

Update on TWSTFT and Related Activities at PTB

Dirk Piester

PTB's Time Dissemination Group

A. Bauch

J. Becker

D. Piester

T. Polewka

+

M. Rost (non permanent)

E. Staliuniene (non permanent)

+

A. Hoppmann (partly)

+

T. Feldmann (PhD-student, until October 2011)

+

Guest Researchers 2010/11:

K. Liang, NIM (6 months)

W. Yang, GUDT, ChangSha (12 months)

Tasks and Work

Generation of UTC(PTB)

together with Unit of Time Group

Dissemination of Time

Low Frequency Transmitter DCF77

NTP-Server

European Telephone Time Service

Remote Comparisons

GPS

GLONASS

TWSTFT

TWSTFT

PTB01: link to European and U.S. laboratories

satellite: T-11N

frequencies: Ku-band

modem: SATRE, 1 MCh/s

data format: ITU-R TF.1153-2 (individual)

PTB03: link to Asia and Russia

satellite: Intersputnik AM2 available from 2010-10

frequencies: Ku-band

modem: SATRE, 2.5 MCh/s @ BW = 2.5 MHz

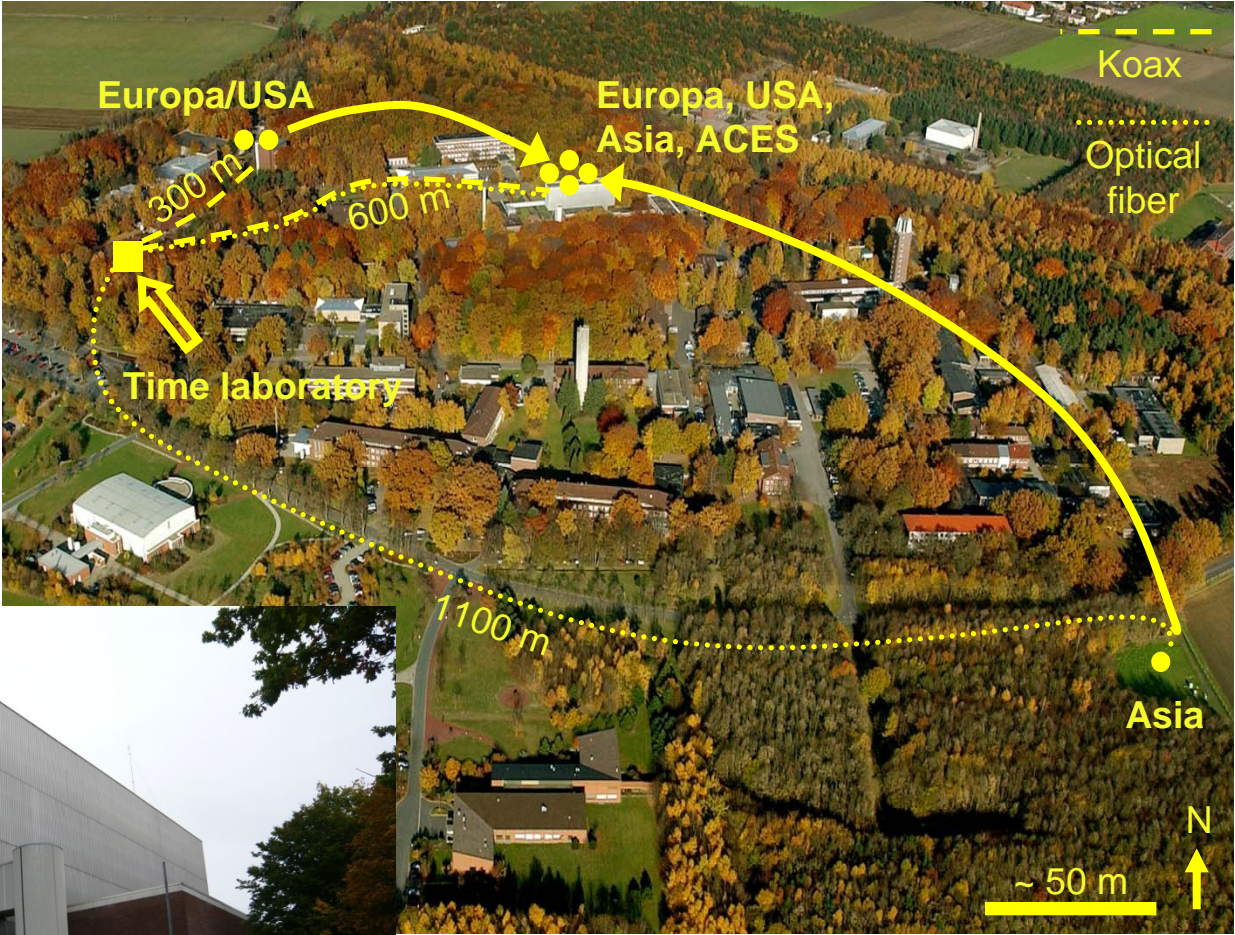
data format: ITU-R TF.1153-2 (individual)

