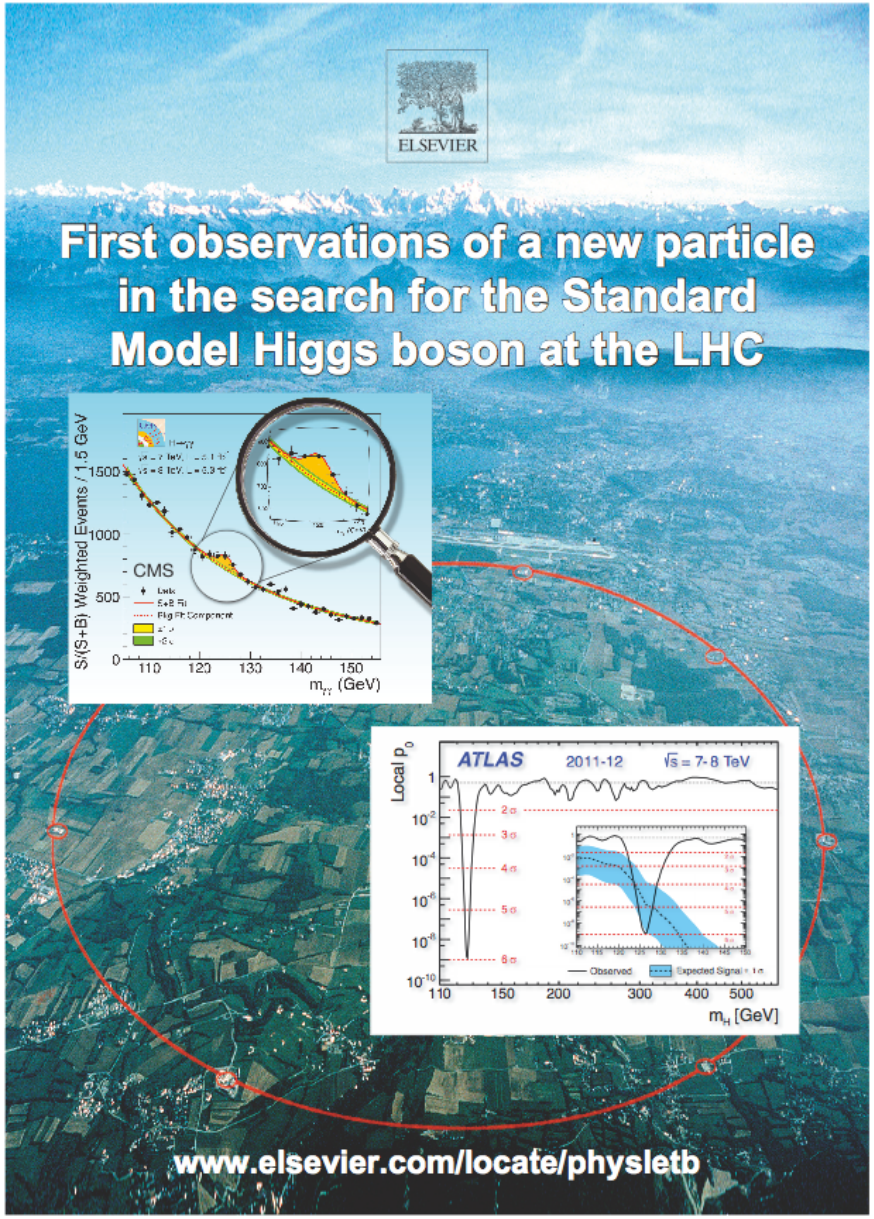
Consiglio di Sezione su Preventivi 2014: CMS

- Lo stato dell'esperimento in due parole
- La fisica che facciamo a Pisa
- Stato del tracciatore nel 2012
- Maintenance tracciatore nello shutdown (LS1)
- LS1 nel 2014
- Upgrade del Tracker, nostro coinvolgimento nelle varie fasi
- Il Tier 2 di Pisa
- Sommario responsabilita' (persone)
- Anagrafica nel 2014
- Sommario richieste

