Time of Day Standards

- Many standards exist:
  - UT0, UT1, UTC (GMT), TT, TDT, TDB, TCG, TCB, SWATCH, MJD, TAI, GPS, UT, ET etc.
- Three serious contenders for CERN LHC
  - International Atomic Time (TAI), 1958
  - Global Positioning System (GPS), 1980
  - Coordinated Universal Time (UTC), 1986 (GMT)

Time Differences

- Due to the introduction of leap seconds in 1972 (end of June or December)
- TAI is ahead of UTC by 32 seconds
- TAI is ahead of GPS by 19 seconds
- GPS is ahead of UTC by 13 seconds

Leap Seconds

- The earth is decelerating (1.4 ms/day/year), with respect to TAI, due to the braking action of the tides.
- To compensate for this effect leap seconds were introduced in 1972 by the International Earth Rotation Service.
- So far there have been 22 positive Leap Seconds during the past 27 years.

Recommendations

- The CERN LHC Time of Day standard should be referenced to Universal Coordinated Time (UTC).