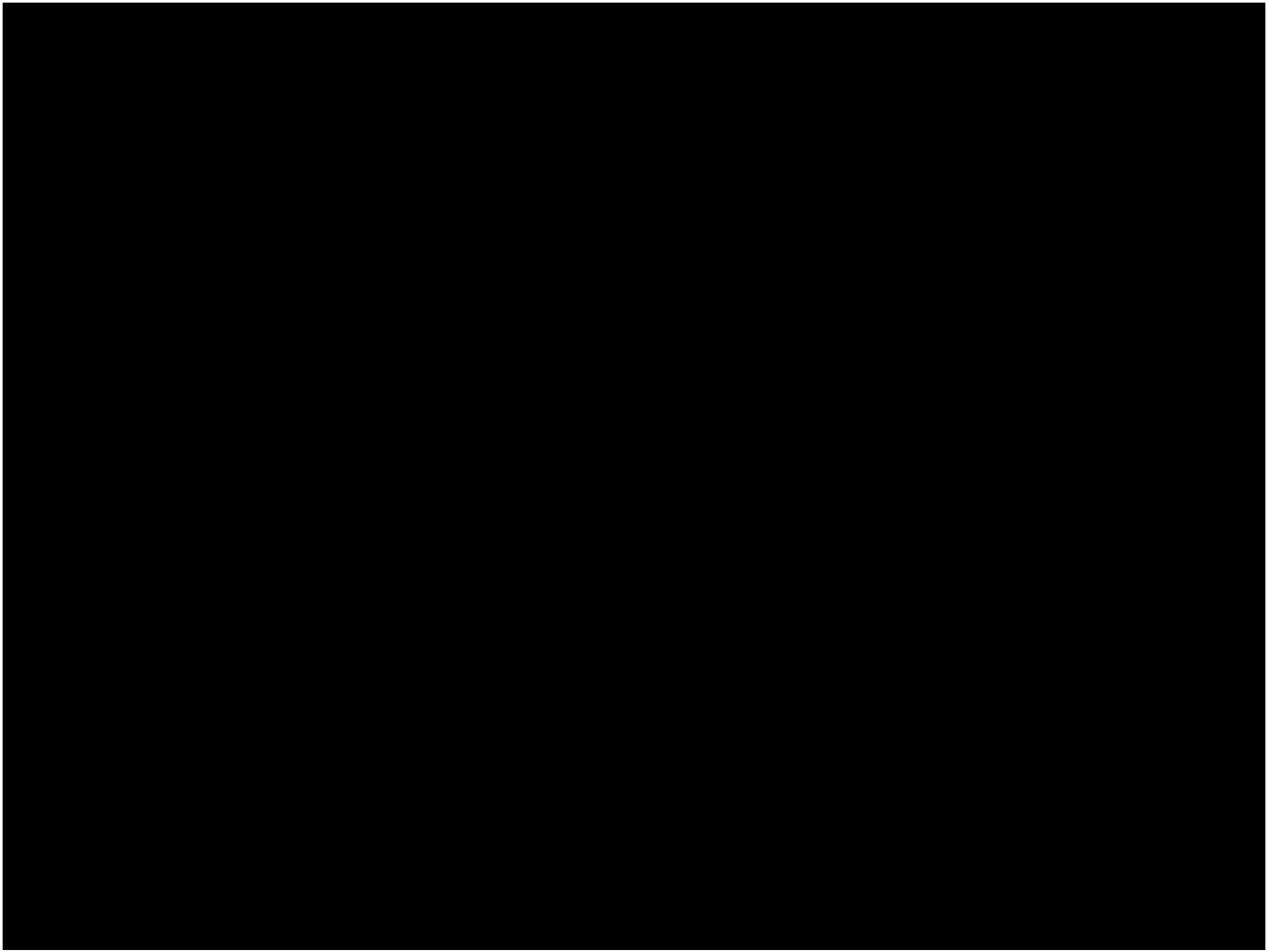
Concluding Remarks

R.-D. Heuer, Univ. of Hamburg



International Consensus I

Study groups of ACFA, ECFA, HEPAP
The next large accelerator-based project of particle physics should be a linear collider

US DOE Office of Science Future Facilities Plan:
LC is first priority mid-term new facility for all US Office of Science

ACFA, ECFA, HEPAP (January 2004)
The chairs reaffirmed their community's priorities for a 500 GeV linear collider operated in parallel with the LHC

Major Funding Agencies
Regular meetings concerning LC

International Consensus II

OECD Ministerial Statement (January 2004)
"…noted the world wide consensus of the scientific community, which has chosen an electron-positron linear collider as the next accelerator-based facility to complement and expand on the…LHC…"

ICFA (i.e. CERN,DESY,FNAL,KEK,SLAC etc) February 2004
reaffirms its conviction that the highest priority for a new machine for particle physics is a linear electron-positron collider with an initial energy of 500 GeV, extendible up to about 1 TeV, with a significant period of concurrent running with the LHC

What else do we want ?

