Storia

- Dal 1994, gruppo impegnato in LHC
- Peculiarità: collaborazione stretta fisici sperimentali – teorici (Udine, Trieste, ICTP, SISSA)

Composizione: 12.4 (11.6) FTE nel 2013 (2014)

- Coordinatore: M. Cobal
- 4 Staff(A. Acharya, M. Cobal, C. del Papa, M. P. Giordani)
- 2 PhD (S. Brazzale, G. Panizzo)
- 5 Post-Doc (U. De Sanctis, M. Horoub, M. Pinamonti, K. Shaw, R. Soualah)

Attività

- Fisica del quark Top (asimmetria di produzione)
- Nuova Fisica oltre il Modello Standard (SUSY, Higgs)
- Data quality monitoring per il rivelatore a Pixel

Composizione 2013: 11.4 FTE

B. Acharya – 80% staff - ICTP
M. Cobal – 100% staff – Ud -> 80%
C. Del Papa – 100% staff - Ud -> 50%
L. Selmi - 30% staff Ing. El. – Ud
P. Palestri – 30% staff Ing. El. - Ud
U. De Sanctis – 100% PostDoc - SISSA
M.P. Giordani – 100% PostDoc – Ud -> 70%
M. Pinamonti – 100% PostDoc - TS
K. Shaw– 100% PostDoc - ICTP
S. Brazzale – 100% PhD- Ud
G. Panizzo – 100% PhD - TS
R. Soualah – 100% PostDoc – Ud
M. Horoub – 100% PostDoc – Ud
L. Truong – 100% PhD – ICTP
C. Verzegnassi - TS

Attività 2013

Fisica:

Top physics – asimmetria (Acharya, De Sanctis, Shaw)

SUSY- Stop in due leptoni (Brazzale, Giordani)

Higgs – ttH e Little Higgs (Pinamonti, Cobal, Soualah, Horoub, Truong, Acharya)

Hardware/Software:

Data quality monitoring Pixel (Giordani)

Responsabilità:

- Physics Office ATLAS (Cobal)
- Pixel Data Quality (Giordani)
- W/Z+jets estimate for top analysis (De Sanctis)
- Top charge asymmetry measurements (De Sanctis)
- Fakes evaluation for top analysis (Pinamonti)

