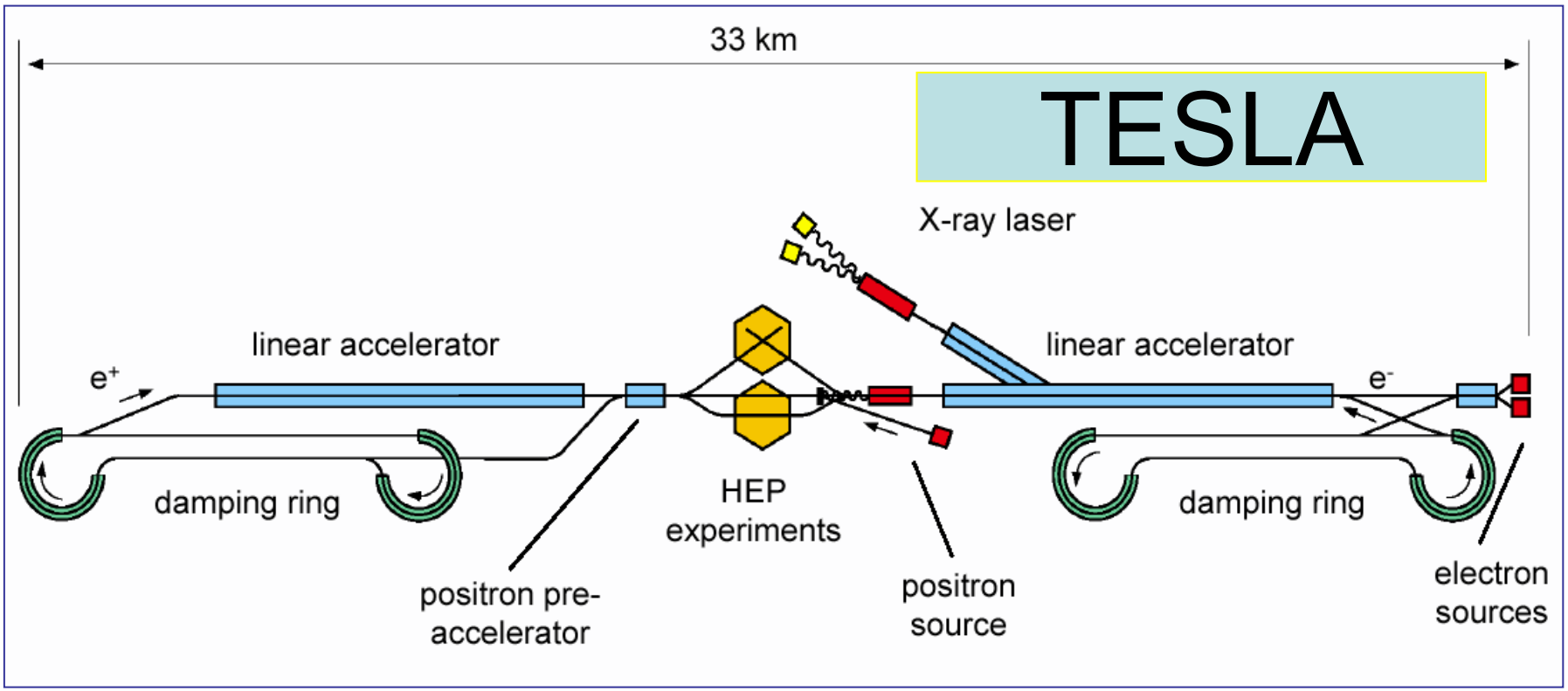
Status of TESLA

Superconducting Electron-Positron Linear Collider Project



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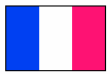

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Jefferson Lab, Newport News VA

Joint Institute for Nuclear Research (JINR), Dubna

March 2003

- The TESLA Collaboration:

-at present 49 Institutes in 12 countries

-growing

- major hardware contributions from abroad: France, Italy, USA

- Major help from CERN and KEK on SC cavities

German Science Council-Recommendation concerning the X-FEL

November 2002

The high luminosity and time resolution of the X-FEL promises a new quality of experiments for many areas of research in the natural, life, material and geo- sciences. Due to the high coherence of the photon radiation it will be possible for the first time to extensively analyse the structural and dynamic properties of matter. ...