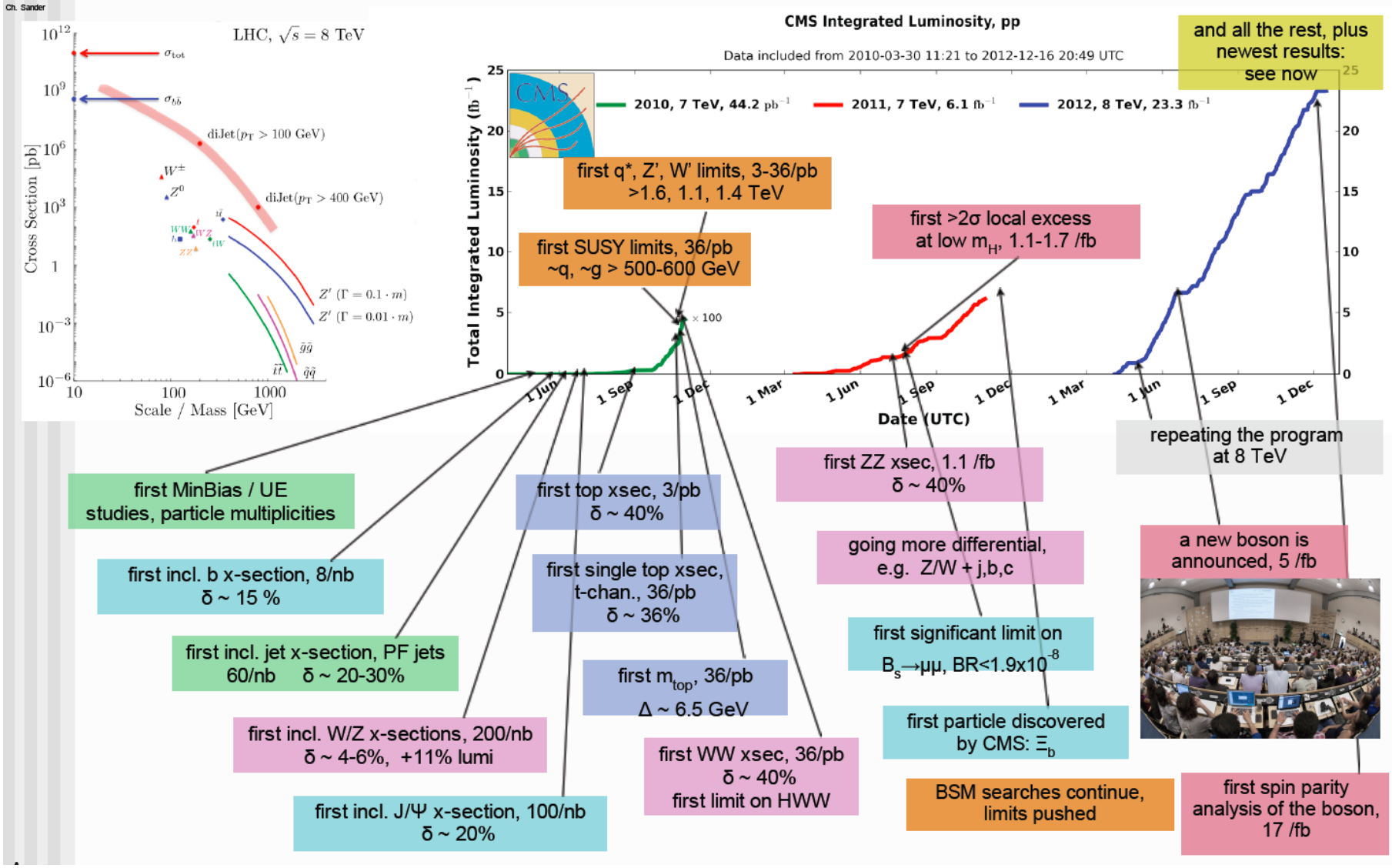
28 Giugno 2013

Roberto Tenchini



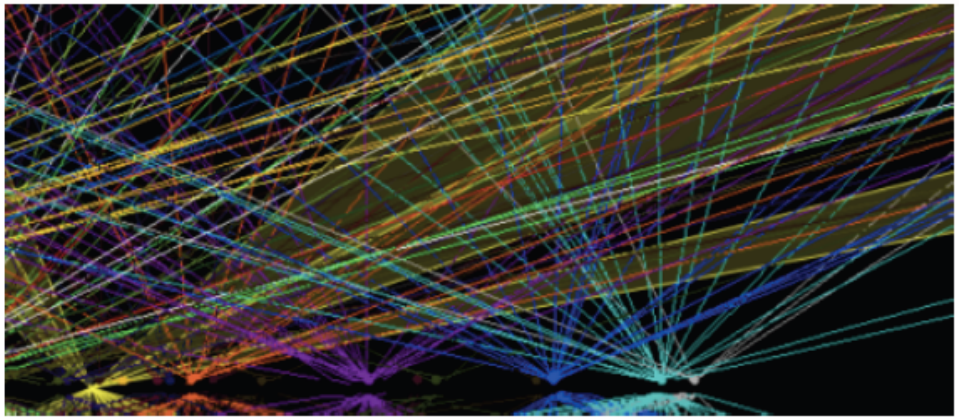
2010-2012: Three amazing years

From "Review of CMS Physics results" [G. Dissertori, ASPEN 2013]

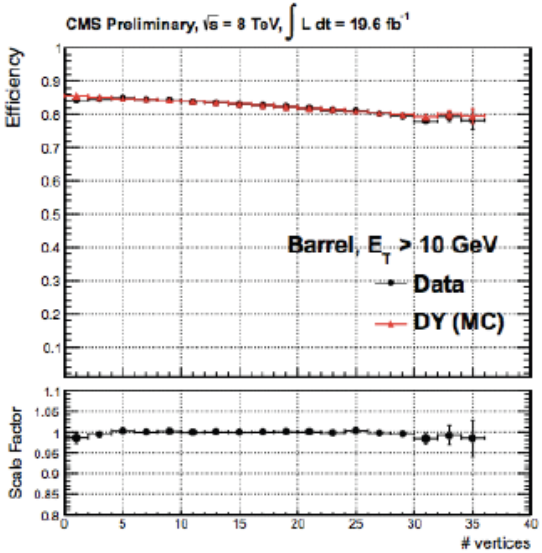


Successful Pileup Mitigation

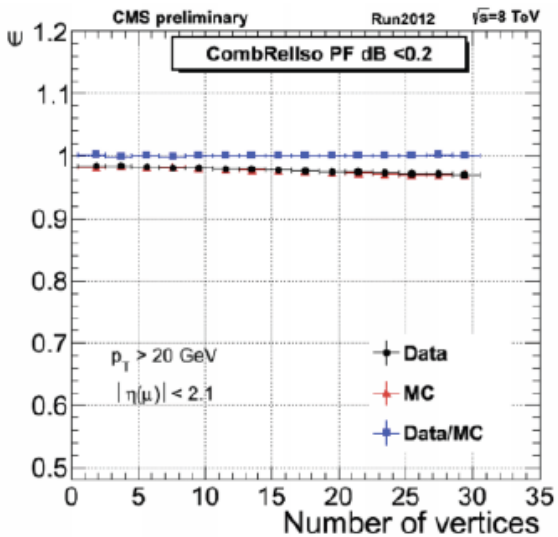
- LHC reached nominal pileup rate of ~ 20 events
- The experiment copes up well !