Very recently VNIIFTRI has joined!

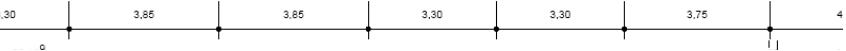
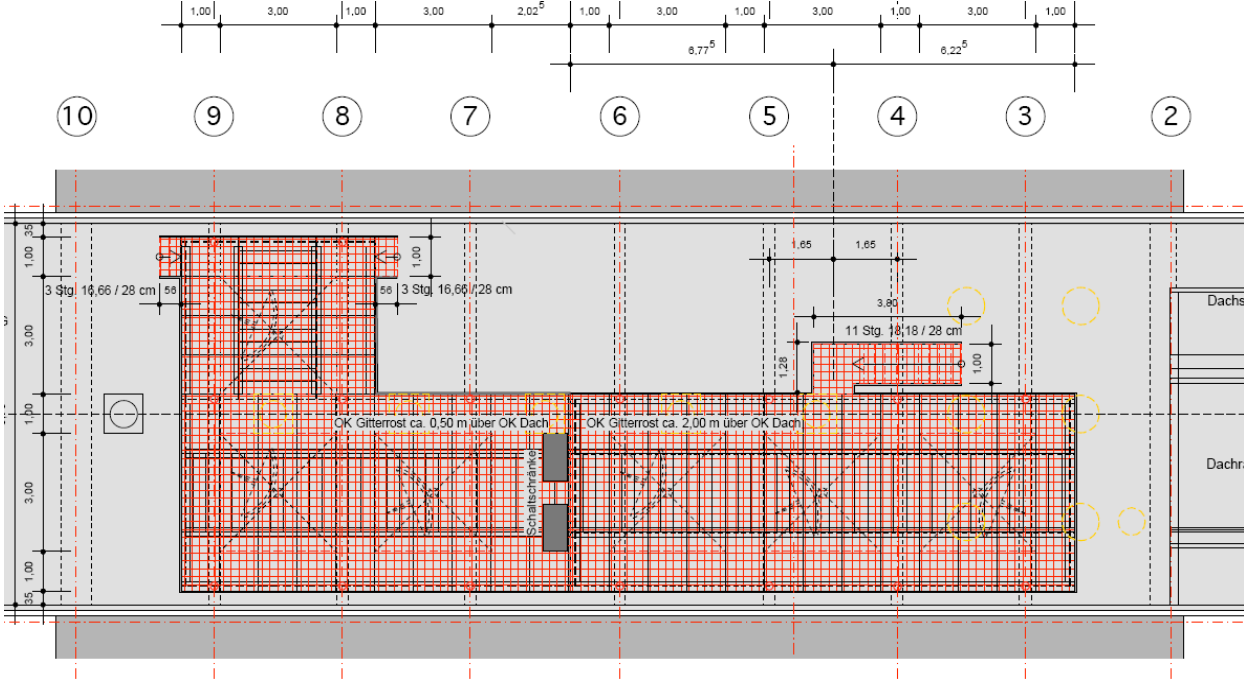
PTB04: spare Ku-band station

New location for antennae ensemble

One site dedicated for the TWSTFT stations



New location for antennae ensemble



Space for fixed and mobile TWSTFT stations, ACES ground terminal

Site installation ready in early 2011 (planned) but work still not finished as of September 2011...

