



KET JV 2014

Reports on:



- CERN Council activities
 - LHC shut-down status and time plans
 - European Strategy
 - Global Strategy
- (– Maria Laach news)



Report on CERN Council activities

- chair: Agnieszka Zalewska
 - German delegates: B. Vierkorn-Rudolph (BMBF), S. Bethke (MPP)
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- member state matters
 - elections
 - other activities (finances; CERN60; pension fund; ...)



Report on CERN Council activities

member state matters:

<u>member states:</u>	Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, United Kingdom, Israel
<u>associate members:</u> (in pre-stage to m.s.)	Romania, Serbia
<u>accession stage:</u> (assoc. in pre-stage to m.s.)	Cyprus, Slovenia
<u>applicants for associate m.s.:</u>	Brazil, Croatia, <u>Pakistan*</u> , Russian Federation, Slovenia, <u>Turkey*</u> , Ukraine (* admitted by Council, subject to signature)
<u>contacts for associate m.s.:</u>	Australia, Azerbaijan, Bangladesh, Canada, India, Ireland, Lithuania
<u>observer status:</u>	JINR
<u>cooperation agreement:</u>	Albania, Mongolia



Report on CERN Council activities

elections:

- extension of Council chair: - Agnieszka Zalewska (+1 yr)
- extension of vice chairs: - W. van Donninck; C. Cesarsky
- extension of contracts: - S. Bertolucci, S. Lettow (- 12/2015)
- next CERN DG: - F. Gianotti (1/2015; 1/2016- 12/2020)

other activities:

- CERN 60th anniversary 2014 (UNESCO Paris, July 1; CERN, Sept 29)
- approval of 2015 budget (income: 1.209 MCHF; expend.: 1.229 MCHF)
- discuss and take note of MTP 2015-2019 (1st MTP implementing European Strategy, new loans securing R&D for neutrinos, FCC,...)
- pension fund matters
- budget scale of contributions (D: 20.2738%, 222 938 350 CHF) - ...