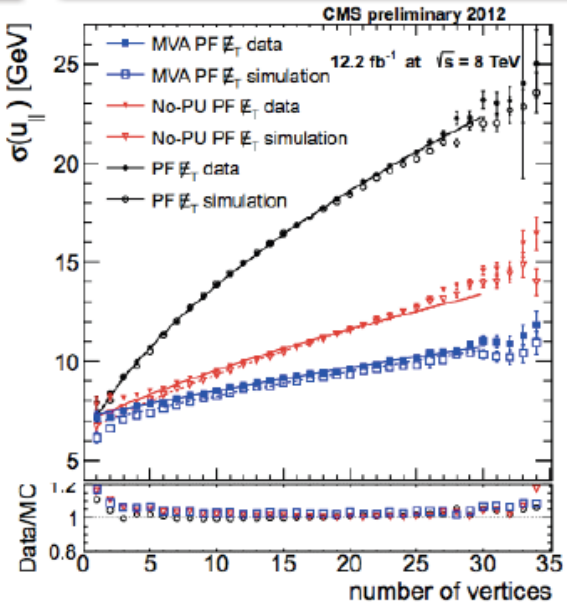
Electron Efficiency



Muon Efficiency

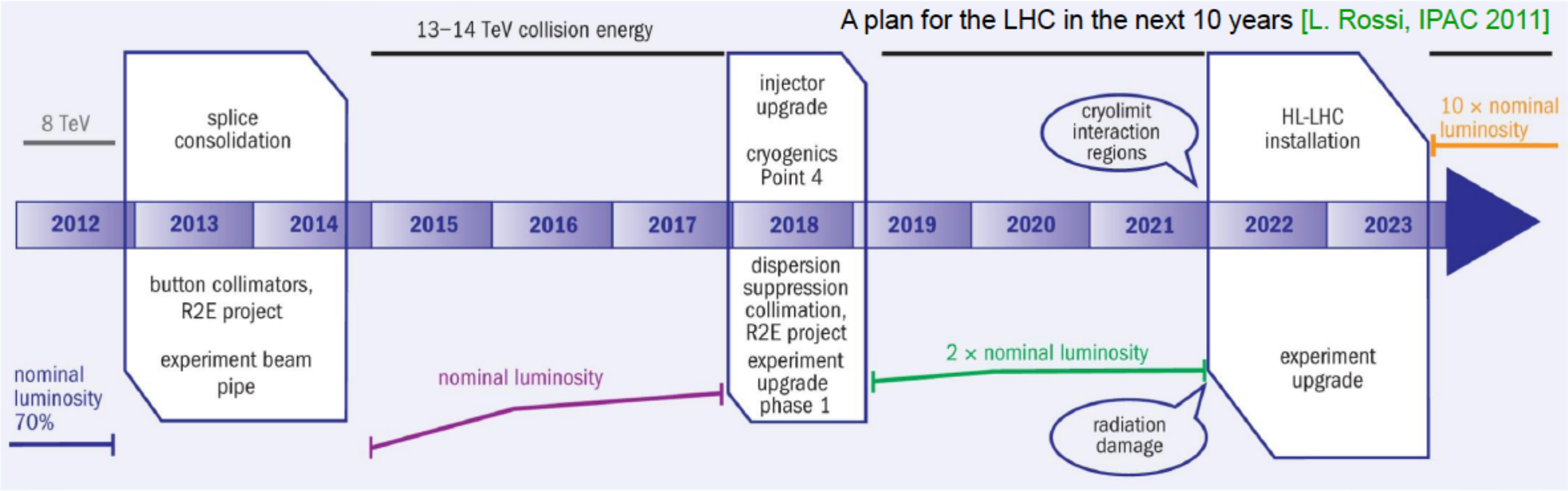


Missing E_T Resolution



The present and future

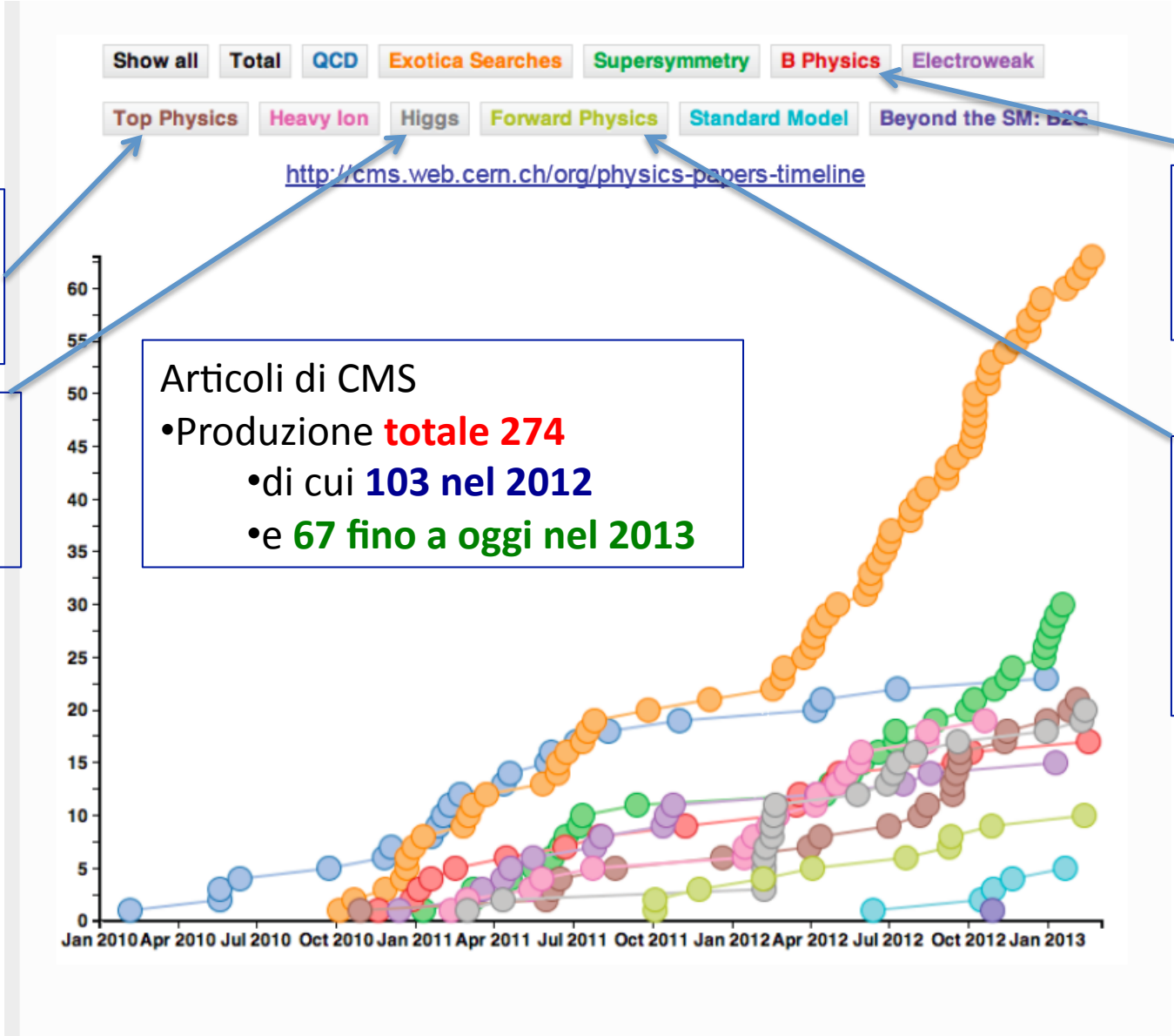
The HL-LHC



Pixel Upgrade "phase 1"

Ful Tracker Upgrade "phase 2"

Physics Production in the past three years



Convener Top physics: R.T.

