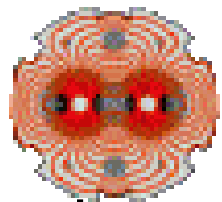


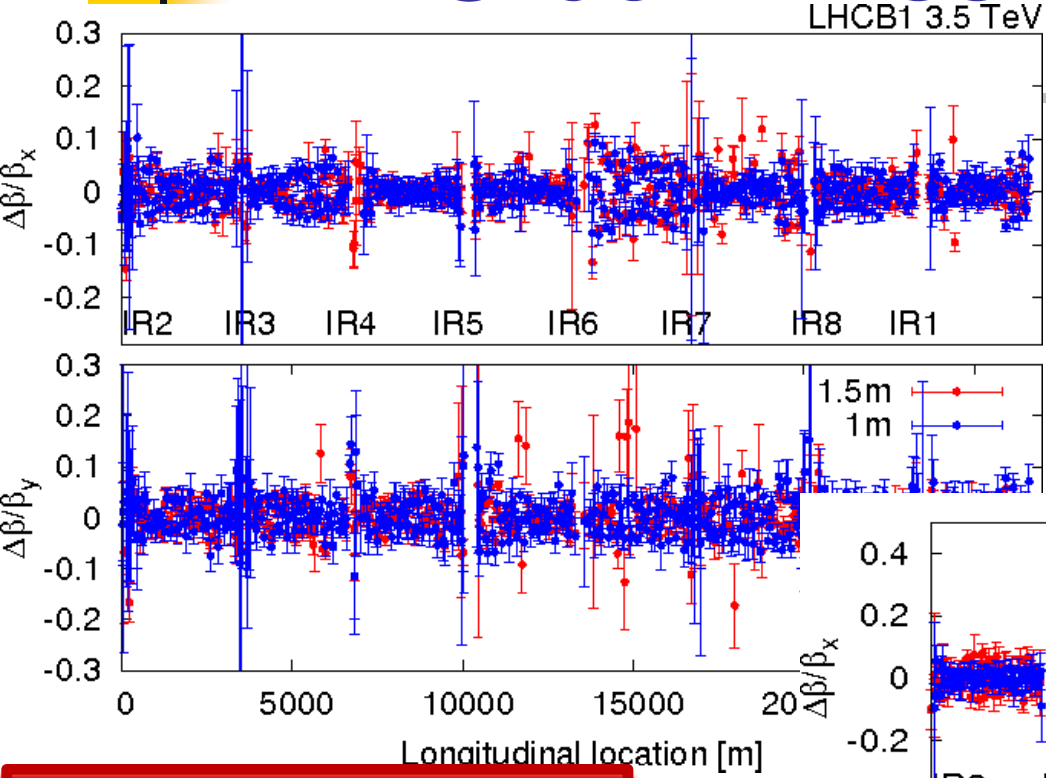
HIGHLIGHTS OF LAST MONTHS OF LCU ACTIVITIES

