Time Scale Notation

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The current time scale notation has provided language independent designations that have served the timing community well. It is becoming apparent, however, that the current notation could benefit from a clarification of terms and possible extension. Suggestions for consideration are presented below.

Institute Designation in UTC

The following recommendation is proposed to clarify the meaning of "k" in the notation UTC(k).

The CCTF

Considering

1. That the Bureau International des Poids et Mesures (BIPM) forms International Atomic Time, and, together with the International Earth Rotation Service (IERS), maintains Coordinated Universal Time through the contributed timing data from institutions throughout the world,

2. The need for specific international time scale notation, and

3. That CCIR Recommendation 536 (1978) recommends notation TA(k) and UTC(k) for time scales realized by the institute "k";

Concurs with CCIR Recommendation 536 (1978), and

Further recommends

That designation of the institute "k" be limited to those institutes that take part in the formation of International Atomic Time by contributing timing comparisons to the BIPM.

Rationale

The notation UTC(k) has gained widespread acceptance in timing as well as related fields. Some confusion has arisen, however, concerning what constitutes an "institute" and, therefore, what is to appear in the parentheses following UTC. The distinction between an institute maintaining a realized time scale closely related to UTC(BIPM) and the means by which that time scale is disseminated is becoming confused. For example, the Global Positioning System (GPS) makes use of an internal time scale (GPS Time) to operate. That time scale is steered to UTC(USNO) by the operators of the GPS. GPS also provides, in the navigational message distributed by the satellites, corrections to GPS time to estimate UTC(USNO). That estimated time scale is sometimes referred to as UTC(GPS), despite the fact that GPS has no direct connection to the formation of UTC other than through UTC(USNO).

It is reasonable to expect that this usage of the notation UTC(k) could possibly be extended by other sources of time, commercial and non-commercial, without regard for whether the institute designation reefers to the source of a realized UTC time scale or the means by which the time scale is distributed. This could result in versions of UTC loosely tied to UTC(BIPM) that serve as advertisements for the provider. The purpose in proposing this recommendation is to clarify the notation by limiting the institute designation to those organizations that actually are used in the formation of TAI/UTC.

Extension of UTC(k) Notation

Although the draft recommendation does not include a recommendation regarding notation for the means of dissemination it is suggested that notation "UTC(k) via (m)" be considered . In this notation "m" refers to the means by which UTC(k) is distributed, and UTC(k) refers to the time scale realized by institute (k), k being an institute contributing to the formation of TAI/UTC. Such notation specifies the source of the time scale and the means by which it can be accessed by a user.

Notation for TAI

It is also suggested that the CCTF consider extending the UTC(k) notation to TAI(k) acknowledging the fact that institutes maintain realized TAI time scales. This could be done in a manner analogous to the adopted UTC notation. It would also help to make it easier for users of precise time to take advantage of a time scale free from discontinuities.