Convener Higgs→bbar: Andrea Rizzi

Articoli di CMS
- Produzione **totale 274**
  - di cui **103 nel 2012**
  - e **67 fino a oggi nel 2013**

Convener rare B decays: Fabrizio Palla

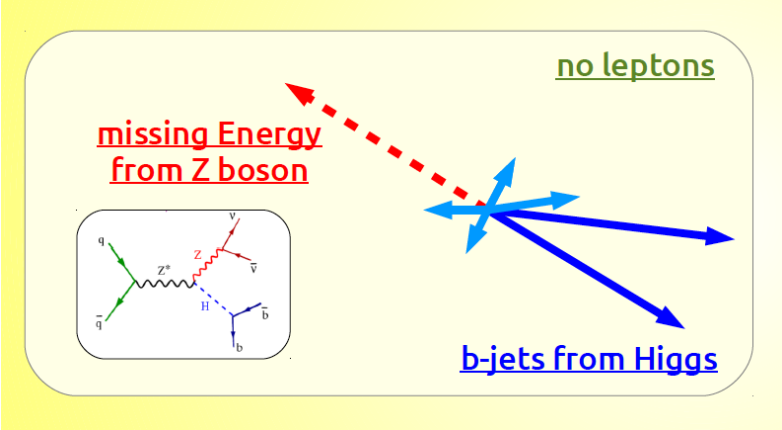
Convener EWK vector bosons with forward jets: Paolo Azzurri

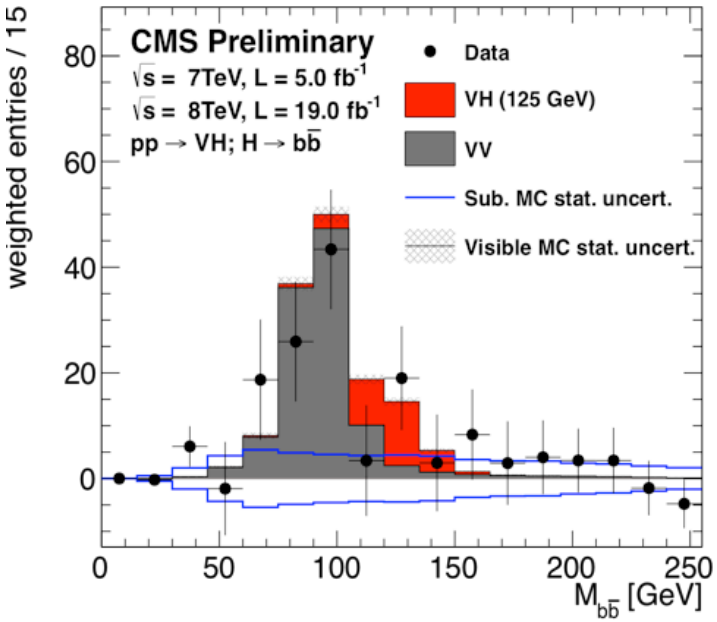
LA FISICA CHE FACCIAMO A PISA (SOLO QUALCHE ESEMPIO !)

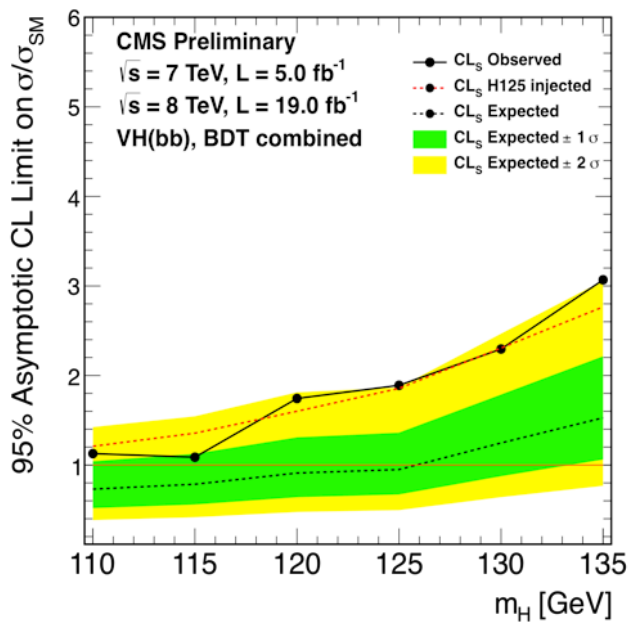
Search for the standard model Higgs boson produced in association with W or Z bosons, and decaying to bottom quarks