International Consensus III

Something else I would like to see:

All (major) Laboratories to acknowledge this unprecedented consensus - recognised up to the level of science ministers - to act correspondingly, and to become partners in this global effort

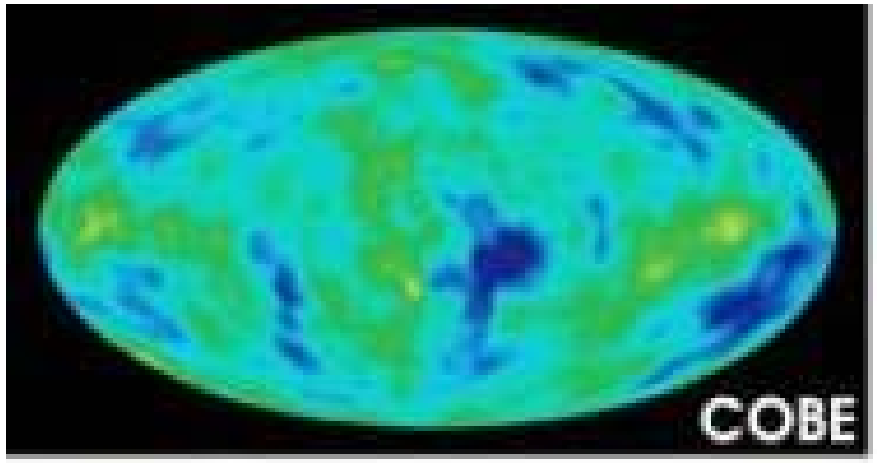
I am confident that our vision will become reality:

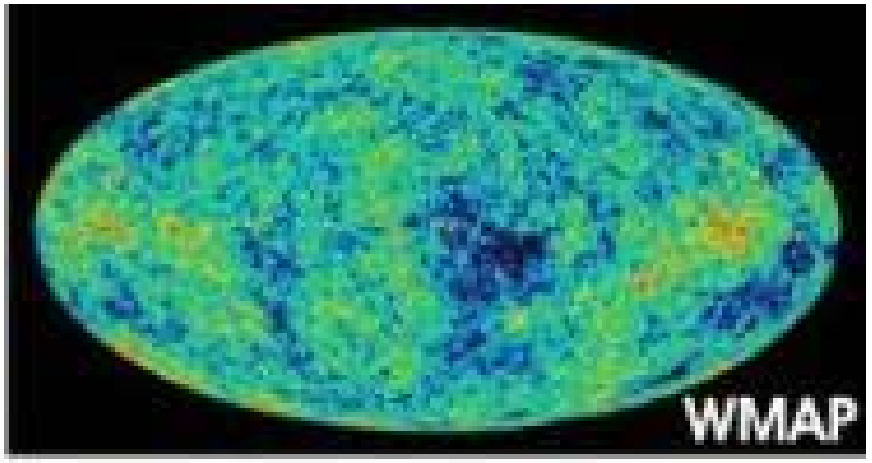
The linear collider will not only investigate new frontiers in physics and technology but also in international science collaboration . . . on a scale and scope not seen before in science

Maury Tigner in our press release

The official launch

Physics I





Linear Collider in the range 500-1000 GeV has excellent scientific potential independent of the results at LHC

. . . so much about 'added value'

Physics II

- Continue to work out the physics capabilities
  - sharpen the physics case
  - provide input to detector design
- LHC / LC
  - draft of first report circulating
  - important to continue this effort
- Cosmology / LC
  - increasingly important topic
  - fascinating topic
  - create working groups in ACFA and ECFA studies as already done in NA and WW studies
- Q: LC notes on world wide repository?

contact: Behnke, Graf, Miayamoto

Technology I

Both technologies (GLC/NLC and TESLA) have the required energy reach of about 1 TeV

→ TeV Collider

not sub-TeV collider

Both technologies well worked out
Collider could be constructed for data taking 2015

CLIC technology promises higher energy reach

→ Multi TeV collider

much R&D needed (and supported)
different time scale (2nd step)

