine²

¹Time Dept, BIPM, Sevres, France

²Time and Frequency Division, NIST, Boulder, CO

on behalf of the CCTF task group on “Towards continuous UTC”

<https://www.bipm.org/en/committees/cc/cctf/wg/cctf-tgutc>

Email: patrizia.tavella@bipm.org

The General Conference of Weights and Measures (CGPM) in 2022 decided¹ to make UTC a *quasi*-continuous time scale by extending the tolerance between the Coordinated Universal Time (UTC) and the rotation of the Earth (UT1), to avoid the need of frequent and unpredictable leap seconds.

The new tolerance and the procedure to adjust UTC to the Earth rotation will be fixed by the next CGPM in 2026. To this aim a task group² has been created by the Consultative Committee on Time and Frequency (CCTF).

The task group has the main tasks to work with the CCTF, all UTC labs, other Organizations, GNSS Providers, and stakeholders, to prepare the draft resolution for the CGPM 2026 which should contain

- The extended tolerance value of UT1-UTC
- The procedure to align UTC to UT1 when the new tolerance is reached
- The periodicity to revise this decision at the CGPM
- The exact implementation date

In addition, the task group has worked in collaboration with the International Telecommunication Union - Radiocommunication (ITU-R) to study the impact of the continuous UTC on the transmission of standard frequency and time signal services. At the ITU-R World Radio Conference in 2023 a consensus was reached³ to endorse the CGPM resolutions and to adapt the transmission code by radio signals of the offset UT1-UTC.

The paper intends to inform the EFTF community on these activities and also to collect feedback and stimulate the discussion on the possible solutions for a continuous UTC fulfilling the needs of current and future applications.

¹ <https://www.bipm.org/en/cgpm-2022/resolution-4>

² <https://www.bipm.org/en/committees/cc/cctf/wg/cctf-tgutc>

³ https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.15-2023-PDF-E.pdf, pag. 398-400