ANOTHER VERY EXCITING PERIOD

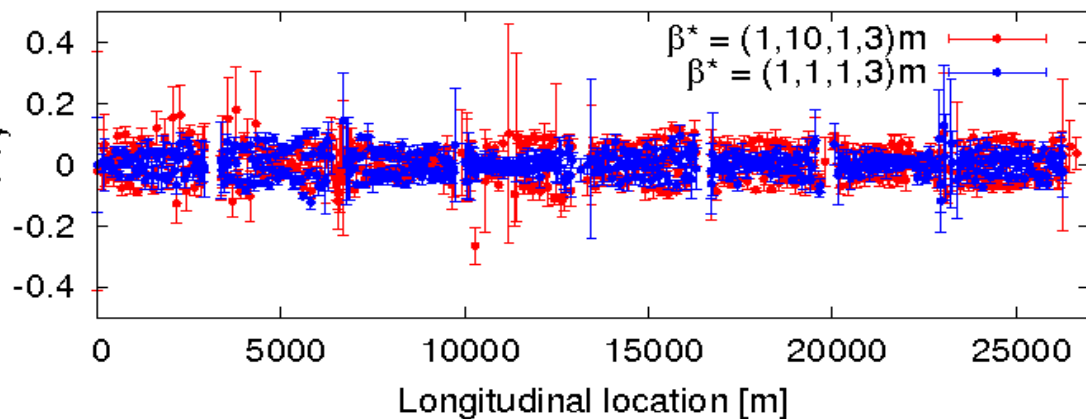
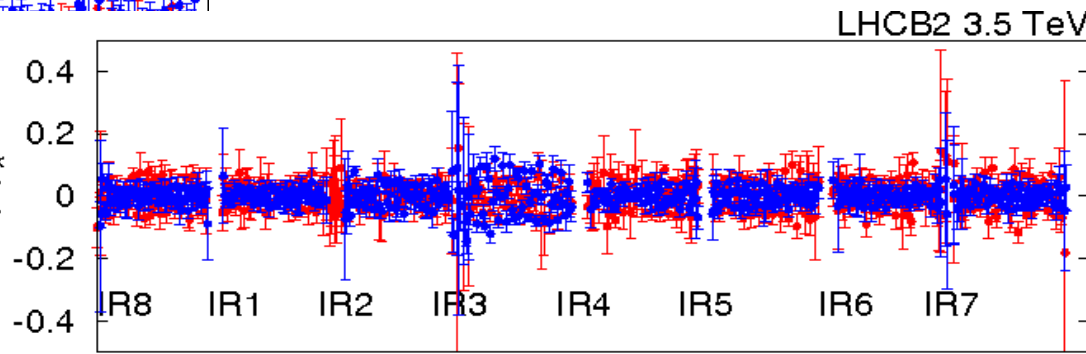
WITH: COMMISSIONING, PHYSICS,
MDs, UPGRADE!



LHC commissioning - I



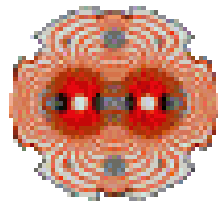
10% β -beating operational in 2011. Same local corrections worked for $\beta^*=1$ and 1.5 m in IR1 & IR5



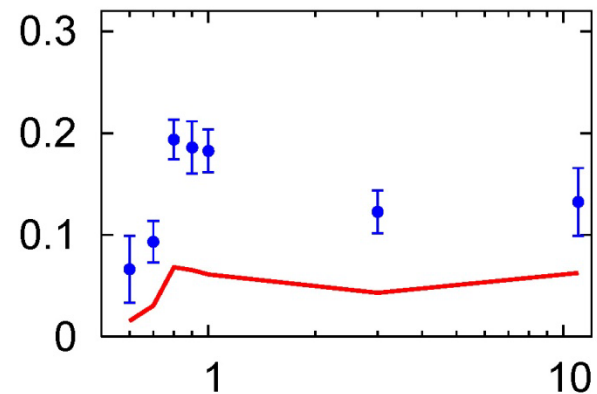
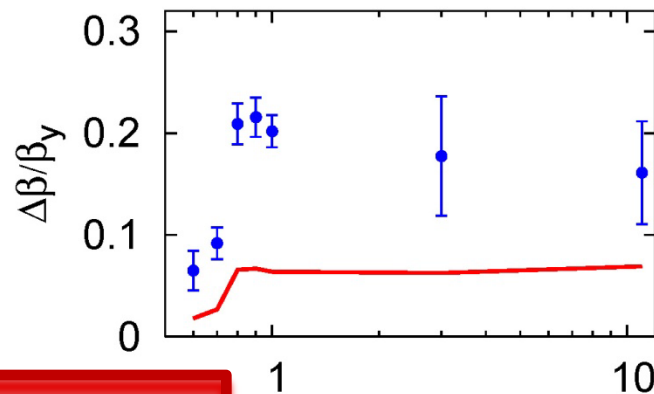
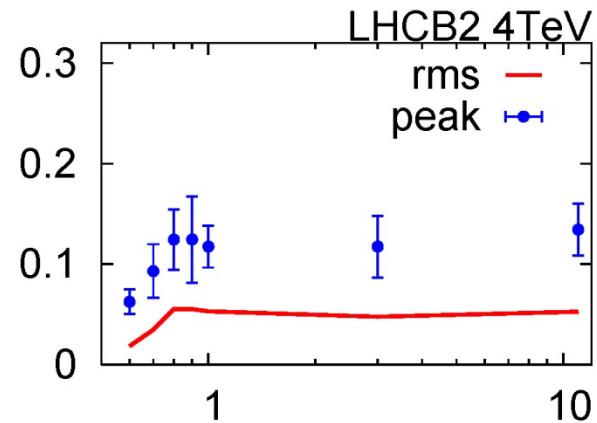
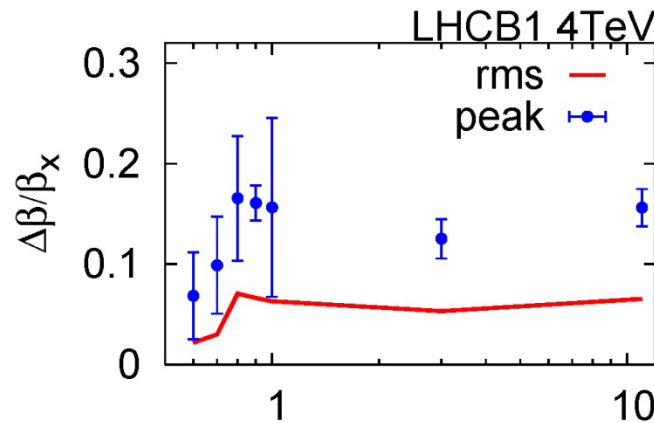
Courtesy R. Tomás et al.