New location for antennae ensemble



2010



New location for antennae ensemble

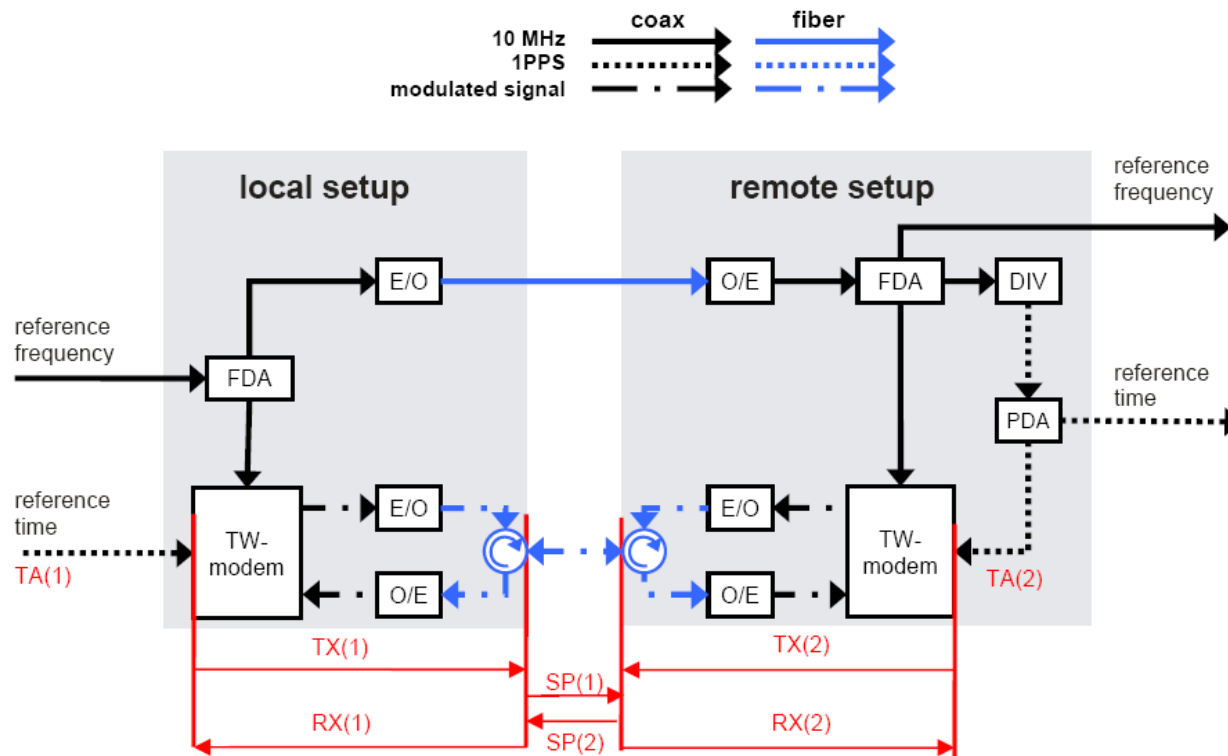


2011

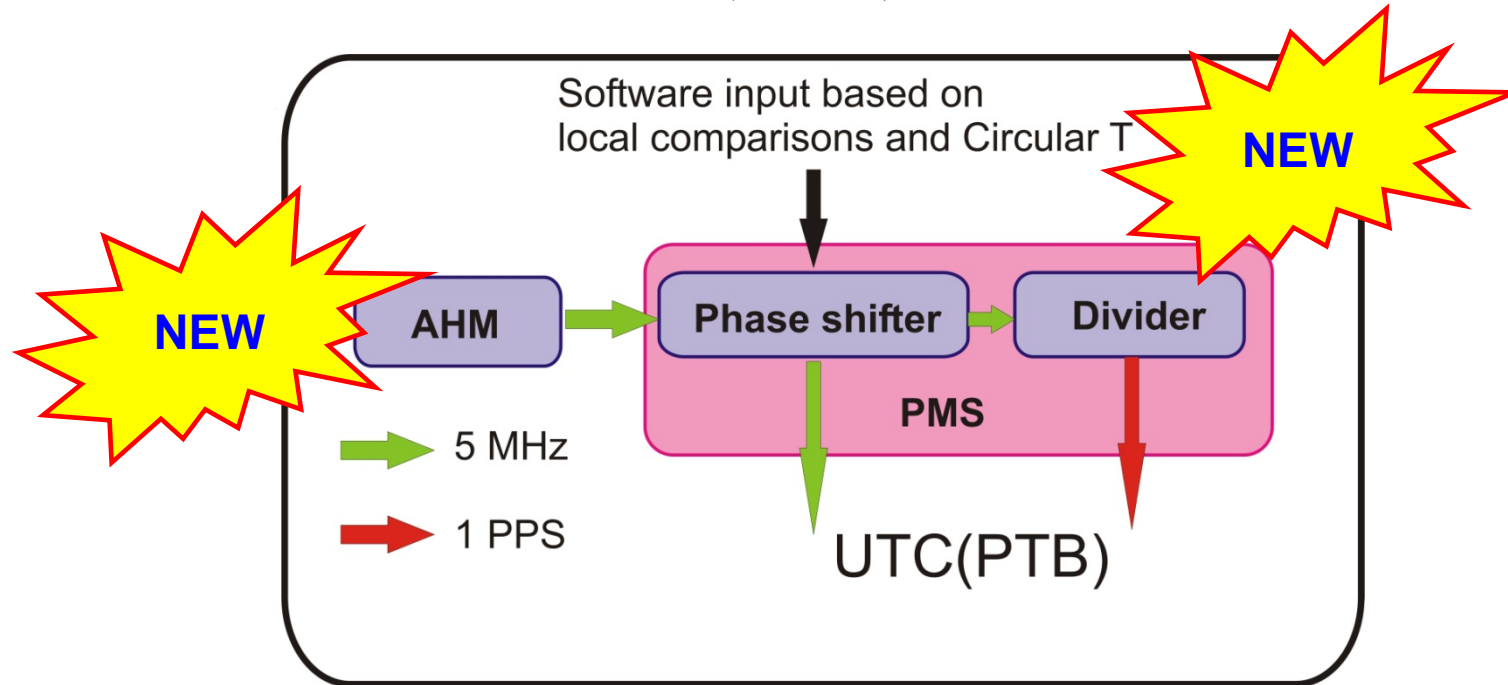


New location for antennae ensemble

Time scale generation at remote site via optical fibers using SATRE modems for ACES microwave link ground terminal



