

Research Director's Report

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Physics and detectors at TILC09

This month's Research Director's Report was written by Hitoshi Yamamoto, co-chair of the Worldwide Study and regional detector contact for Asia.

I am writing this column for the first time as one of the three regional contacts who serve under the ILC research director Sakue Yamada, but also as a co-chair of World Wide Study (WWS) and a member of the Asian Committee for Future Accelerators (ACFA). There will be a joint ACFA Physics and Detector Workshop and GDE Meeting ([TILC09](#) – where 'T' stands for Tsukuba) from 17 to 21 April. The venue is a conference centre called EPOCHAL Tsukuba located in the central part of the city of Tsukuba. In 1985, an international exhibition was also held around this location, and KEK is about 10 kilometres to the north. In this note, let us focus on the physics and detector part of the workshop since the accelerator part has been covered in the [Director's Corner of February](#)

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This ILC workshop will be the first one after the deadline for the ILC-detector Letters of Intent (LOI), on 31 March. The primary goal, therefore, is to start an active and productive process of LOI reviews. The formal reviewing body is the International Detector Advisory Group (IDAG) headed by Michel Davier, but the whole ILC detector community will be involved in the process, further polishing up physics studies and optimisation of the detector designs, and communicating with the IDAG. Relevant R&D on detector technologies will of course be carried on. The process will continue up to the ILC workshop to be held in Albuquerque, New Mexico, from 29 September to 3 October, where the IDAG is to announce its recommendation. The ILC research director will then report it to the ILC Steering Committee (ILCSC).



Conference venue for TILC09: Epochal Tsukuba

The reviewing process of the IDAG is often described as 'validation' of LOIs. The main point of the terminology is to indicate that the IDAG charge does not include down-selection of the three LOIs to two. Then, what does that mean concretely? In a nutshell, the validation amounts to making sure that the concept, plan, and capability of a given LOI group is sufficient for designing a successful ILC detector which requires unprecedented performances in order to realise the rich physics potential of the ILC. More specifically, the IDAG will look into the issues whether the concept is suited for the physics goals of the ILC, the state of detector R&D and the plan toward a real detector, the group's resource profile, and whether the cost estimate is realistic. In addition, the IDAG will address more technical issues such as machine backgrounds, calibration or alignment, and basic engineering issues including the push-pull design. Through this reviewing process, it is hoped that the ILC detector efforts will not only be steered towards realistic ILC detectors but can also be adequately funded.

At TILC09, there will be an ACFA plenary session on the first day after the joint plenary session, where an extensive presentation will be made by each of the three LOI groups. Each talk will consist of a general section and a subdetector section. The general section will cover the overall philosophy of the detector concept, how the detector was optimised, and the expected physics performances. The subdetector part will report on detector R&D status and plans in some detail. The members of IDAG will be listening attentively to these talks. There will also be closed sessions where the IDAG can ask questions to the representatives of each LOI group.

The fact that the accelerator meetings and the physics/detector meetings are held at the same time will be

fully exploited. There will be a plenary session where each LOI group will present its design for the push-pull operation. This session will be arranged so that the beam delivery system experts from the accelerator community can also attend. Other issues related to machine-detector interfaces will be discussed in sessions where both accelerator and physics/detector experts can attend as much as possible even though some compromise may be necessary.

There are important topics other than the LOI process such as the roadmap beyond, responding to the LHC results, and collaboration with the Compact Linear Collider Study (CLIC). These will be appropriately covered and discussed at TILC09. I hope that you will come to TILC09 and enjoy (weather permitting!) wonderful spring days in Japan.

-- *Hitoshi Yamamoto*