ESFRI workshop on

Technical Challenges at the Proposed European XFEL Laboratory

30-31 October 2003

Final conclusion

Introductory remarks for the discussion

Report to be presented to ESFRI at its

Seventh meeting

Trieste, Thursday November 2003

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- *Over the last 10 years progress in Linac driven light sources has been impressive*
  - *proof of principle experiments of SASE*
  - *photo cathodes (drive laser)*
  - *integrated system test at TTF including first experiments, which stimulated enormous interest in the community*

- ***A lot more needs to be done*, but technical solutions are in reach to meet the parameters of the proposed European XFEL Laboratory in due time**
  - ***photo-cathodes, injectors***
  - ***optimization of Linac, however, it is already clear today that the TESLA technology is flexible enough to be able to profit from progress expected in the coming years for different sub-systems***
  - ***fast switching within a bunch train preserving the beam quality***
  - ***electron and photon beam diagnostics***
  - ***synchronization***
  - ***X-ray optics, instrumentation, detectors***

- ***In order to be successful*, to motivate the experts in Europe and to create a broad basis for XFELs in the accelerator community and among the potential users, in order to keep the excitement and the motivation**
  - ***decisions for a reasonably well funded European project have to be made in the coming 18 months.***
  - ***A European Working Group on scientific and technical matters at the proposed European XFEL Laboratory should start working early 2004.***

At DESY we hope to continue the work, so far done within the TESLA collaboration, together with the European Working Group on scientific and technical matters and new partner laboratories. Issues which need to be approached in the coming months include

- *Technical challenges*
- *Scientific program and general layout of the facility*
  - *As an example: We would like to know if we should take out an electron beam at ~2.5 GeV and plan additional VUV, soft X-ray beamlines at the European XFEL Laboratory.*

Common discussions on the organizational schemes for the preparation phase of the European XFEL Laboratory, i.e. for the coming 18 months, should start as soon as possible.

The European Working Group on administrative and political aspects of the project should start working early next year.