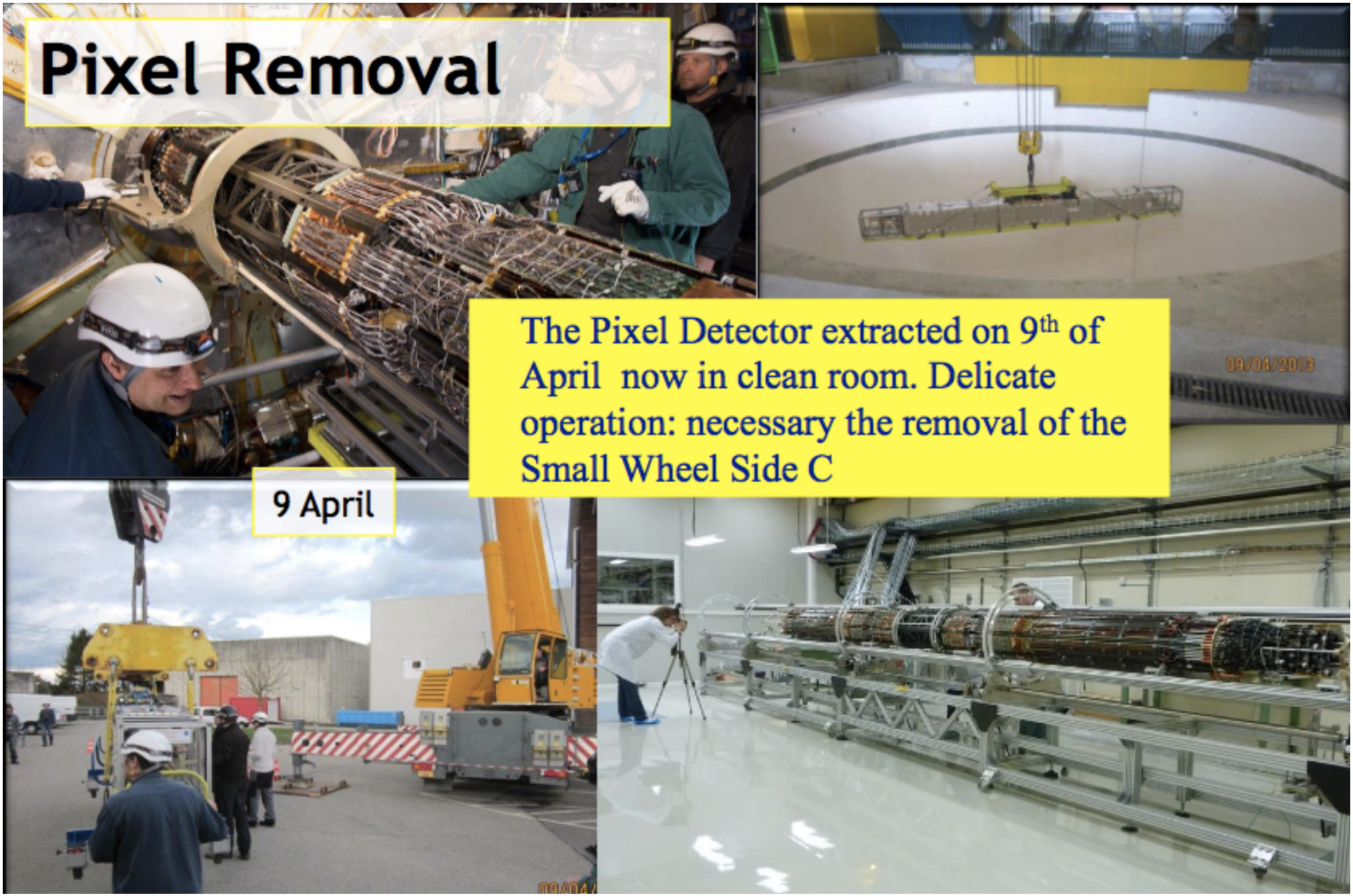
Richieste finanziarie 2014

	Algoritmo	
MI	1KeuroxFTE=1x11.4 (MI metabolismo)	11.5 kE
ME	3 MUx3.95 kEuro= 11.85 kEuro (giordani DQ pixel) 3MUx3.95 kEuro = 7.9 keuro (cobal physics office) 1.7 MU x 3.95 Keuro (shifts per 1.5 mesi run) 2 MU x 3.95 Keuro (commissioning pixel) 1 MU x 3.95 kEuro (pixel performance shifts) 1 MU x 3.95 kEuro (R&D sensori) 1MUxFTE=3.95x11.4=45.03 kEuro (ME metabolismo)	92 kE
Cons	1 kEuro+ 0.2 kEuro x FTE = 3.48 kEuro (camionetta) 1.5 kEuro/FTE x FTE =1.5x11.4 =17.1 kEuro (metab) 2 kEuro (camera pulita)	26 kE

Talks gruppo ATLAS Udine

Advanced studies institute symmetries and spin" (spin 2012 prague), Praga, 2-8 Luglio 2012	UD: M. Cobal	ATLAS Upgrade		
Probing the STandard Model and New Physics at low and high energies, Lubljana, Slovenia, 15-18 Aprile 2013	UD: M. Cobal	Top and Higgs Results at Tevatron and LHC		
ICHEP2012 - 36th International Conference for High Energy Physics, Melbourne, Australia, 4-11 Luglio 2012	UD: M.P. Giordani	Charge asymmetry in top pairs at ATLAS		
ICHEP2012 - 36th International Conference for High Energy Physics, Melbourne, Australia, 4-11 Luglio 2012	UD: M.P. Giordani	Overview of the ATLAS Insertable B-Layer (IBL) Project		
CKM 2012, Cincinnati,Ohio, USA, 28 Settembew-2 Ottobre 2012	UD: U. De Sanctis	Top charge asymmetry at LHC		
7th International Workshop on the CKM Unitarity Triangle, Cincinnati Ohio/USA, 28 Settembre-2 Ottobre 2012	UD: M. Alhroob	Searches for new physics in the Single Top channel at the LHC		
European Linear Collider Workshop ECFA LC2013,Desy, Hamburg, 26-30 Marzo 2013	UD: R. Soualah	Direct electroweakino, slepton and stop searches at ATLAS		
Higgs and Beyond 2013, Sendai, Japan, 3-10 Giugno 2013	UD: M. Pinamonti	ATLAS top results		
Top2012, Winchester, UK-16-21 Settembre 2012	UD: K. Shaw	Top Quark Charge Asymmetry Measurement with ATLAS at the LHC		

Stato dell' esperimento



IBL (insertable b-layer)