CMS PAS HIG-13-012

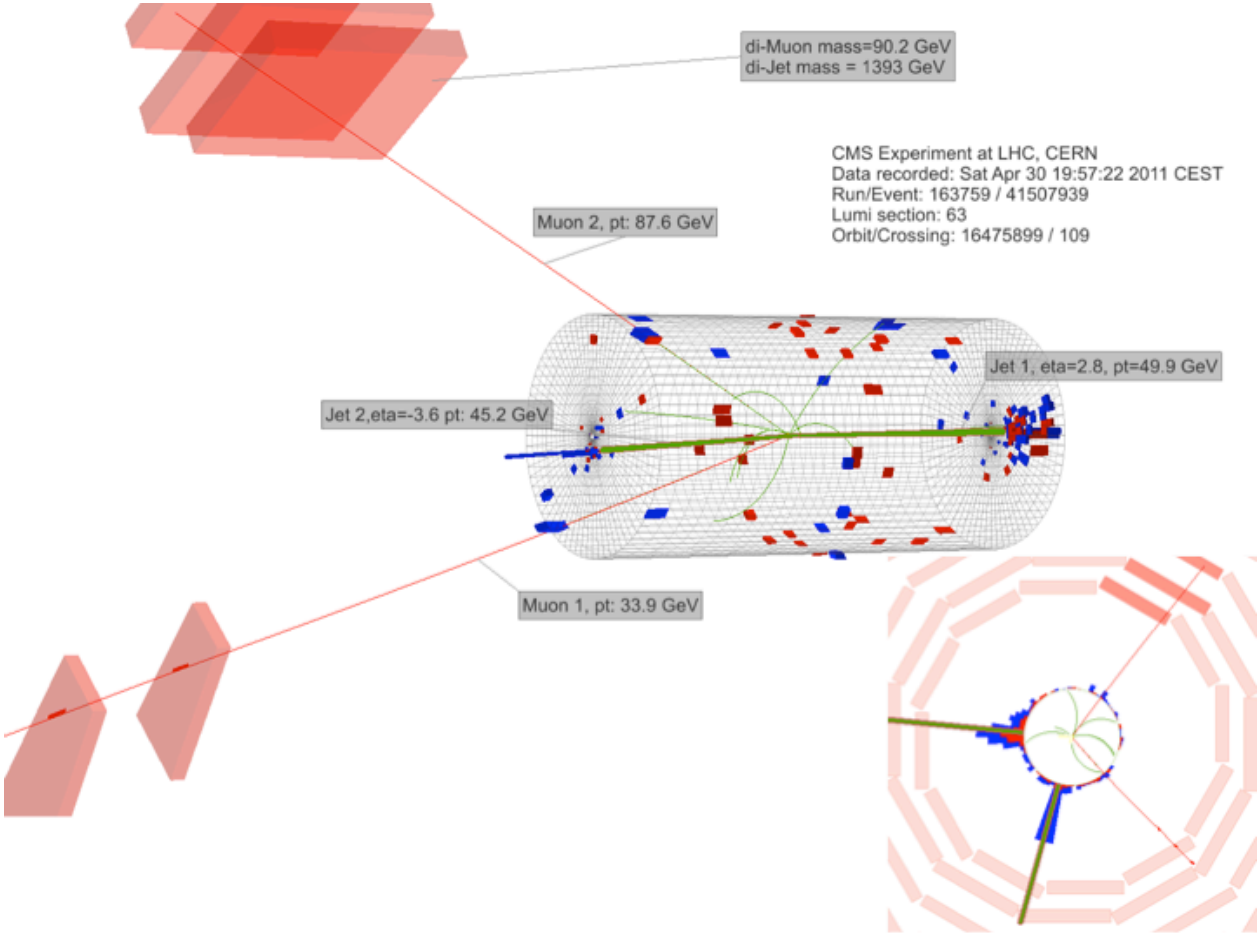
Silvio Donato
Caterina Vernieri
Andrea Rizzi
Tommaso Boccali

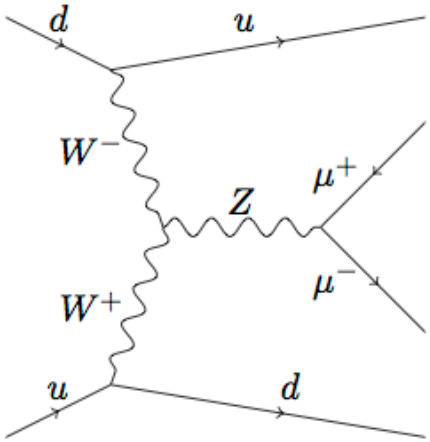


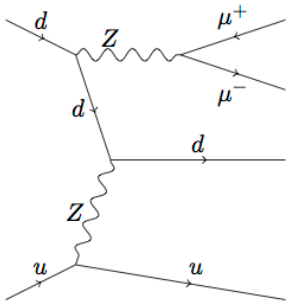


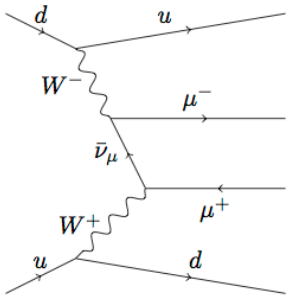


“VBF Z” in pp a 7 TeV **(FSQ-12-019)**



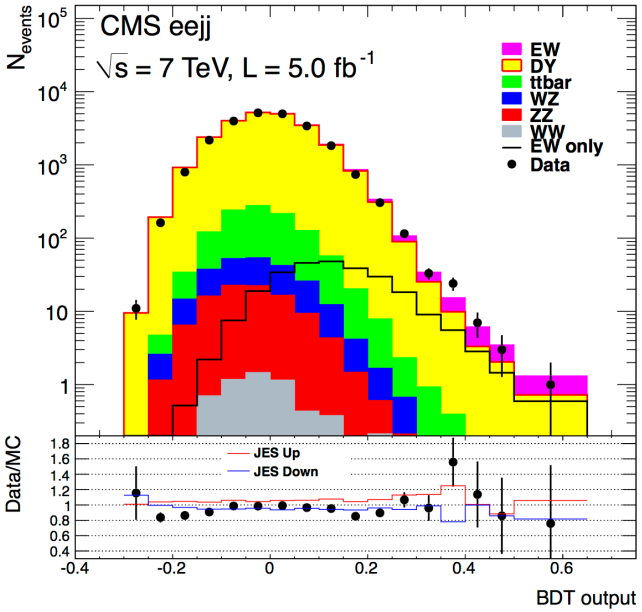


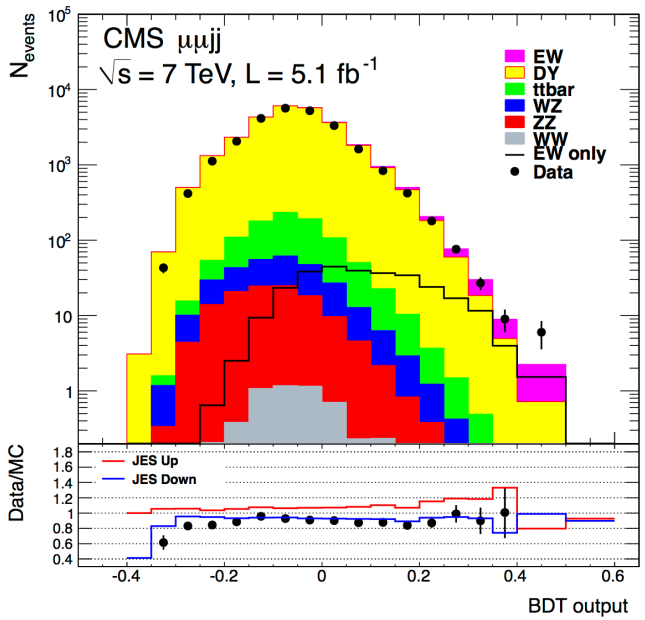




INFN Pisa: P. Azzurri , D. Caiulo (analisi 8 TeV)
University of Antwerp: T. Cornelis, A. Van Spilbeeck, P. Van Mechelen
ITEP, Moscow: V. Gavrilov, **MSU, Moscow:** O. Kodolova,
Imperial College, London: A. Nikitenko

