Developments & Opportunities in Terascale Accelerator Research in Germany

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Verbundforschung

- support for universities engaging in research at large facilities
  - for personnel including students
  - technical support
- funded by bmbf
  - to enable scientific return on the investments at large infrastructures (accelerator centers)
  - large detectors and telescopes have long been supported; **accelerators** were **excluded** since they were considered part of the infrastructure

Accelerator Research

- New large projects at the centers bind many resources (FAIR, XFEL, LHC, ILC, CLIC, …)
  - project oriented funding in new legal frameworks (GmbH etc.)
- Research on fundamentally new concepts is less important
  - new accelerator schemes
  - diagnostics
  - controls

Frankfurt Meeting

- HuK and KET initiated a meeting of all university experts on November 13, 2008
  - Reports from the three centers introducing topics
    - presentation of activities from individual unversities
- There is
  - interest to collaborate
  - need to operate and exploit in-house resources and facitilties; i.e. the local accelerator, storage ring etc.

Consortia

	Koordinator
1. Teilchenquellen [CERN, Ffm, FZD, TU DD]	H. Teichert
2. Strahlinstrumentierung [CERN, FAIR, Ffm, HD, DO, KIT, Uni Wuppertal]	H. Braun
3. Normalleitende Kavitäten [FAIR, Ffm, TEMF, TU DA, Uni Rostock]	P. Hülsmann
4. Supraleitende Kavitäten [CERN, DESY, KP und TEMF TU DA, Ffm, KIT, Uni HH, MPI HD, Uni Rostock, Uni Wuppertal]	W. Weingarten
5. Supraleitende Instrumente [CERN, KIT LMU München]	P. Peiffer
6. Strahl-Material-Wechselwirkungsprozesse u. Diagnose (Wiggler, Undulatoren etc.) [CERN, FAIR, TU DA, Ffm, FZK]	R. Schmidt
7. LHC & FAIR-Kollimatoren in den Ringen [CERN, FAIR, TEMF TU DA, Ffm, Bonn]	R. Assmann
8. Pol. Elektronenstrahlen [Mainz, Bonn, CERN, DESY, Zeuthen]	K.. Aulenbacher
9. Electron Cloud-Effekte [CERN, FAIR, Uni Rostock, KIT, Uni Wuppertal]	F. Zimmermann
10. Rezirkulierende Elektronen-Linacs [TU DA, CERN, Mainz, KIT, BESSY]	S. Müller
11. "Feed Back"-Systeme für Ringe [Uni DO, FAIR, FZJ, Bonn, GSI]	S. Khan
12. HF-Nachbeschleunigung von laserinduzierten Protonenstrahlen [FZ DD, TU DA, Ffm, GSI]	M. Roth
13. Elektron – Nukleon – Kollider [Mainz, FZJ, Bonn, Uni DO	A. Jankowiak

- Tentative allocation of topics and participants
- Both HuK and KET are represented
- CERN, DESY and GSI are centers facilitating engagement

Comments

- Problems are common to HuK and HEP
  - source
  - cooling
  - acceleratoin
  - exploitation
- and dominated by HuK
  - FAIR (many accelerator physics challenges)
  - CERN – LHC injector upgrade and CLIC

Potential Consortia for the Terascale

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- many areas are general purpose – adequate for university engagement

Lol's till end of this week

- Polarized beams
  - source (e^+ and e^-)
  - spin manipulation and transport
  - polarimetry
  - Facilities:
    - Bonn, Mainz, DESY
- Beam instrumentation
  - position & profile
  - bunch compressors
  - Facilities
    - Bonn, Dortmund, Mainz, …, CERN (CTF3&4), DESY

Lols cont'd

- Superconducting cavities
  - ongoing DESY effort for XFEL & ILC
    - surface inspection
    - analysis
- SPL preparation at CERN
  - …

Summary

- HGF-Alliance
  - still some unused opportunities for collaboration on scientific topics
  - Verbundförderung
    - some new opportunities
    - extremely short time scale (end of November)