Accurate time link calibration for UTC time transfer

- Status of the BIPM pilot study on the UTC time link calibration

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In 2011, the BIPM launched a pilot study on the accurate calibration for the UTC time links [1]. The goal is to unify the UTC time link calibration uncertainties $\leq$ 2 ns. This is attainable using the METODE (MEasurement of TOtal DElay) which is based on a calibration scheme and a delicately designed travelling calibrator (StdB).

The participants of the pilot study are the BIPM and the 7 leading UTC laboratories: OP in France, PTB in Germany, AOS and PL in Poland, TL in Taiwan, NMIJ and NICT in Japan. The experiments are first carried out at BIPM and then the calibrator StdB is sent to the above laboratories to further perform the time link calibration experiments to investigate the methodology and related total uncertainty.

During the calibration tours in Poland, the StdB was setup side by side with the optical fiber transceivers at PL and AOS, where available the self-calibrated optical fiber time link with an uncertainty of 126 ps. Other methods are used to evaluate the uncertainty of the scheme, such as the moving Cs standard, the time interval counters, the short baselines etc.

This paper reports the preliminary results of the pilot study, which allows us an independent and more accurate estimate of the present calibration uncertainty of the UTC time links.

Reference

[1] Jiang Z., Arias F., Lewandowski W., Petit G., *BIPM Calibration Scheme for UTC Time Links* - BIPM pilot expermiment to strenghen Asia-Europe very long baselines, Proc. EFTF 2011, pp 1064-1069