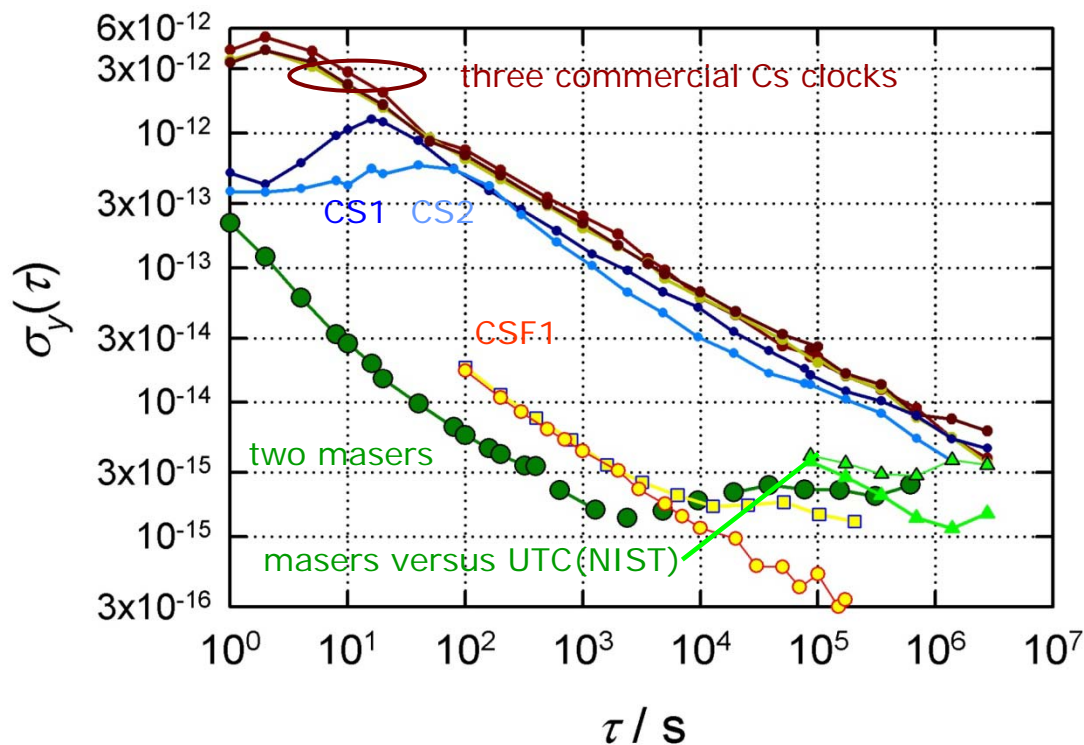
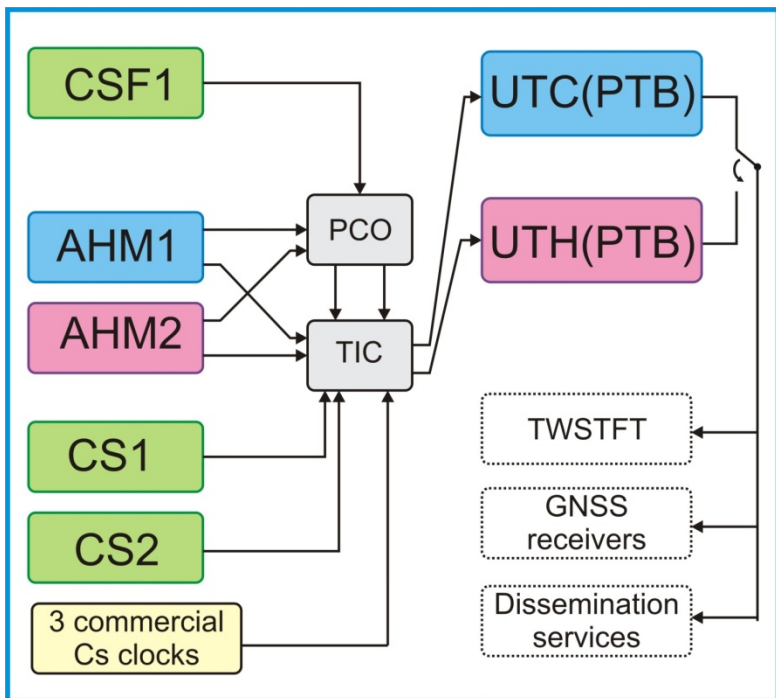
New UTC(PTB) realization



- Reduced short-term and long-term instability
- Better predictability of UTC-UTC(PTB)
- Optimum use of resources in the PTB time lab.