Technology II

ICFA and ILCSC established

- procedure to arrive at a technology recommendation
- time scale for collider design and construction

agreed to by all parties involved

ITRP (see presentation by B.Barish)

- we are in good hands
- important for all of us to:

accept the recommendation of the panel

and

unite behind the recommendation of the panel

only then the project will become reality

Technology II continued

ITRP would like input from us about influence of collider technology on physics and detector (like the issues discussed Thursday afternoon)

timescale: ITRP meeting at CalTech (end June)

Contact persons from the WW org.com:
F.Richard, J.Jaros, S.Yamashita

Time scale

ILCSC (see presentation by M.Tigner) :

2004 technology recommendation (confirmed by ITRP)

Establish Global Design Initiative / Effort (GDI/E)

2005 CDR for Collider (incl. first cost estimate)

2007 TDR for Collider

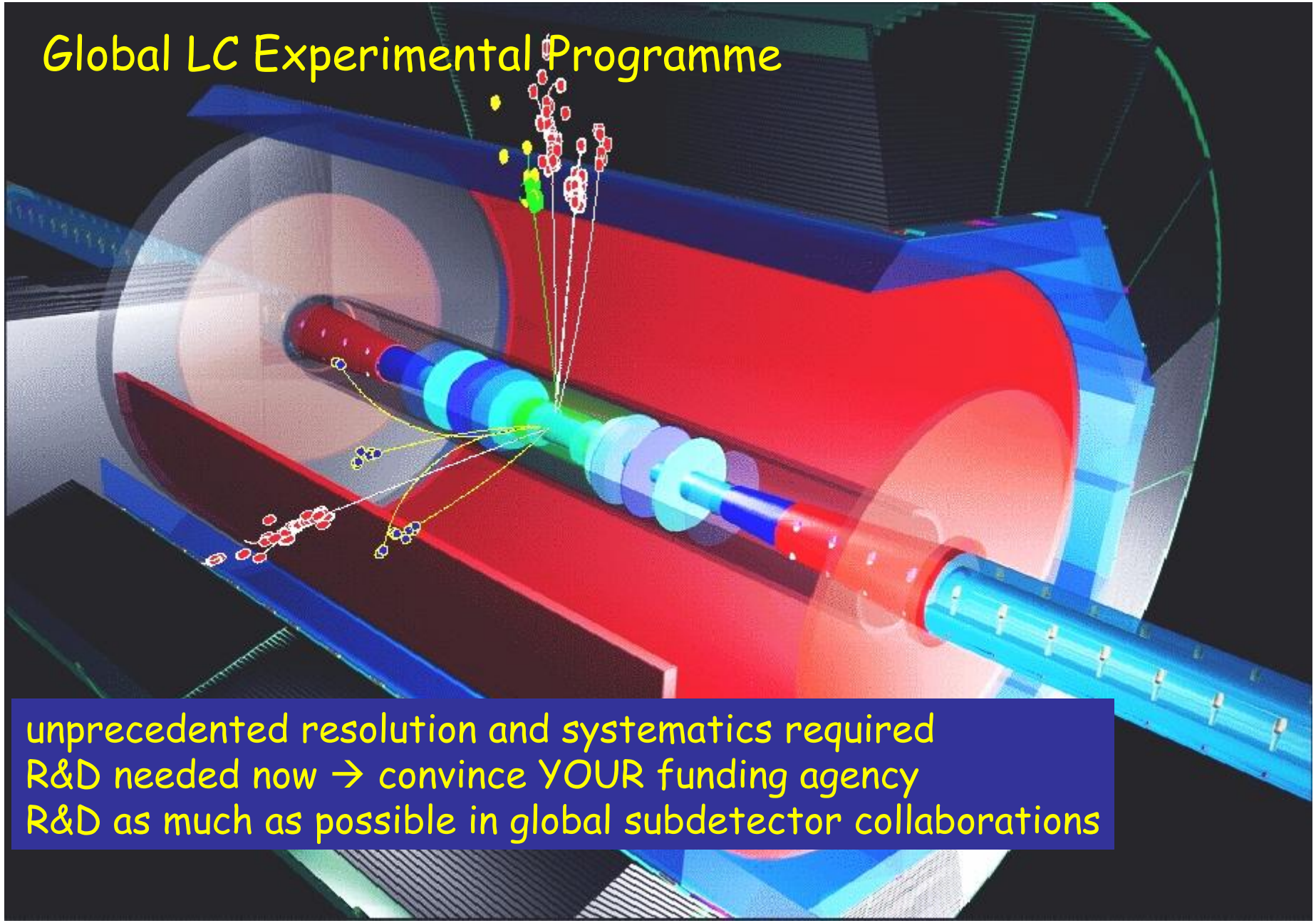
2008 site selection

2009 construction could start

(need approval of funding but not yet major spending !)