... use of the TTF has led to key theoretical and experimental developments as well as sweeping technological innovations, a trend that is expected to continue in the future .

The Science Council requests the Federal Government to give its binding consent to German participation in the TESLA X-FEL project as soon as possible after the revised project proposal has been submitted .

German Science Council-Recommendation concerning the LC

November 2002

The Science Council believes that an enormous amount of knowledge about fundamental questions concerning the micro- and macrocosmos will be gained from the scientific questions that will be examined using the TESLA linear collider.

... The general feasibility of superconducting accelerator technology was convincingly demonstrated by the test accelerator (TTF) installed at DESY .
...

The Science Council requests the Federal Government to give its binding consent to German participation in the project as soon as possible after the project proposal has been submitted with specific details concerning international funding and international cooperation

Status of TESLA

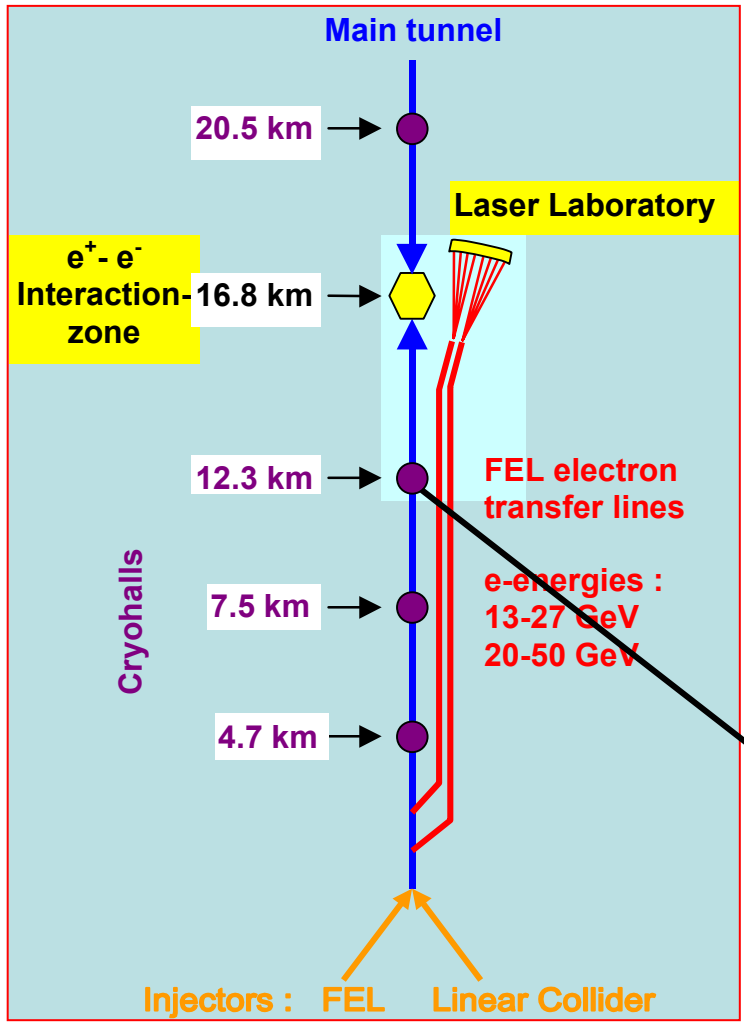
TDR:

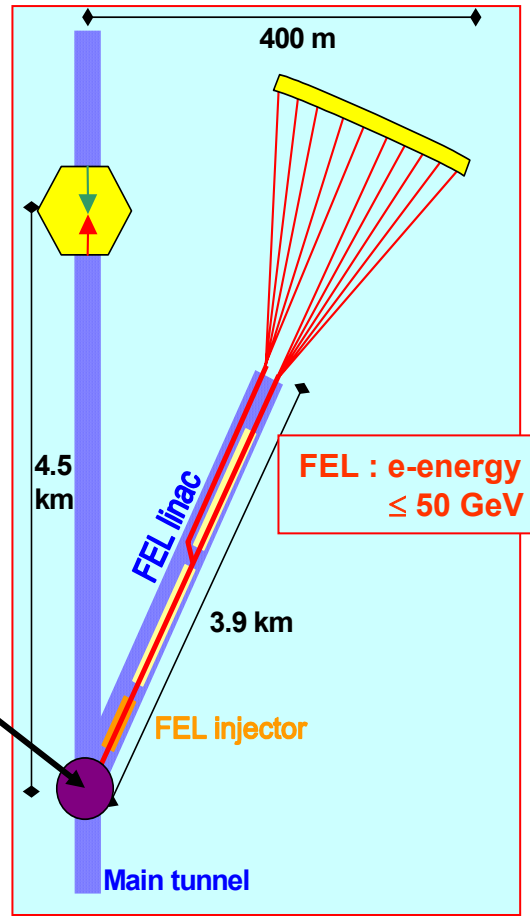
Collider and FEL use jointly the first section of the SC linac, minimising the cost