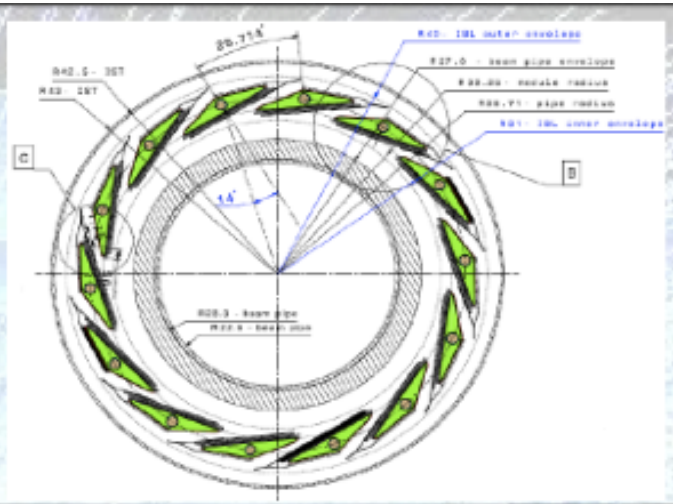
- Module production underway
- Finish module production by ~September

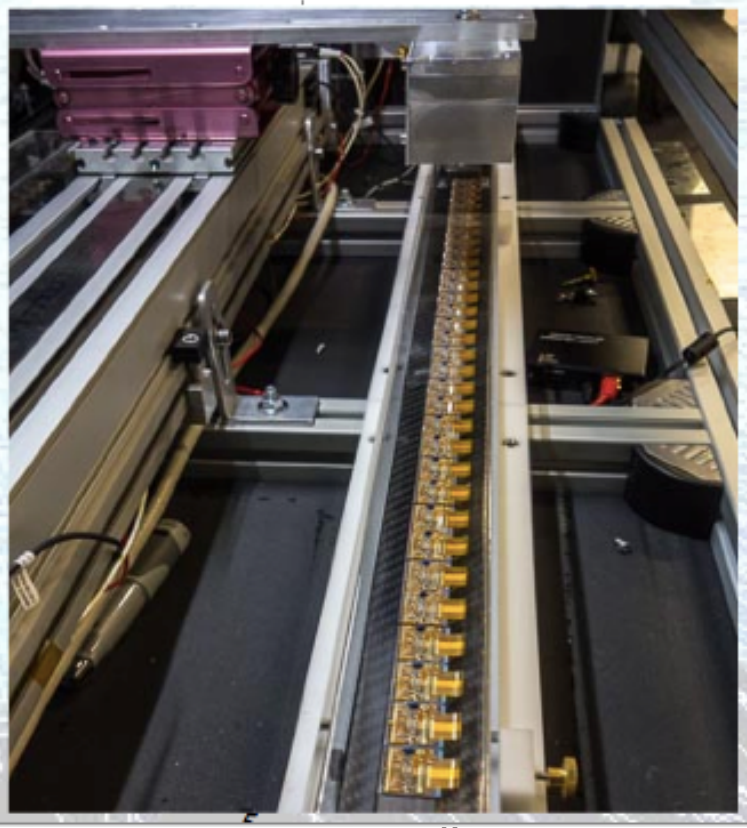
- Now three completed production staves
  Need 14 for final detector
  - Stave 1 looks good: 99.8% pixels working

- IBL integration starting ~ August
  - Installation in early 2014 in ATLAS

- Pixel+IST (IBL support tube) will be re-installed first (~December), IBL inserted in the cavern