→ **keep this momentum**

Global LC Experimental Programme



unprecedented resolution and systematics required
R&D needed now → convince YOUR funding agency
R&D as much as possible in global subdetector collaborations

Global LC Experimental Programme

Necessity to work out detector concepts
on a time scale matching the accelerator (GDI/E) time scale

→ **keep this momentum**

Need to work out a procedure now (i.e. on the time scale of ICHEP04) for detector concepts up to LoIs and experiment proposals (see presentation by D.Miller)

- w/o damaging the international R&D collaborations
- open for newcomers and new ideas
- as much as possible within international context
- avoid shoot out between regional concepts !

how are we going to do this ?

→ Your input required before NA-meeting (Victoria) end July

Final Remarks

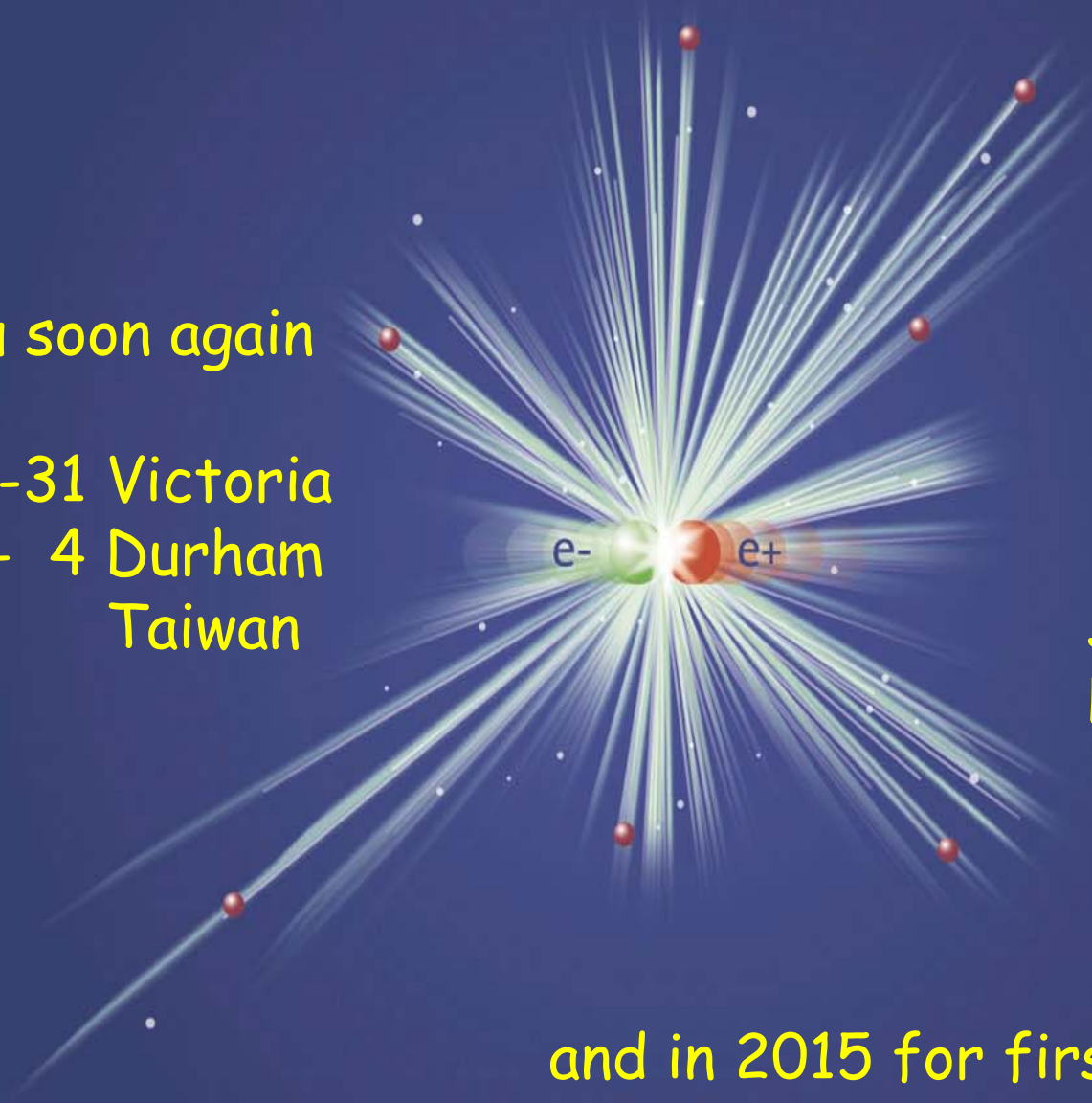
The strength of our community is its ability to unite behind a project