“VBF Z” in pp a 7 TeV (FSQ-12-019)





arXiv:1305.7389v1 [hep-ex] 31 May 2013

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

CERN-PH-EP/2013-060
2013/06/03

CMS-FSQ-12-019

Measurement of the hadronic activity in events with a Z and two jets and extraction of the cross section for the electroweak production of a Z with two jets in pp collisions at $\sqrt{s} = 7\,\text{TeV}$

The CMS Collaboration*

Abstract

The first measurement of the electroweak production cross section of a Z boson with two jets (Zjj) in pp collisions at $\sqrt{s} = 7\,\text{TeV}$ is presented, based on a data sample recorded by the CMS experiment at the LHC with an integrated luminosity of $5\,\text{fb}^{-1}$. The cross section is measured for the $\ell\ell$jj ($\ell = e, \mu$) final state in the kinematic region $m_{\ell\ell} > 50\,\text{GeV}$, $m_{jj} > 120\,\text{GeV}$, transverse momenta $p_T^j > 25\,\text{GeV}$ and pseudorapidity $|\eta^j| < 4.0$. The measurement, combining the muon and electron channels, yields $\sigma = 154 \pm 24\,(\text{stat.}) \pm 46\,(\text{exp. syst.}) \pm 27\,(\text{th. syst.}) \pm 3\,(\text{lum.})$ fb, in agreement with the theoretical cross section. The hadronic activity, in the rapidity interval between the jets, is also measured. These results establish an important foundation for the more general study of vector boson fusion processes, of relevance for Higgs boson searches and for measurements of electroweak gauge couplings and vector boson scattering.

Submitted to the Journal of High Energy Physics

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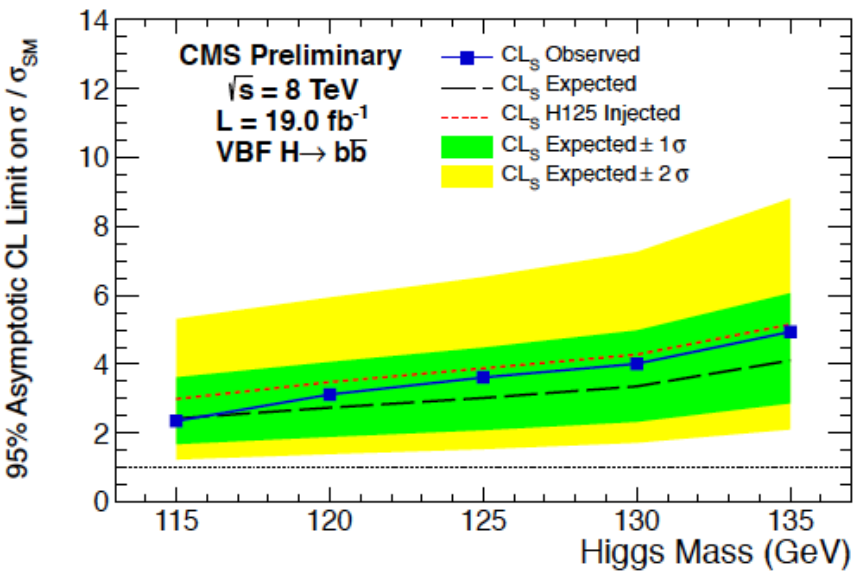
*See Appendix A for the list of collaboration members

Search for SM Higgs boson produced with the VBF mechanism and decaying to bbar

P. Azzurri, J. Bernardini, D. Caiulo, P. Spagnolo

$$\mu = \sigma/\sigma_{SM} = 0.7 \pm 1.4.$$ @125 GeV



Available on the CERN CDS information server CMS PAS HIG-13-011

CMS Physics Analysis Summary

Contact: cms-pag-conveners-higgs@cern.ch 2013/05/16

Search for the standard model Higgs boson produced in vector boson fusion, and decaying to bottom quarks