It leads however to a coupling of the LC and the FEL during all stages of the project

TDR Supplement:

Own Linac for FEL to decouple FEL and LC





Alternative implementation

Decisions of the German Ministry for Education and Research concerning TESLA

5 February 2003

Decision concerning FEL:

DESY in Hamburg will receive the X-FEL

Germany is prepared to carry half of the investment cost.

Discussions on European cooperation will proceed expeditiously, so that in about two years a construction decision can be taken.

Cost: 450 MEuro for accelerator part (including personnel)

240 MEuro for XFEL laboratory (including personnel)

Decisions of the German Ministry for Education and Research concerning TESLA

5 February 2003

Decision on LC:

Today no German site for the TESLA linear collider will be put forward.

This decision is connected to plans to operate this project within a world-wide collaboration

DESY will continue its research work on TESLA in the existing international framework, to facilitate German participation in a future global project

Statement of the German Ministry for Education and Research to Parliament Commission on Research:

February 2003

- DESY will remain a world-wide leading centre of particle physics. Today, Germany is not proposing a site for the TESLA Linear Collider.
- DESY will continue its R&D work, which is done in international collaboration, in order to assure a German participation in a global project.
- The decision to not propose a site today is not meant as a reduction of the importance of particle physics in Germany.

Essence:

The statement by the German government

- is positive on a linear collider in general,
- approves continued R&D on TESLA,
- encourages the German participation in a global project,
- but leaves the site selection open for the time being.

Next Steps for the FEL:

- Discussion with European partners interested in the construction of the linear accelerator and the laser facility
- Formation of a planning group with members from all countries interested in the participation in the construction of the linear accelerator and the laser facility
- Analysis of the present concept for the linear accelerator and the laser facility by the planning group
- Adaptation of the project parameters to include the findings and recommendations of the planning group
- Continuation of the R&D work on the linear accelerator, undulators, beam lines and experiments of the X-FEL laboratory

- The design work on the XFEL accelerator will be largely applicable for the main accelerator of a superconducting LC

Next Steps for the LC:

The path chosen by TESLA to move towards approval:

- plan and develop the project jointly with many partners,
- convince one country to make a financial commitment and a site proposal,

to be followed by

- commitments of other countries,
- joining of new partners to the project and
- joint review of all aspects of the design before moving into the construction phase

was recommended by the German Science Council

but not followed by the German Government, therefore . . . .

Next Steps for the LC:

Community will now take the other path used for international projects (e.g. ITER):

- unite first behind one project with all its aspects, including the technology choice, and then
- approach all possible governments in parallel in order to trigger the decision process and site selection.

It is now up to us, to the particle physics community to converge in a speedy way

Technology Recommendation

Aim at joint selection of one technology in 1 year.

How:

- Gather a committee of wise persons, who use criteria to be developed by the ILCSC, to recommend a technology choice to the ILCSC.
- The regional steering committees will each nominate 4 persons from which the ILCSC will choose three from each list for a total of 9 wise persons.

First discussion of the make-up of the committee in August.

Advice in this will be widely sought from the community.

Progress on TESLA Collider Technology

Report by the International Technical Review Committee, endorsed by ICFA in February 2003:

"TESLA has essentially demonstrated its main linac rf performance specifications for 500 GeV c.m. By the end of 2003, one will hopefully know if TESLA can reach 800 GeV c.m. by testing of the cryomodules at 35 MV/m."