2. Estimated budget balances

Figure 2: Estimated budget balances

(in MCHF, 2014 prices, rounded off)	Revised 2014 Budget	2015	2016	2017	2018	2019	Total 2014-2019	2020	2021	2022	2023	2024	2025	Total 2014-2025
EXPENSES	1,286.7	1,229.8	1,177.1	1,176.0	1,184.7	1,127.7	7,182	1,164	1,148	1,127	1,097	1,005	1,012	13,734
Running of scientific programmes and support	1,053.0	987.4	940.5	936.3	947.7	907.8	5,773	950	906	904	904	865	899	11,200
Scientific programmes	555.9	472.9	473.7	488.9	517.6	487.3	2,996	487	474	473	495	483	473	5,880
<i>LHC (machine, detectors, computing, including spares and consolidation)</i>	<i>347.9</i>	<i>279.3</i>	<i>272.7</i>	<i>281.9</i>	<i>306.0</i>	<i>293.4</i>	<i>1,781</i>	<i>284</i>	<i>282</i>	<i>282</i>	<i>304</i>	<i>292</i>	<i>282</i>	<i>3,506</i>
<i>Non-LHC physics and scientific support</i>	<i>59.2</i>	<i>52.5</i>	<i>52.3</i>	<i>52.3</i>	<i>54.7</i>	<i>56.0</i>	<i>327</i>	<i>56</i>	<i>56</i>	<i>56</i>	<i>56</i>	<i>56</i>	<i>56</i>	<i>664</i>
<i>Accelerators and areas (including consolidation)</i>	<i>148.8</i>	<i>141.2</i>	<i>148.8</i>	<i>154.8</i>	<i>156.8</i>	<i>138.0</i>	<i>888</i>	<i>147</i>	<i>136</i>	<i>135</i>	<i>135</i>	<i>135</i>	<i>135</i>	<i>1,711</i>
Infrastructure and services	329.6	308.4	273.6	262.0	263.3	264.8	1,702	263	261	261	261	261	261	3,270
<i>General infrastructure and services (including administration, outreach)</i>	<i>272.4</i>	<i>259.9</i>	<i>251.0</i>	<i>242.7</i>	<i>244.4</i>	<i>243.8</i>	<i>1,514</i>	<i>242</i>	<i>240</i>	<i>240</i>	<i>240</i>	<i>240</i>	<i>240</i>	<i>2,957</i>
<i>Infrastructure consolidation, buildings and renovation</i>	<i>57.1</i>	<i>48.5</i>	<i>22.6</i>	<i>19.3</i>	<i>18.8</i>	<i>21.0</i>	<i>187</i>	<i>21</i>	<i>21</i>	<i>21</i>	<i>21</i>	<i>21</i>	<i>21</i>	<i>313</i>
Centralised expenses	167.5	206.1	193.2	185.4	166.9	155.7	1,075	200	171	170	148	121	165	2,049
<i>Centralised personnel expenses</i>	<i>34.6</i>	<i>35.4</i>	<i>35.7</i>	<i>35.7</i>	<i>35.7</i>	<i>35.7</i>	<i>213</i>	<i>36</i>	<i>36</i>	<i>36</i>	<i>36</i>	<i>36</i>	<i>36</i>	<i>427</i>
<i>Internal taxation</i>	<i>28.5</i>	<i>28.4</i>	<i>28.5</i>	<i>28.5</i>	<i>28.2</i>	<i>28.1</i>	<i>170</i>	<i>28</i>	<i>28</i>	<i>28</i>	<i>28</i>	<i>28</i>	<i>28</i>	<i>339</i>
<i>Personnel internal mobility, on detachment, teams, paid but not available</i>	<i>14.7</i>	<i>10.5</i>	<i>8.8</i>	<i>8.6</i>	<i>8.4</i>	<i>8.2</i>	<i>59</i>	<i>8</i>	<i>8</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>111</i>
<i>Budget amortisation of staff benefits accruals</i>	<i>17.3</i>	<i>17.3</i>	<i>17.3</i>	<i>17.3</i>	<i>17.3</i>	<i>17.3</i>	<i>104</i>	<i>17</i>						<i>121</i>
<i>Energy and water, insurances and postal charges, miscellaneous</i>	<i>53.7</i>	<i>96.5</i>	<i>85.8</i>	<i>79.2</i>	<i>62.2</i>	<i>52.3</i>	<i>430</i>	<i>97</i>	<i>86</i>	<i>86</i>	<i>65</i>	<i>40</i>	<i>85</i>	<i>891</i>
