Long-Term Results of the HLS at the Swiss Light Source (SLS)

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Swiss Light Source (SLS): Paul Scherrer Institute, Switzerland

Technical data required for SLS (realized)
Range: ± 2.5mm (14 mm)
Resolution: 2 Microns (< 1 Micron)
Accuracy: 10 Microns

Girder SLS
Schlott et al. 2000

HLS Levelsensor: from the lab experiment to the prototype
Schlott et al. 2000

Hydrostatic Levelling System HLS
Collaboration of EMP, Winterthur, Streckeisen Seismometer Factory, University of Stuttgart Stanford Linear Accelerator Center, geomETH, Paul Scherrer Institute

SLS Levelsensor: Cross Section
Preamplifier Electronics
Temperature Sensor
Heating
Electrode with 'Touch Point'

Levelsensor mounted on a girder
Remote controlled filling process

SLS absolute response: levelsensors from sector 1, 4, 7, 10

SLS relative response: levelsensors from sector 1, 4, 7, 10

HLS Longterm data: Extrem year 2003 in sector 9

HLS Records in the four cardinal points during eclipse

Signals of all Sectors
Das neue Preciion WideRange PWR-HLS System

- large measuring range
- two tube connectors
- integrated analogue output

Conclusions and Outlook

The HLS System delivers reliable long term results but there is still a lot to research!

- the dynamic behaviour of the liquid in the half filled tube system should be understood better
- study of capillary effects along the measuring tube
- Instrumentation with continuously and fastly responding tiltmeters

Thank you for your attention!

have a nice evening!