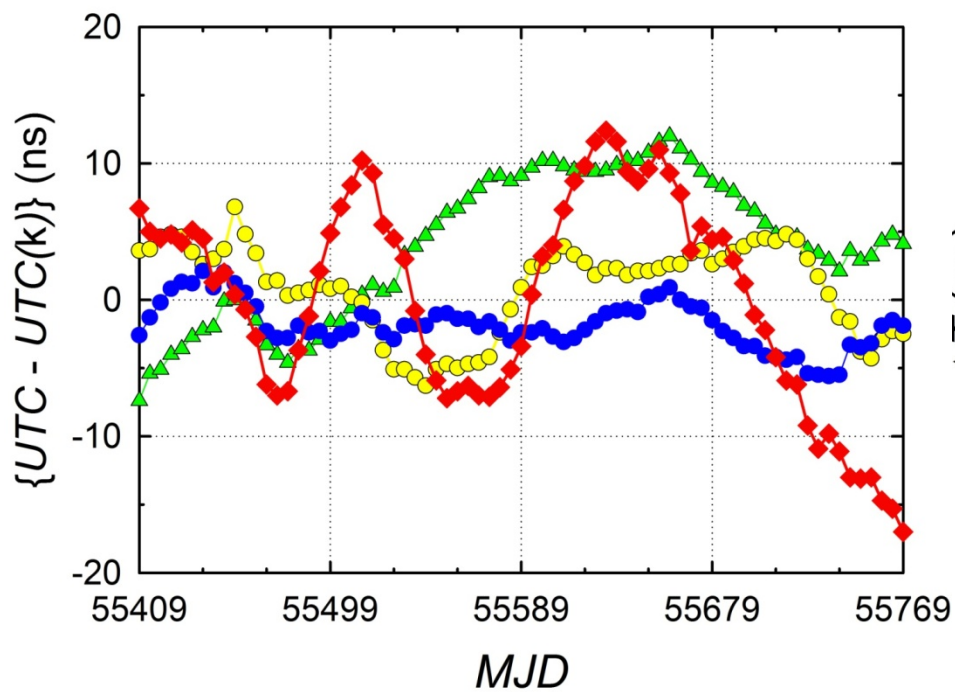
[A. Bauch et al., Proc. Joint IEEE IFCS and EFTF, San Francisco, pp. 40-43, 2011]

New UTC(PTB) realization

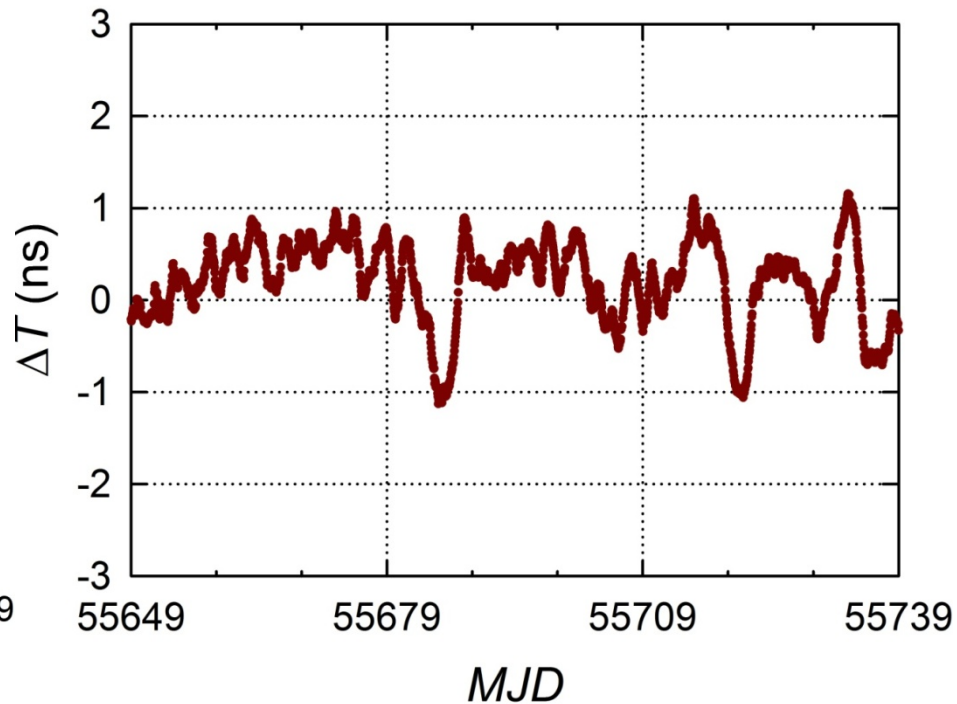


- priority 1 based on fountain data
- priority 2 based on combination of Cs-beam clocks
- priority 3 based on CS1 or CS2 data

New UTC(PTB) realization



Comparison of UTC-UTC(k)
including July 2011



Comparison of two independent
UTC(PTB) realizations

Thank you for your attention!