Similarly for $\beta^* = 1$ m in IR2 (for ions).

LHC commissioning - II



- In 2012 β^* kept going down...to 0.6 m!
- Beta-beating after correction even smaller!
- No need to use non-linear correctors in triplets so far!

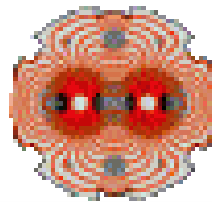


IP1&IP5 β^* [m]

IP1&IP5 β^* [m]

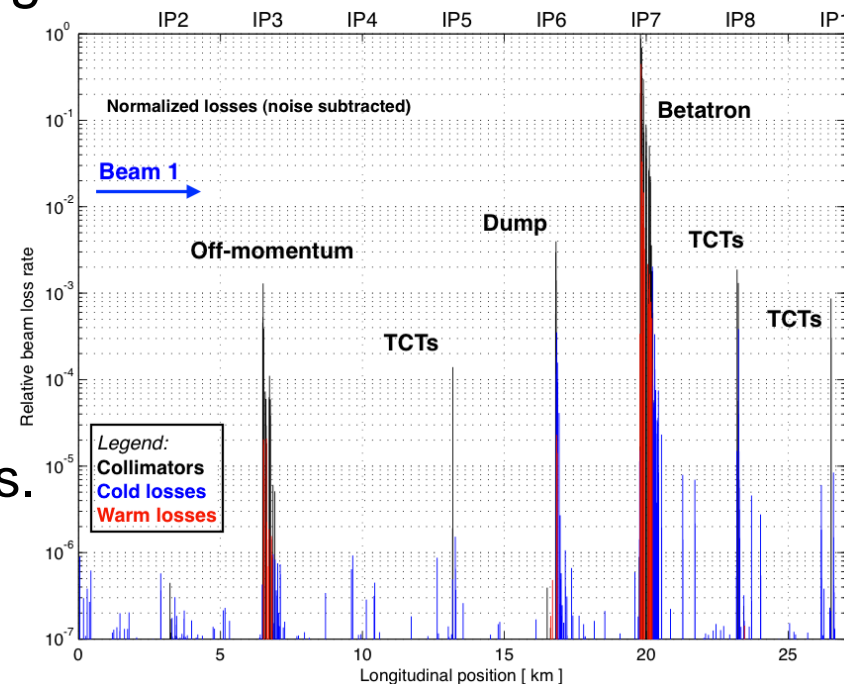
Courtesy R. Tomás et al.

LHC Collimation

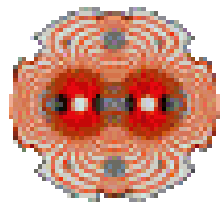


Courtesy R. Assmann,
S. Redaelli et al.

- Impressive cleaning inefficiency of few 10^{-4} .
- No quenches observed with circulating beams at 3.5 TeV in 2011.
- A semi-automated software (feedback between BLM signal and collimator motor controllers) used for beam-based setup.
- Other crucial studies:
 - The feasibility of tight collimator settings.
 - Quench tests with collimation losses. These results were used to update the performance reach estimates of the present collimation system.
 - Aperture measurements in the interaction regions at top energy, which allowed reducing β^* from 1.5 m to 1.0 m in September 2012.



