

Meeting of Project Board Accelerator

26.1.2011, 16:00-17:00, Phone Conference

Present: A. Caldwell, E. Elsen, W. Hillert, S. Khan, G. Müller and C. Zeitnitz; apologies from R. Assmann and J. Osterhoff.

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Announcements

The Annual Report for the Alliance is due. Representatives of the institutes should prepare a short text for their respective activities. Further news will be given shortly by the Management of the Alliance.

Frankfurt Meeting

A 1-day meeting is planned in Frankfurt on January 28, 2011, with representatives of all institutes taking part in the Alliance. In addition, the chairs of the respective project boards are asked to present ideas on a new Alliance. The meeting follows the tradition of the first Frankfurt meeting at the beginning of the Terascale Alliance, which served to establish a common basis and understanding amongst the institutes. The goal is to found a new Terascale Alliance.

The Alliance was funded out of the *Impuls- und Vernetzungsfond* of the Helmholtz President. Following criticism from other Helmholtz centres this funding branch will be reduced (max 2.5 M€/a per project) and is reserved for new initiatives. As a complement, the Portfolio-Programme has been launched to establish truly new research branches. The Accelerator Research & Development programme (ARD) is one such new programme that will address specifically the progress of accelerator research. A similar joint programme has been submitted for detector development as part of the Portfolio Programme. A new Terascale programme will also be part of the Portfolio Programme and will have to address these developments. A first sketch of a new Terascale programme has been submitted end of last year; the corresponding text has been drafted on rather short notice. The Frankfurt meeting will collect further opinions from all interested parties and solidify the goals. It is well understood that the collaboration of universities and Helmholtz centres engaged in High Energy Physics is desirable and beneficial for the German HEP community.

To guide the discussion a questionnaire has been drafted which can be obtained from the web-page of the meeting.

Concerning the accelerator area the following topics were mentioned in the discussion:

- SRF will probably achieve its original goal of 35 MV/m with high yield before the end of 2012. Meanwhile, R&D efforts have started with the goal to increase the gradient above 50 MV/m using new cavity shapes, single crystals, single atom layers on the superconductor, etc. Such a programme could be carried out in the international context and would benefit from the existing infrastructure. – This research is also complementary to the ARD-programme, which is concentrating on high Q-values and does not support universities.
- Plasma wakefield acceleration is topical. It enters a phase where the infrastructure of larger research centres is required. CERN and DESY have started to engage in the topic and it is likely that an experimental research programme will flourish, particularly in the context of close collaboration of universities, MPIs and Helmholtz centres. The YIG has been devoted to this topic in the Alliance.
- Beam dynamics and simulations will be important to understand or improve the luminosity for LHC, B-Factories, ILC and CLIC. An example of topical interest is the observation of electron clouds at LHC, somewhat stronger than originally anticipated. It is also a concern for PETRA III. The effects pose a severe limitation in high current positron damping rings and potentially also in linacs. – Considerable expertise exists in some of the research centres in understanding these limitations. Another aspect of simulation arises from the demands of transporting ultra-low-emittance beams over long distances and focusing them to the small dimensions required for high-luminosity operation.
- Feedback and controls is another important topic. This field requires formal training and is required essentially in all accelerators.

Beyond the selection of research topic and actual research the main benefit of the Alliance for the topic of accelerator research is the attraction for students. Students meet during the schools, exchange their ideas and form early collaborations. The links between centres and university institutes improves; the field receives fresh input from students and is treated as an academic discipline at the universities. These aspects of the collaboration should be preserved for the successor of the Terascale Alliance.

Schools

HUB and BESSY would like to organise an Accelerator School in autumn 2011 in Adlershof. They currently envisage to include a lecture on theoretical physics, medical and biological applications of accelerators along with the more traditional formal lecture on beam optics. They also foresee to offer hands-on practical hours on the accelerator possibly in parallel to the practical exercise with the students. – We are asked to consider to participate.

The topic was discussed and received the following comments:

- The date will be very close to the CERN accelerator school, September 18-30. It will hence be difficult to attract students in sufficient number.
- Given the experience from the previous schools TAS2008 and TAS2009 the programme schedule seems to be rather loaded. Students at TAS2008/TAS2009 had asked for a more focused programme and better introduction to the practical courses. The challenge of the practical courses comes both from understanding the tools and applying them to the accelerator topics just apprehended. The topics at TAS concentrate accelerator optics and applications for LHC and ILC. Typically plasma acceleration has also been included.

The PB hence decides not to hold a formal school in 2009. Instead a topical ~2 day workshop on plasma acceleration in autumn 2011 is foreseen. The next TAS will be offered in spring 2012 with the full programme.

Next Meeting

The date of the next meeting will be separately announced; a tentative date is 23.2.2011.

E.Elsen