We are ready to embark on a global project (collider and experiments)

To assure a healthy future of the field we need to concentrate the world-wide efforts on the common goal: commissioning of a LC in ~2015

The community requests to be heard by those bodies which are presently discussing our future

thank YOU all for this exciting and fruitful meeting



see you soon again

Jul 28-31 Victoria
Sep 1- 4 Durham
Dec Taiwan

Spring 2005
LCWS (America)

and in 2015 for first collisions

World's Physicists Endorse Linear Collider

Paris—Over 2600 physicists from around the world have signed a document supporting a high-energy electron-positron linear collider as the next major experimental facility for frontier particle physics research, members of the World Wide Study of Physics and Detectors for a Linear Collider announced today.

"Such consensus on what the next research facility should be is unprecedented," said Prof. Jim Brau, University of Oregon, "It is a tremendous endorsement. Experimenters, theorists and accelerator scientists, graduate students and Nobel prizewinners have all signed up to support the linear collider." The announcement came today at an International Conference on Linear Colliders being held in Paris this week under the auspices of the World Wide Study.

In January 2004, an OECD Ministerial Statement also endorsed the plan for global collaborative development of a linear collider and noted the consensus of the scientific community on the importance of a new-generation facility.

The linear collider will be one of the essential tools to answer new and emerging questions about matter, energy, space and time. In the last 30 years, physicists have achieved a profound understanding of the fundamental particles and the physical laws that govern matter, energy, space and time. Researchers have subjected this "Standard Model" to countless experimental tests; and, again and again, its predictions have held true. Now, in a development that some have compared to Copernicus's recognition that the earth is not the center of the solar system, startling new data have confirmed that only five percent of the universe is made of normal, visible matter described by the Standard Model. Ninety-five percent of the universe consists of dark matter and dark energy whose fundamental nature is a mystery. The Standard Model's orderly and elegant view of the universe must be incorporated into a deeper theory that can explain the new phenomena. The result will be a revolution in particle physics as dramatic as any that have come before.

"The linear collider will be a revolutionary research facility that will provide the sharpest, cleanest window to the world of elementary particles ever built, allowing scientists to probe with clarity the most fundamental mechanisms of matter and the universe," said Nobel laureate Masatoshi Koshiba of the University of Tokyo.

The 30-km-long accelerator will have two main linear accelerators oriented opposite one another, propelling head-to-head beams of electrons and their antimatter twins, positrons, to within nearly light speed before colliding them. Working in a real-time dialogue with the Large Hadron Collider (LHC), currently being installed in CERN in Geneva, will allow the discoveries from each accelerator to be used to make further discoveries at the other.

The strong support from the world physics community for the linear collider is another step forward in the build-up toward approval of the project.
"The linear collider will not only investigate new frontiers in physics and technology but also in international science collaboration. This project will go ahead as a closely coordinated international collaboration, with shared costs and shared benefits, on a scale and scope not seen before in science," said Maury Tigner, director of the Laboratory of Elementary Particle Physics at Cornell University and chair of the International Linear Collider Steering Group.

In 1999, scientific panels studying the future directions for particle physics in Europe, Asia and the United States concluded that a linear collider would be an essential complement to the LHC at CERN. As a consequence, the International Committee for Future Accelerators (ICFA) recommended pursuit of accelerator research and development for a linear collider in the TeV energy range. In 2001-2002, the three regional organizations of the high energy physics community—the Asian Committee for Future Accelerators (ACFA), the European Committee for Future Accelerators (ECFA) and the High Energy Physics Advisory Panel (HEPAP) from the U.S.—reached the common conclusion that the next accelerator should be an electron-positron linear collider with an initial energy of 500 GeV, running in parallel with LHC, and later upgradeable to higher energies.

"I am delighted by the response from physicists worldwide, particularly by the number of young researchers who have signed the document." said Prof. Francois Le Diberder, deputy director of IN2P3 in Paris. "Participation in the linear collider gives young scientists the challenge of taking part in the most exciting scientific quest of the 21st century."