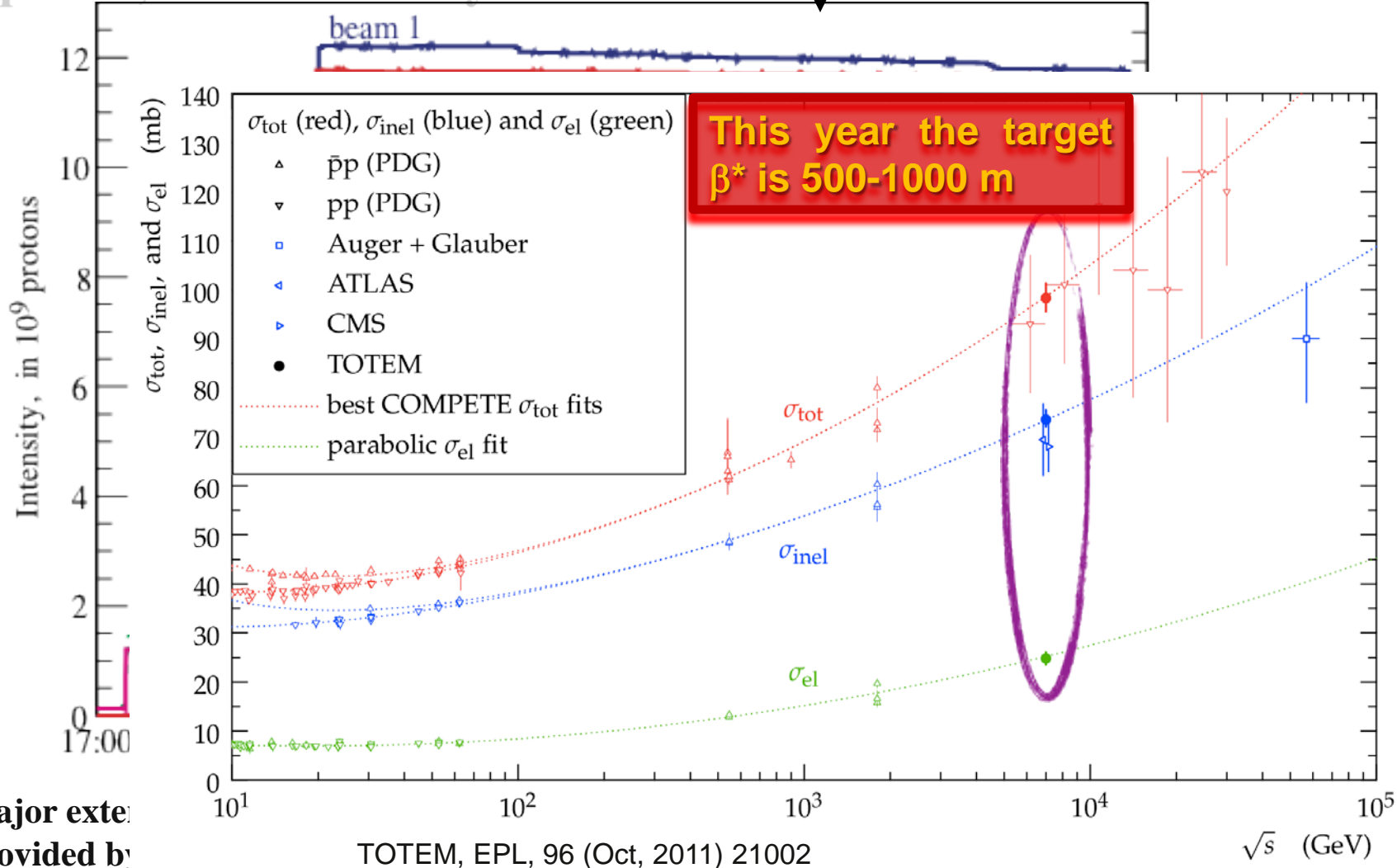
Start of high β^* program for ATLAS/ALFA + TOTEM