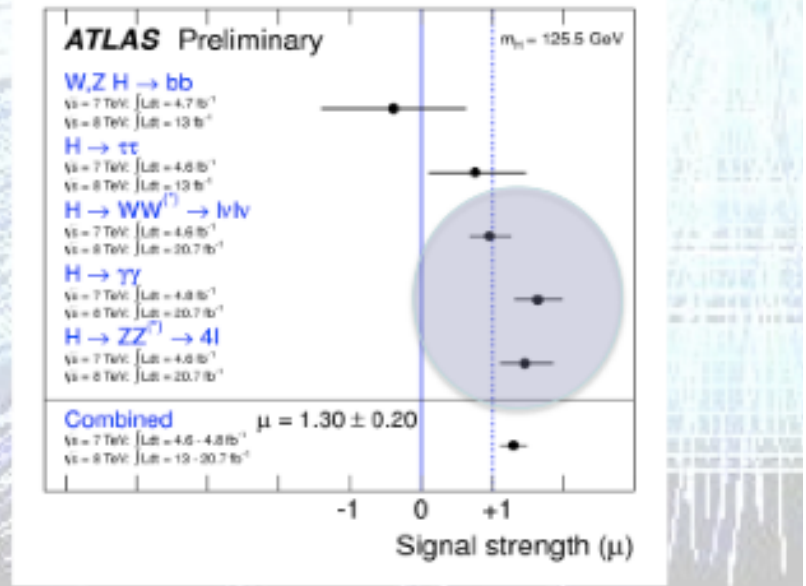
Tight schedule but still on track

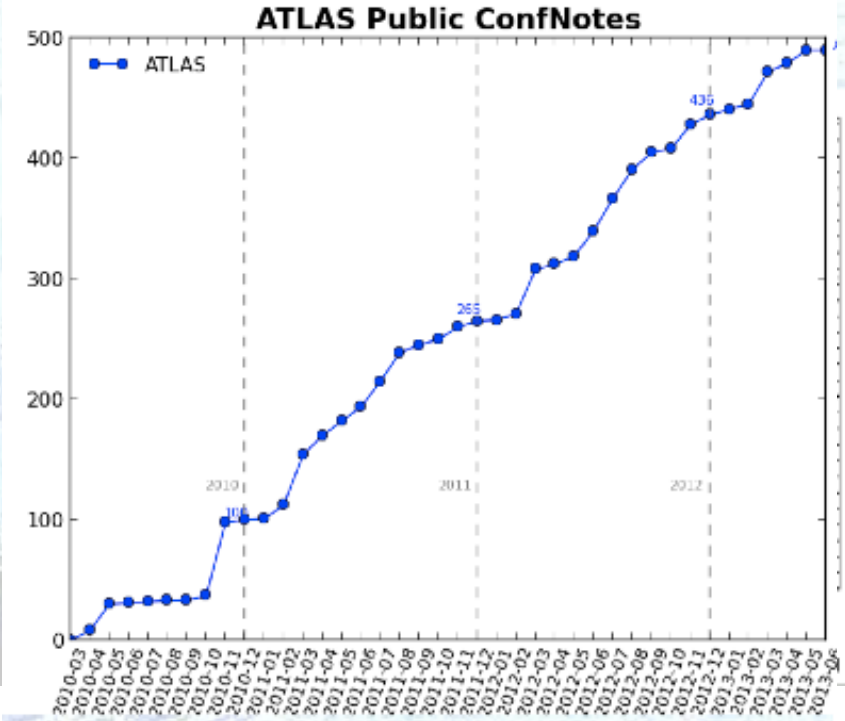




Higgs: Update on Couplings

- New combined coupling determination including:
  - H->γγ, H->ZZ* (4l) , H->WW* ->lνlν (Full 2011+2012 Data)
  - H->ττ, H->bb (Full 2011+13 fb^{-1}2012 Data)
- Combined signal strength:
  - $\mu = 1.30 \pm 0.13(stat) \pm 0.14(syst)$ $(M_H = 125.5\ GeV)$
- 3 σ evidence for VBF Higgs production:



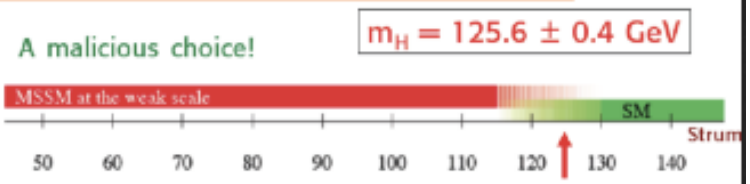


R&D per l'LHC upgrade di fase 2

Varie Iniziative verso la fase 2 :

- USA: Snowmass, (Jul 29 - Aug 6, 2013)
- HL-LHC Experiment ECFA Workshop, Aix-les-Bains Oct 1-3 2013
- Workshop INFN 11-13 novembre 2013→ luogo da decidere

Il 30 maggio Council del CERN ha approvato l'EU strategy update document



EU strategy update document*

The discovery of the Higgs boson is the start of a major programme of work to measure this particle's properties with the highest possible precision for testing the validity of the Standard Model and to search for further new physics at the energy frontier. The LHC is in a unique position to pursue this programme. ***Europe's top priority should be the exploitation of the full potential of the LHC, including the high-luminosity upgrade of the machine and detectors with a view to collecting ten times more data than in the initial design, by around 2030.*** *This upgrade programme will also provide further exciting opportunities for the study of flavour physics and the quark-gluon plasma.*

* Approved May 2013 by Council

Courtesy L. Rossi

Workshop INFN – novembre 2013

- **Abbiamo individuato una persona di riferimento in ATLAS e CMS nei gruppi:**
  - **Physics** goals, theoretical developments and performance reach **(M.COBAL)**
  - **Tracking devices** and associated electronics and readout **(N.DARBO)**
  - **Calorimetry** and associated electronics and readout **(F. TARTARELLI)**
  - **Muon systems** and associated electronics and readout **(E.PASQUALUCCI)**
  - **Trigger**/DAQ/Offline/Computing **(A. NEGRI)**

- **Con il mandato di :**

- **informare la comunita' INFN di riferimento in ATLAS sulle riunioni/iniziative**
- **individuare possibili sinergie, promuovere la partecipazione alle call CSN5**
- **organizzare un workshop INFN da tenersi a novembre per fare il punto sugli R&D**