The CMS Collaboration

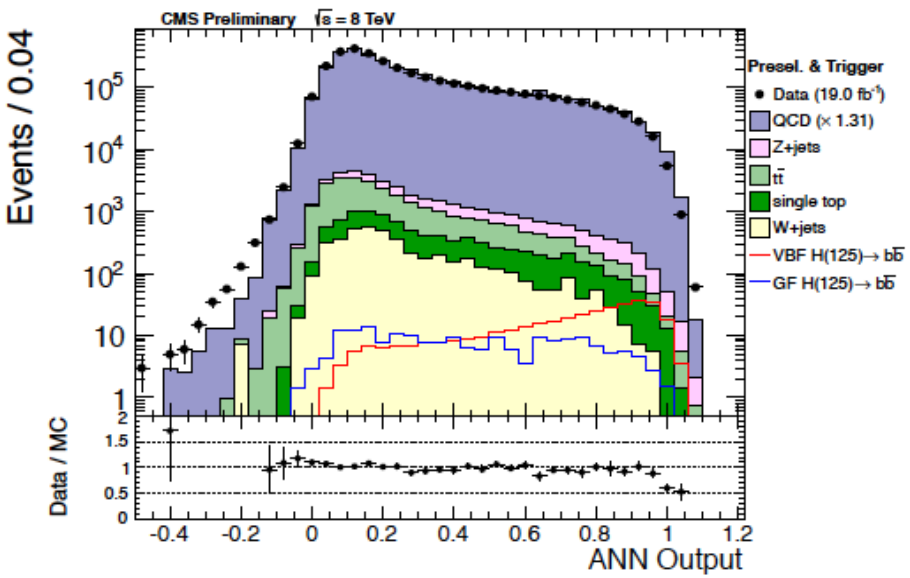
PAS HIG-13-011

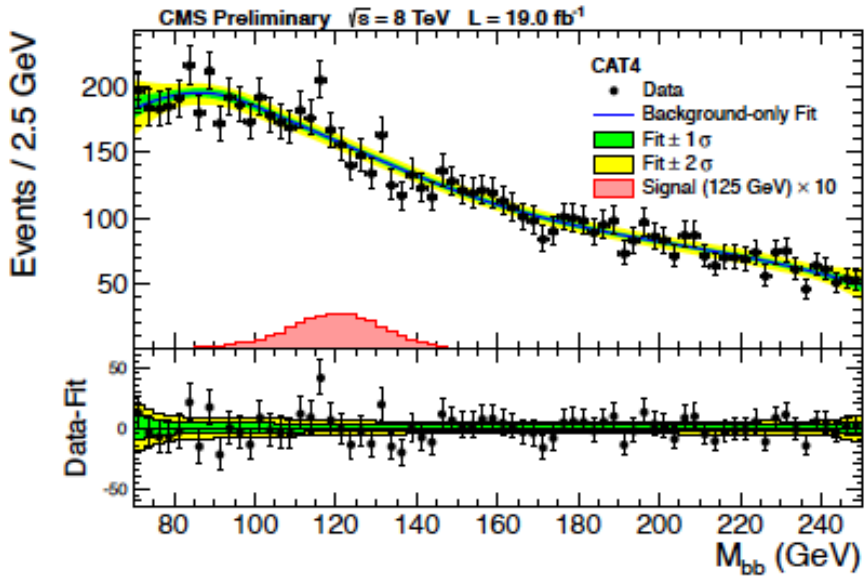
Abstract

A search for the standard model Higgs boson in the vector boson fusion production channel with decay to bottom quarks is reported. A data sample comprising 19.0 fb^{-1} of proton-proton collisions at $\sqrt{s} = 8$ TeV collected during the 2012 running period has been analyzed and 95% Confidence Level upper limits are derived for five mass points from 115 to 135 GeV. At a Higgs boson mass of 125 GeV the observed limit is 3.6 while the expected limit is 3.0 times the standard model prediction. For a 125 GeV Higgs boson signal the fitted signal strength is $\mu = \sigma/\sigma_{SM} = 0.7 \pm 1.4$.

Highlights

- First result on this channel in LHC (need a dedicated trigger) extremely challenging because of the disfavored S/B ratio
- Full trigger and analysis chain designed in Pisa
- Mild use of NN to select the signal, then m(bb) spectrum analysis
- Expect very strong improvement on the limits expected with new optimization of the analysis

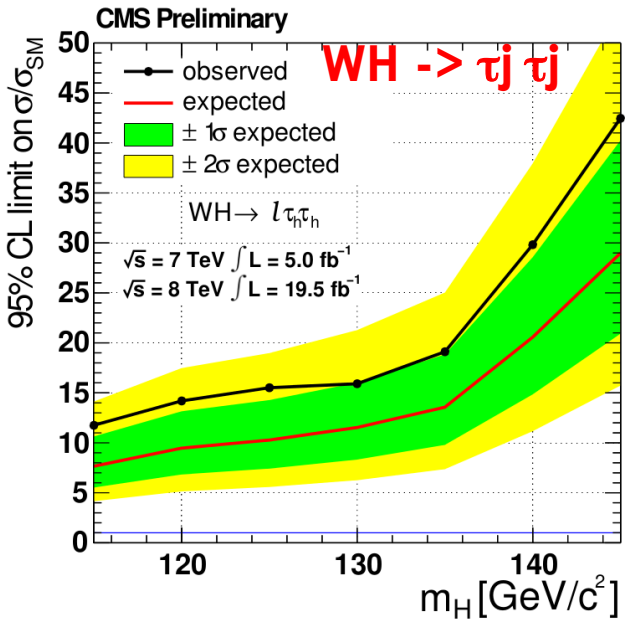


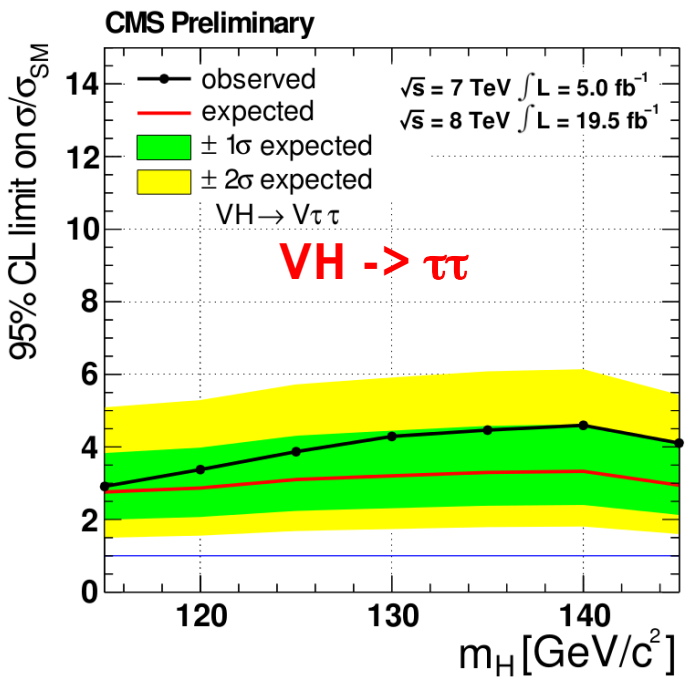


WH->τj τj

G.Bagliesi
M.T. Grippo

- Public PAS : **HIG – 12 – 053** : **VH->ττ** analysis
  - Analyzed 24 fb-1 – all the statistics recorded by CMS
  - Analysis cut – based
  - Estimation of irreducible background based on ***"Fake Rate method"***
  - Upper limits set on the production cross section times branching ratio
  - New analysis in preparation by summer 2013
    - Fake rate estimation, selection, systematics have been improved





Analisi $B_{s/d}^0 \rightarrow \mu\mu$ Stato attuale

- Main analysis (Pisa, PSI, ETHZ, Padova)
  - L. Martini (Tesi PhD), F. Palla, P. Squillacioti
- Control analysis (Pisa, Purdue)
  - F. Fiori, A. Mauri (Tesi laurea), F. Ligabue, G. Rolandi