Un-squeeze, MD of 05 May '11

at 90 m, no losses

Courtesy H. Burkhardt



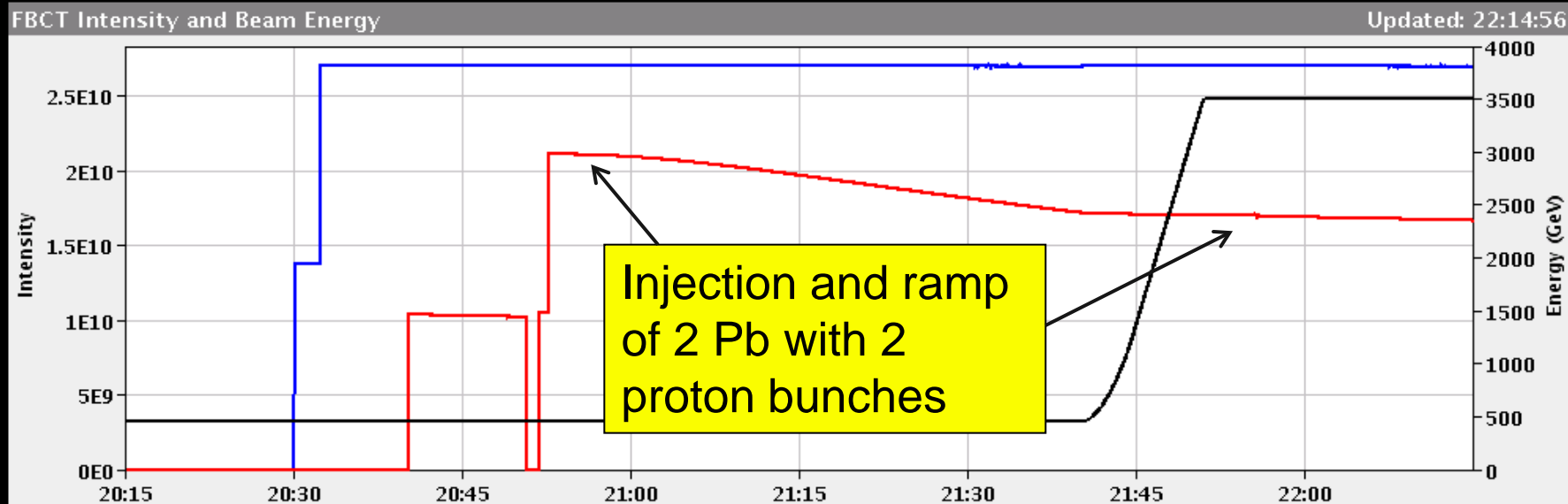
Major extension provided by

18/06/2012



Adding diversity: p-Pb beams

Energy: 3500 GeV I(B1): 2.54e+10 I(B2): 1.87e+10

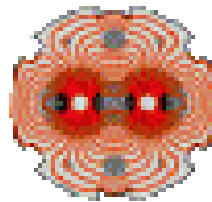


Comments 31-10-2011 21:55:27 :

2011 Proton physics program finished!
 Proton and lead ion beams together for
 the first time at 3.5 Z TeV.
 2 bunches each, will try rephasing RF.

