राष्ट्रीयभौतिकप्रयोगशाला
(वैज्ञानिकएवंऔद्योगिकअनुसंधानपरिषद)
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Press Note

Insertion of "Leap Second" in the Indian Standard Time (IST)



CSIR-National Physical Laboratory (CSIR-NPL) is the custodian of Indian Standard Time (IST) and has the responsibility for realization, establishment, maintenance and dissemination of IST through an act of Parliament (**Govt. of India Gazette No 589).**

A "Leap Second" is added every now and then to Coordinated Universal Time (UTC) in order to synchronize clocks worldwide with the Earth's ever slowing rotation. UTC consists of a time scale that combines the output of more than 300 highly precise Atomic clocks worldwide, including the one at CSIR-NPL. Atomic clocks are very accurate and are stable within 1 second over a period of millions of years. On the other hand, the Astronomical Time known as Universal Time (UT1) refers to the Earth's rotation around its own axis and determines the length of a day. However, the Earth's rotation around its own axis is not regular, as sometimes it speeds up and sometimes it slows down, due to various factors including the moon's gravitational Earth-braking forces that often results in ocean tides. As a result, Astronomical Time (UT1) gradually falls out of synch with Atomic time (UTC), and as and when the difference between UTC and UT1 approaches 0.9 seconds, a "Leap Second" is added to UTC through Atomic clocks worldwide.

Since 1972, 36 "Leap Seconds" have been added at intervals varying from six months to seven years. 37th "Leap Second" will be added to UTC at the midnight of December 31, 2016 in the countries within this time zone. However, countries in other time zones will have "Leap Second" inserted according to their longitude. As the "Leap Second" is added simultaneously all over the world at UTC 23:59:59 on December 31, 2016, implying that in India the "Leap Second" will be inserted at IST 05:29:59 on January 1, 2017 (IST being five hours and thirty minutes ahead of UTC). In order to follow IST, the clocks need to be adjusted after the insertion of "Leap Second". Those utilizing CSIR-NPL time dissemination services (NTP, Teleclock etc.) need not worry as they will receive the corrected time post the insertion of "Leap Second". The "Leap Second" adjustment is not so relevant for normal everyday life; however this shift is critical for applications requiring of time accuracies in the nanosecond e.g. astronomy, satellite navigation, communication networks etc.

A "Leap Second" explanatory meeting will be held on December 31, 2016 at 23:30 Hours at the Main Building Reception area of the CSIR-National Physical Laboratory. All are cordially invited for this meeting followed by celebration of the "New Year -2017" along with refreshment.

The detailed information about the IST is available on NPL website http://www.nplindia.org/time-frequency-and-electrical-electronics-metrology-division