<i>Interest, bank and financial expenses, in-kind ¹</i>	<i>18.8</i>	<i>17.9</i>	<i>17.0</i>	<i>16.1</i>	<i>15.1</i>	<i>14.1</i>	<i>99</i>	<i>13</i>	<i>12</i>	<i>11</i>	<i>10</i>	<i>9</i>	<i>7</i>	<i>161</i>
Projects and studies	233.7	242.4	236.7	239.8	237.0	219.9	1,409	214	242	223	193	139	112	2,534
LHC upgrades	123.4	136.3	153.6	167.5	169.5	162.6	913	159	186	166	141	86	58	1,709
<i>LINAC4</i>	<i>24.3</i>	<i>11.6</i>	<i>3.8</i>	<i>0.8</i>	<i>0.1</i>		<i>41</i>							<i>41</i>
<i>LHC injectors upgrade</i>	<i>31.9</i>	<i>42.6</i>	<i>54.9</i>	<i>48.4</i>	<i>38.7</i>	<i>25.9</i>	<i>242</i>	<i>3</i>						<i>246</i>
<i>HL-LHC construction</i>	<i>38.0</i>	<i>58.2</i>	<i>69.1</i>	<i>88.7</i>	<i>94.2</i>	<i>98.5</i>	<i>447</i>	<i>115</i>	<i>148</i>	<i>132</i>	<i>117</i>	<i>66</i>	<i>44</i>	<i>1,068</i>
<i>LHC detectors upgrade (Phase 1) and consolidation</i>	<i>18.7</i>	<i>15.6</i>	<i>17.5</i>	<i>16.6</i>	<i>13.2</i>	<i>9.6</i>	<i>91</i>	<i>11</i>	<i>11</i>	<i>11</i>	<i>11</i>	<i>11</i>	<i>11</i>	<i>158</i>
<i>HL-LHC detectors, including R&D (Phase 2)</i>	<i>10.5</i>	<i>8.3</i>	<i>8.3</i>	<i>13.0</i>	<i>23.4</i>	<i>28.6</i>	<i>92</i>	<i>30</i>	<i>27</i>	<i>23</i>	<i>13</i>	<i>8</i>	<i>3</i>	<i>196</i>
Energy frontier	37.4	34.5	36.1	35.9	36.0	32.7	213	30	31	32	33	34	35	408
<i>Linear collider studies (CLIC, ILC, detector R&D)</i>	<i>34.4</i>	<i>28.0</i>	<i>27.0</i>	<i>24.9</i>	<i>23.7</i>	<i>20.4</i>	<i>158</i>							<i>158</i>
<i>Future Circular Collider study</i>	<i>3.0</i>	<i>6.5</i>	<i>9.1</i>	<i>11.0</i>	<i>12.3</i>	<i>12.3</i>	<i>54</i>							<i>54</i>
<i>High-energy frontier</i>								<i>30</i>	<i>31</i>	<i>32</i>	<i>33</i>	<i>34</i>	<i>35</i>	<i>196</i>
Diversity activities	73.0	71.6	47.0	36.3	31.5	24.6	284	25	25	25	20	20	20	417
<i>ELENA</i>	<i>9.5</i>	<i>11.8</i>	<i>6.9</i>	<i>1.6</i>	<i>0.3</i>		<i>30</i>							<i>30</i>
<i>HIE-ISOLDE</i>	<i>24.1</i>	<i>9.0</i>	<i>4.9</i>	<i>2.6</i>	<i>2.7</i>	<i>0.5</i>	<i>44</i>							<i>44</i>
<i>TSR@ISOLDE</i>						<i>2.0</i>	<i>2</i>	<i>5</i>	<i>5</i>	<i>5</i>				<i>17</i>
<i>CERN neutrino platform</i>	<i>11.1</i>	<i>15.9</i>	<i>10.3</i>	<i>7.6</i>	<i>6.8</i>	<i>3.0</i>	<i>55</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>73</i>
<i>R&D (incl. EU support) for accelerators, detectors, medical applications</i>	<i>28.2</i>	<i>35.0</i>	<i>25.0</i>	<i>24.6</i>	<i>21.7</i>	<i>19.1</i>	<i>154</i>	<i>17</i>	<i>17</i>	<i>17</i>	<i>17</i>	<i>17</i>	<i>17</i>	<i>253</i>
BALANCE														
Annual balance	-66.5	-20.7	23.5	30.2	19.3	98.1		92	108	129	134	201	194	
Capital repayment allocated to the budget (Fortis, FIPOI 1, 2 and 3, SIG)	-26.2	-27.1	-28.0	-28.9	-29.9	-30.9		-32	-33	-34	-35	-36	-34	
Recapitalization pension fund	-60.0	-60.0	-60.0	-60.0	-60.0	-60.0		-60	-60	-60	-60	-60	-60	
Annual balance allocated to budget deficit	-152.7	-107.8	-64.5	-58.7	-70.6	7.3		0	15	35	39	105	101	
-Cumulative Balance ²	-86.1	-346.6	-411.0	-469.7	-540.3	-533.0		-533	-519	-484	-446	-341	-240	