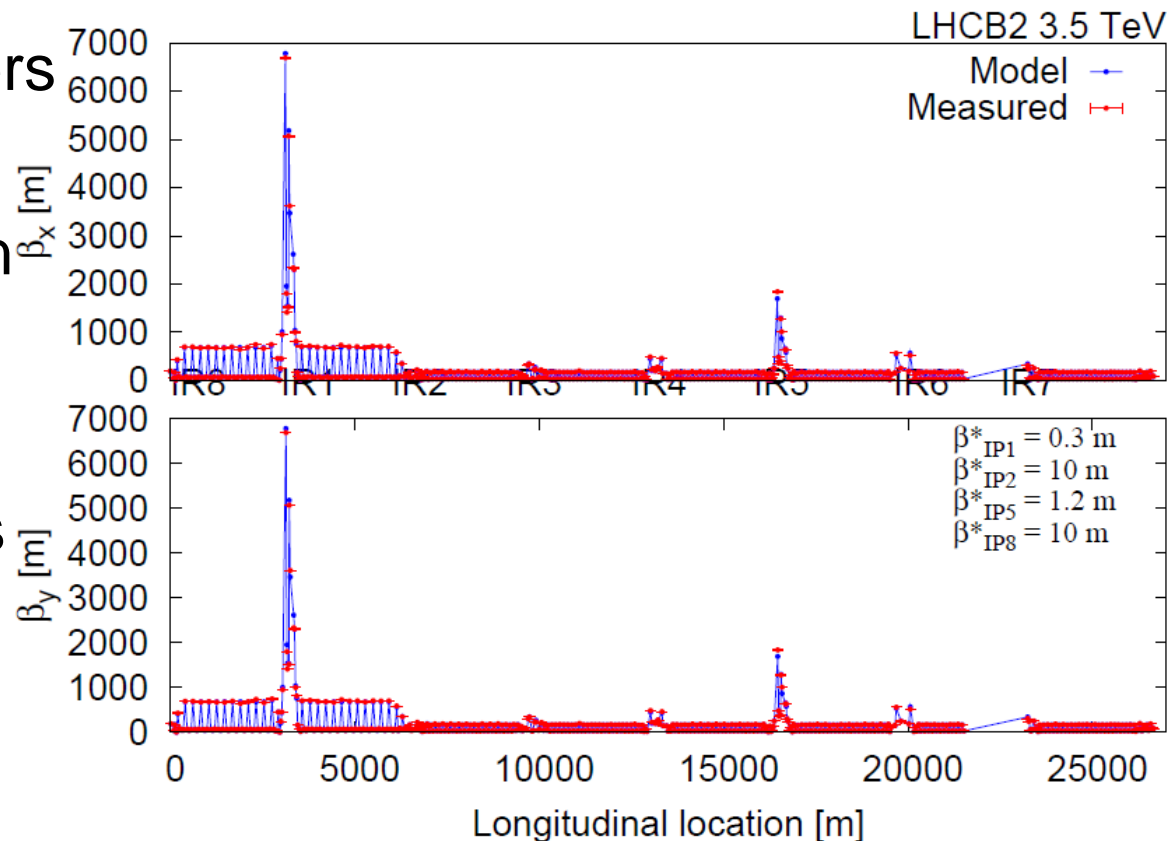
BIS status and SMP flags

	B1	B2
Link Status of Beam Permits	false	false
Global Beam Permit	true	true
Setup Beam	true	true
Beam Presence	true	true
Moveable Devices Allowed In	false	false
Stable Beams	false	false



LHC Upgrade - I

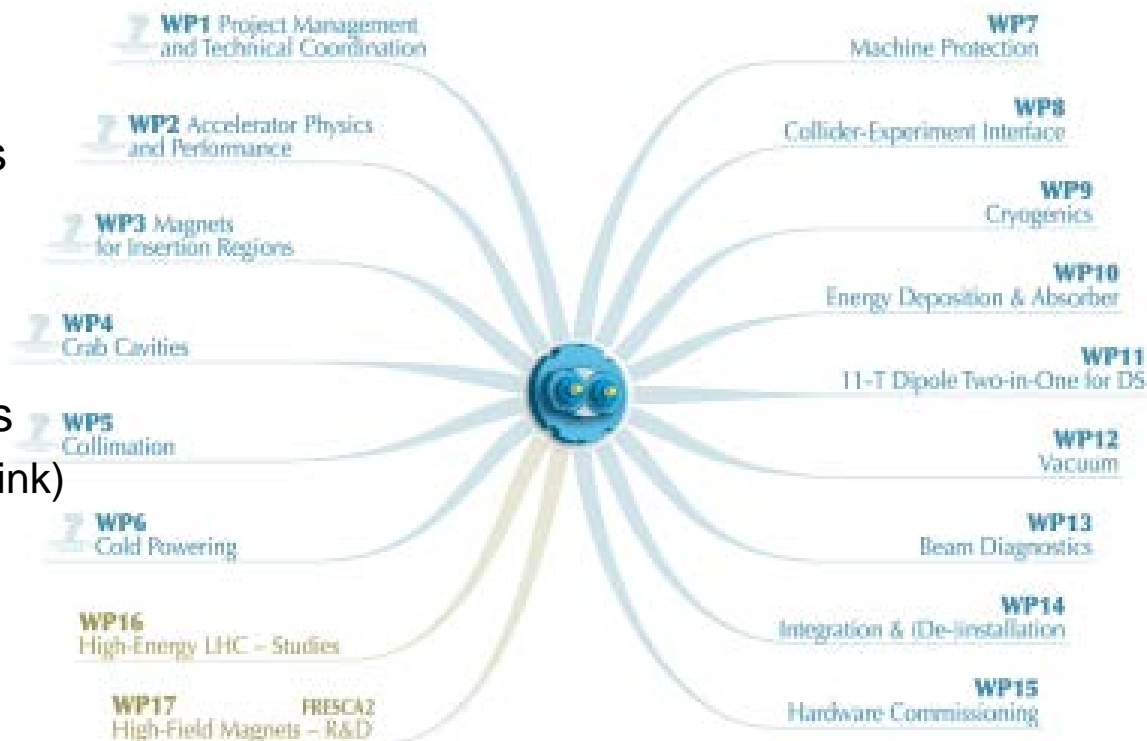
- Successful MD programme for ATS feasibility -> now baseline optics of HL-LHC.
- New set of parameters for LHC upgrade
- Discussions between HL-LHC and LIU projects to converge on beam parameters



