

SYNTHETIC CONCLUSIONS FROM THE IWAA COMMITTEE

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With 43 papers presented in sessions, 26 posters and 75 participants, no doubt that this IWAA 2002 has been a successful meeting, with active participation of the attendees to the programme and to the discussions. We are glad to observe that our workshops remain a rich opportunity of mutual information and exchange between many HEP or SLS laboratories of any size, together with universities or institutes interested in large scale metrology, high precision alignment or ground motion.

From the dense programme of this 7th IWAA, we have tried to identify the main facts and trends in practice, methods, instruments and techniques used here and there :

- There is now a much larger choice of commercial instruments which can fully or nearly satisfy most of the requirements. From our respective investigations and exchanges, we all came to choose about the same adequate models - finding sometimes problems not cared by manufacturers when within their specification of common use and bringing all possible improvements for drawing off the best level of accuracy in relation with our exigency. As a consequence, norms, rigorous procedures and frequent calibrations are absolutely needed for the best use of them : beware of "black boxes"... The new automated total stations with ATR and tracking have unequal and degraded performances in angular measurements - for which refraction remains a limiting factor in their accuracy. For such main tools, widely used in engineering surveys, some progress is expected from the manufacturers.
- Except for a few specific accessories or adapters, there is less and less in-house development for the positioning metrology of circular accelerators. An optimum of the techniques seems to be reached with respect to requirements, taking benefit of the development made for future linear colliders to fit with some specific demanding parts or parameters at micrometric scale.
- Linear colliders (at micrometer level) and the internal metrology of huge experiments like CMS or ATLAS keep fostering new ideas and generating the development of new measuring equipment, with continuous or cyclic monitoring capabilities. It is satisfactorily acknowledged that three types of hydrostatic levelling systems (HLS) are now pretending to μm requirements. Wire positioning systems (WPS) - not so much discussed there - are also more and more ensuring this demanding level.
- Last but not least, computing software and least-square adjustment models (stochastic and physical) need to be refined when chasing micrometers. The idea of an inter-comparison has been emitted.

Considering the agenda of the next meetings, it was first expressed that the HLS seminar planned at CERN and postponed for external reasons remains wished by all laboratories concerned. It can be combined with WPS matters, and preliminary tests might be defined and processed before. Finally, taking into account the previous commitments and looking for the

best opportunities of seeing the most interesting stages of the installation of LHC, the next meetings will be scheduled as follow :

- HLS-WPS seminar at CERN, CH, in 2003
- 8th IWAA at BNL, USA, in 2004
- 9th IWAA at CERN in 2006

In fine, the IWAA committee express its gratitude and warm thanks to Spring8/JASRI Laboratory and to the local organising committee, led by Dr Sakuo Matsui, for the efficient management of the workshop. Above that, from the so kind welcome and exquisite courtesy of our host, we will all keep sweet memories of this second IWAA in Japan.