

## **RECOMMENDATION CCTF PSFS 3 (2020)**

### **Handling of Dead Time Uncertainty and Frequency Transfer Uncertainty by Laboratories Operating Optical Frequency Standards**

The Consultative Committee for Time and Frequency (CCTF), at its 22nd session in 2020 and 2021,

#### **realizing**

- the increasing importance of optical frequency standards (OFS) as secondary, and eventually primary frequency standards

#### **considering**

- at the present time OFS commonly operate on an intermittent basis
- dead time uncertainty (DTU) and frequency transfer uncertainty (FTU) generally make up a significant fraction of the total uncertainty of an OFS evaluation report to the BIPM for use in TAI
- the minimum possible uncertainty contribution, limited by the frequency instability of EAL, can be realized for OFS reports covering the whole reporting month
- comparisons between PSFS are easier to handle if reports cover the whole reporting month

#### **recommends** that laboratories operating OFS

- calculate, as with any significant source of uncertainty, the DTU for an OFS report using a method that has been documented in a peer reviewed journal
- accurately characterize the instabilities in the local fly-wheel frequency reference, usually a hydrogen maser, or ensemble of hydrogen masers,
- consider and document the minimum total uncertainty from DTU and FTU in determining the report interval
- aim at generating reports which cover the whole reporting month