LHC Upgrade - II

Official kick off meeting:
November 2011

- PL: Lucio Rossi; DPL: Oliver Brüning;
- WP2 - Accelerator Physics and Performance: Stephane Fartoukh
 - Task 2.2 Optics and Layout
 - B. Holzer
 - Task 2.3 Particle Simulations
 - MG
 - Task 2.4 Collective Effects
 - E. Métral
 - Task 2.5 Beam-Beam Effects
 - A. Valishev (T. Pieloni CERN link)
 - Task 2.6 Beam Parameter
 - O. Brüning
 - Task 2.7 Intensity limitation from existing LHC hardware
 - TBA
- WP8: Collider-Experiment interface (H. Burkhardt contributing)



Computing



Thanks to Frank Schmidt for his decade-long service with MAD-X and SixTrack

- MAD-X: new custodian -> Laurent Deniau
- SixTrack: new responsible -> Riccardo de Maria.
- LHC@home:
 - successfully repatriated to CERN in August 2011.
 - Presented at Frankfurt book fair.
- Next steps:
 - Review ABP computing situation and prepare possible strategy

Thanks to Eric McIntosh and Frank Schmidt for being the driving force of this development.

Large Hadron electron Collider (LHeC)



DRAFT 1.0
Geneva, September 3, 2011
CERN report
ECFA report
NuPECC report
LHeC-Note-2011-003 GEN



<http://cern.ch/lhec>



A Large Hadron Electron Collider at CERN

Report on the Physics and Design
Concepts for Machine and Detector

LHeC Study Group

THIS IS THE VERSION FOR REFEREEING, NOT FOR DISTRIBUTION



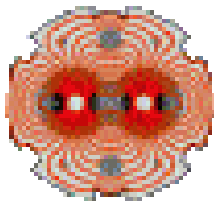
LHeC Study Group

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About 150 Experimentalists and Theorists from 50 Institutes
Tentative list

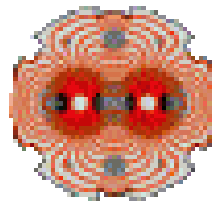
Thanks to all and to
CERN, ECFA, NuPECC

**draft LHeC CDR completed (~600 pages);
TDR by 2014, expect first beam by 2022**



Other activities

- FiDeL
- UFO
- HE-LHC studies
- Crab cavities
- LEP3
- Accnet



CONGRATULATION TO ALL OF YOU FOR THE GREAT ACHIEVEMENTS!

Jose Luis ABELLEIRA FERNANDEZ, Ralph ASSMANN, Roderik BRUCE, Helmut BURKHARDT, Marija CAUCHI, Riccardo DE MARIA, Daniel DEBOY, Laurent DENIAU, Cesar Octavio DOMINGUEZ SANCHEZ DE LA BLANCA, Stephane FARTOUKH, Miriam FITTERER, Lutz HEIN, Pascal HERMES, Steffen HILLENBRAND, Bernhard HOLZER, Christoph ILGNER, John JOWETT, Luisella LARI, Andrea LATINA, Ewen MACLEAN, Aurelien MARSILI, Humberto MAURY CUNA, Eric MCINTOSH, Stefano REDAELLI, Tatiana RIJOFF, Thys RISSELADA, Adriana ROSSI, Belen SALVACHUA FERRANDO, Michaela SCHAUMANN, Marek STRZELCZYK, Rogelio TOMÁS, Gianluca VALENTINO, Reine VERSTEEGEN, Frank ZIMMERMANN.