¹ Including theoretical interest of the FIPOI loan and advantage from free use of land (compensated by a corresponding heading in the revenues).

The main 2013-14 LHC consolidations

Opening: 100%

1695 Openings and final reclosures of the interconnections

100 % done

Complete reconstruction of 3000 of these splices

100 % done

Consolidation of the 10170 13kA splices, installing 27 000 shunts

100 % done

Installation of 5000 consolidated electrical insulation systems

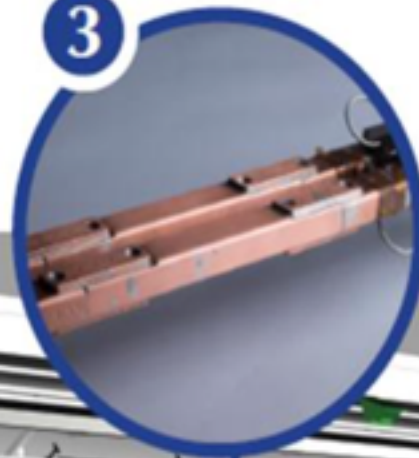
100 % done

300 000 electrical resistance measurements

100 % done

10170 orbital welding of stainless steel lines

Closure: 100%



100 % done

18 000 electrical Quality Assurance tests

100 % done

10170 leak tightness tests

Done

3 quadrupole magnets to be replaced

Done

15 dipole magnets to be replaced

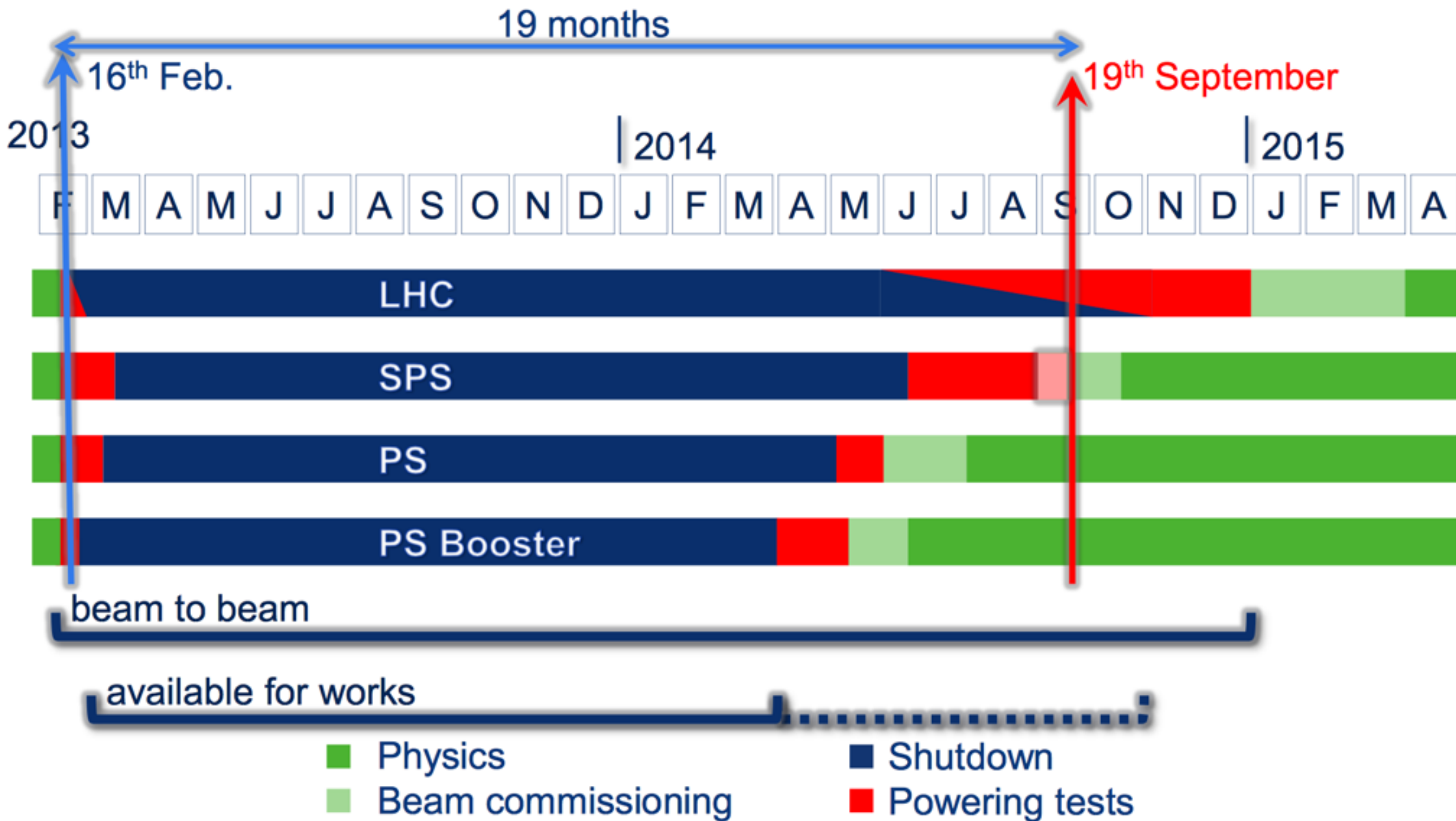
100 % done

Installation of 612 pressure relief devices to bring the total to 1344

100 % done

Consolidation of the 13 kA circuits in the 16 main electrical feed-boxes

LS 1 from 16th Feb. 2013 to Dec. 2014



LHC schedule beyond LS1

Only EYETS (19 weeks) (no Linac4 connection during Run2)

LS2 starting in 2018 (July) 18 months + 3months BC (Beam Commissioning)

LS3 LHC: starting in 2023 => 30 months + 3 BC
injectors: in 2024 => 13 months + 3 BC





European Strategy

- dedicated sessions during September Council
- reports (ECFA, ICFA, H2020, implementation, outreach, ...)

Global Strategy

- **Regional strategies in Particle Physics**
 - Japan
 - Europe: update approved by CERN Council
 - US: P5

- **US P5 Strategy: Science Drivers**

- Higgs boson
- Neutrino mass
- Dark matter
- Cosmic acceleration
- Explore the unknown

→ Facilities: LHC, LBNF, ILC, ...

- **Japan, February 2012**

- if there is a Higgs → ILC
- If θ_{13} is large → large neutrino experiment

- **Europe, May 2013**

- LHC incl. HL-LHC
- Accelerator R&D (CLIC, hield magnets)
- ILC in Japan
- participation in long-baseline neutrino experiment(s)

- Different flavors in different regions, but large overlap!
- Emerging global strategy

Future Global Accelerator Projects:

- (hl) LHC
- FCC study (CERN; 100/80 km pp-collider; 100 TeV)
- ILC (Japan; 500 GeV e^+e^-)
CLIC (CERN; 3 TeV e^+e^-)
- CepC/SppC (China; 50/70 km; first e^+e^- then pp?)
- LBNF (Fermilab)



news on: Herbstschule Maria Laach

- neue interim Klosterleitung: Prior statt Abt
- weiterhin sehr offene Haltung zur HEP-Schule
- neue Kontakte zu Mönchen
- gemeinsame Veranstaltungen mit dem Kloster: öffentl. Abendvorträge (bisher: Heuer, Danzmann)
- insgesamt sehr erfreuliche Entwicklung (nach vielen substantiellen Änderungen: Renovierung des Gästetraktes; Tod von P. Athanasius; Internet im Kloster;...)



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