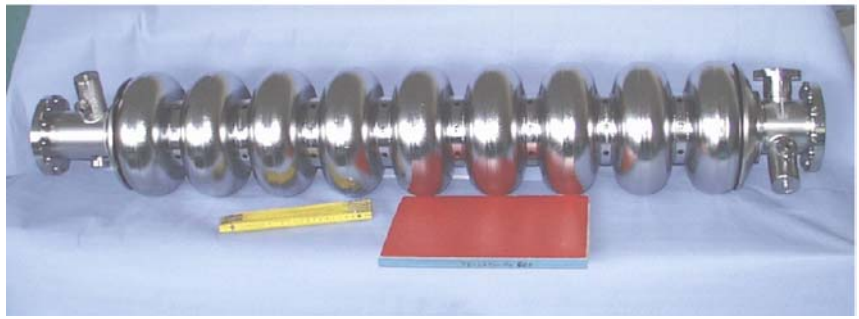
{ Note: cms-energy above 800GeV achievable by appropriate choice of length and site of the interaction region }

Together with all tasks related to the XFEL, DESY and partners will focus in preparation of the collider on linac related issues (industrialisation, reliability, high gradient programme)

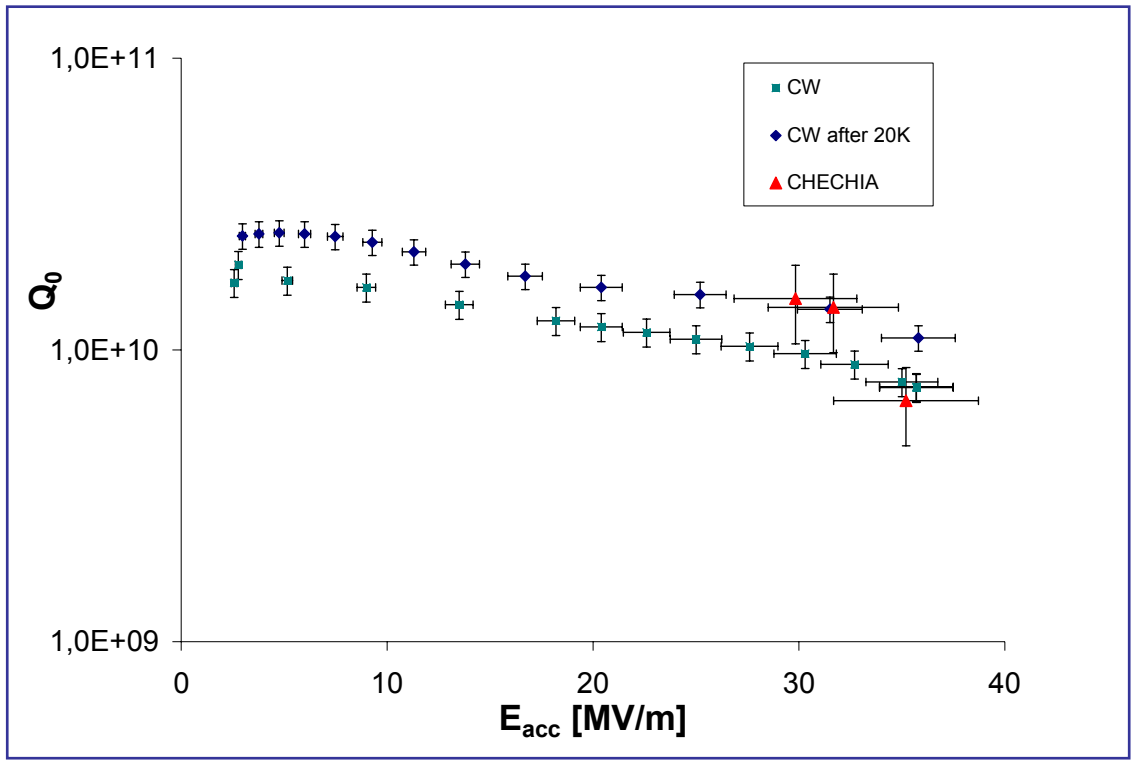
Progress on TESLA Collider Technology

First high power test of an electro-polished cavity

Completely new final preparation sequence (no etching after tank welding)



very good result, similar to vertical test



Conclusion

We have a convincing scientific case and a world consensus on the importance of a LC and on its timing w.r.t the LHC

We have a great dynamics in the international coordination and are gaining political attention.

We need to make the technology choice soon to meet our goals

The future of the LC is largely in our hands, lets make it happen