

- ▶ Scientific enlargement
- ▶ Geographical enlargement
- ▶ Medium Term Plan
- ▶ Financial problems
- ▶ LHC operation plans until 2030

Scientific enlargement

- ▶ CERN should possibly make available its experience (Science administration, Collaboration management, hardware and software facilities) also to other research fields, for instance astro-particle physics.
- ▶ not necessarily hosted at Geneva Laboratory.
- ▶ However, this would need additional financial resources.
- ▶ Details to be discussed in the next European Strategy update
- ▶ Update of the European Strategy for Particle Physics will take place in 2012 (delayed by one year).

Geographical enlargement I

- ▶ These days Cern is the worldwide leading laboratory for high energy physics, which is global, not only European.
- ▶ It is of interest to Cern to have more member states to provide resources to operate the laboratory
- ▶ Several also non-European states show some interest to be closer connected to Cern (e.g. India, China, Russia, Brasil, Canada, Korea).
- ▶ Council decided to accept also non-European states as full members, majority of member states should be European.
 - Verification of a solid basis and longterm committment in particle physics research, supporting industry and economic capacity, mutual benefit for Cern and the applicant state are to be judged by the council.
 - stable democracy, rule of law and human rights to be judged soly by the individual member states.

Geographical enlargement II

- ▶ Explicit application letters to become members of Cern received by Cyprus, Israel, Serbia, Slovenia, Turkey. (technical verification and fact-finding mission started).
- ▶ The "associate member state" (non so far) is improved: (More flexibility on yearly financial contribution, partial eligibility for posts and industrial contracts, attendance to council meetings, but no voting rights).
- ▶ States applying for full membership have to become associate members first for at least two years.
- ▶ Open questions still to be worked on:
 - "governance": how to organize efficient decision making with >> 20 council delegations
 - "entrance fee" to be regulated better, how much? extra to budget?
 - annual membership fee supplement to previous budget?

Medium Term Plan (5 y)

- ▶ Discussed, but rejected in June council, since too many resources needed
- ▶ New version to be discussed tomorrow

Main scientific objectives:

- ▶ LHC operation and consolidation, LINAC 4 construction until 2016, prepare for HL-LHC for > 2020.
- ▶ ee Collider R&D, incl. CLIC/CTF3 and detector R&D.
- ▶ HE-LHC (double energy) R&D
- ▶ fixed target program: SPS, PS, AD, n-TOF, ISOLDE, neutrinos.

For the approved LHC and fixed target physics program >85% of the resources are needed.

=> save CHF in R&D for future projects ??

Injector chain upgrade

- ▶ after Chamonix workshop (from Steve Myers):
Intensity Limits

Intensity Limitations (10^{11} protons per bunch)			
Reminder design = 1.15 (for 10^{34}); Ultimate = 1.7 (for 2.3×10^{34})			
	Present	SPL-PS2	2GeV in PS
Linac2/LINAC4	4.0	4.0	4.0
PSB or SPL	3.6	4.0	3.6
PS or PS2	1.7	4.0	3.0
SPS	1.2	>1.7?	>1.7?
LHC	1.7-2.3?	1.7-2.3?	1.7-2.3?

Conclusion:

We continue (as planned) and terminate the study for LP-SPL/PS2 and study in parallel the PS Booster energy upgrade
Decision can be taken when we have the results of these studies and
experience with the LHC operation

- ▶ increasing the PS booster energy allows to improve bunch charge limit in PS
- ▶ PS2 and LP-SPL not needed really and not ready in 2020 -> terminate R&D
- ▶ but need to improve SPS (at least for the HL-LHC)
- ▶ HP-SPL still interesting for the high intensity frontier (neutrinos etc.)

Financial problems

Unfortunate coincidence of

- ▶ $> 10^9$ CHF missing in pension fund capital (Cern and ESO), needs yearly injection of money. All three parties to contribute: Employees, Pensioners, Regular budget.
- ▶ Severe research budget cuts in some member states.
=> Regular Cern budget will decrease.
- ▶ LHC and approved physics program need larger fraction of budget than thought originally.
- ▶ The cumulative budget deficit originating from LHC construction has not been payed yet.

Serious budget cuts expected, mostly on R&D for future projects, full accelerator stop in 2012, etc.

Discussion tomorrow in SPC and on Wednesday in FC.

LHC time plan until 2021