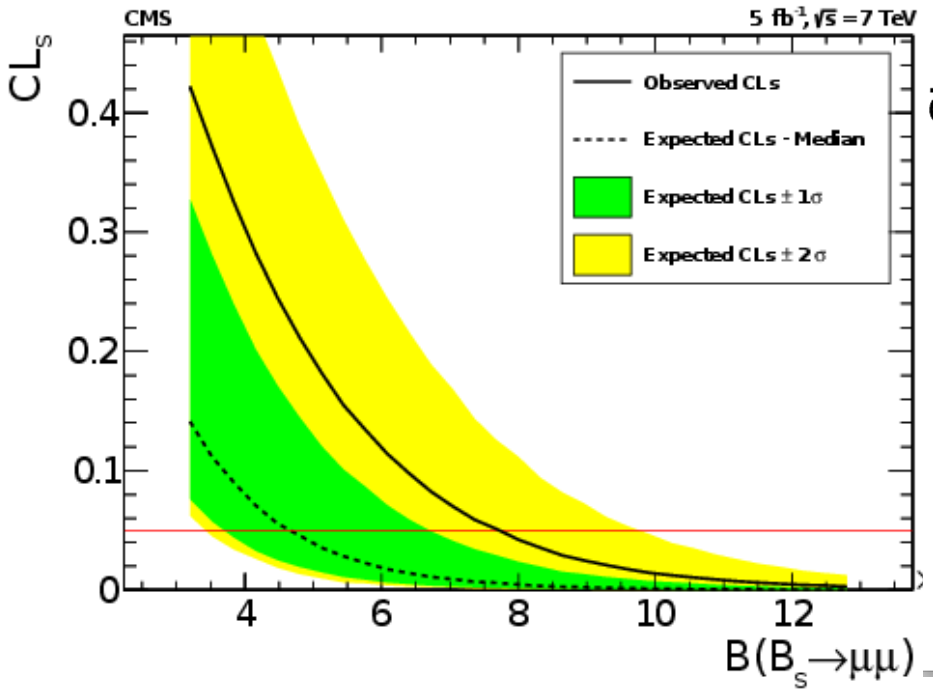
  - In corso: (ri)analisi dei dati (2011) 2012 e cambiamento della strategia di analisi:
    - Migliore comprensione dei fondi
    - Migliore Muon Id e maggiore riduzione dei fake μ
    - Analisi multivariata
    - Risultati nell'estate 2013

Upper limits CMS (risultato precedente del 2011)

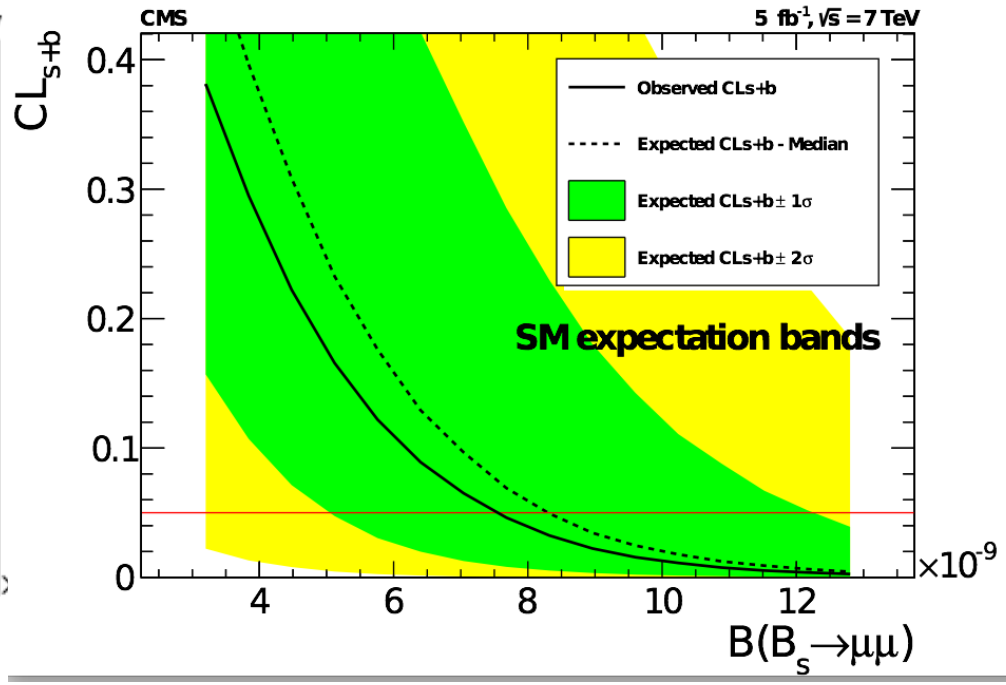
- With CLs at 95%C

	observed	median expected
$BR(B_s^0 \rightarrow \mu\mu)$	7.7×10^{-9}	8.4×10^{-9}
$BR(B^0 \rightarrow \mu\mu)$	1.8×10^{-9}	1.6×10^{-9}

Bkg only hypothesis

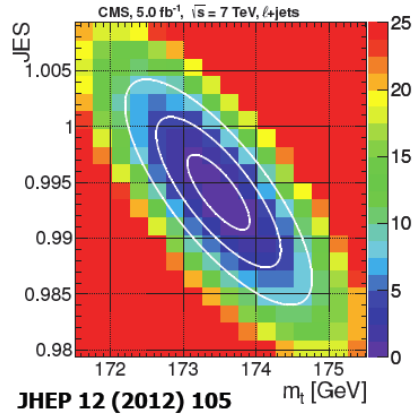


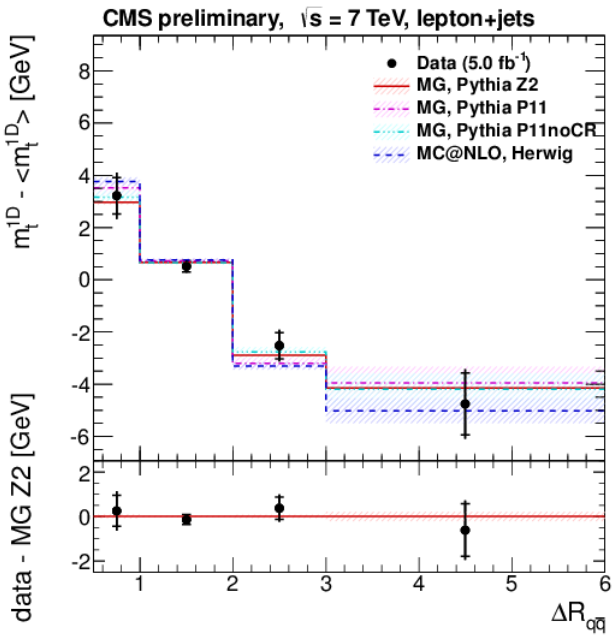
Bkg + SM hypothesis

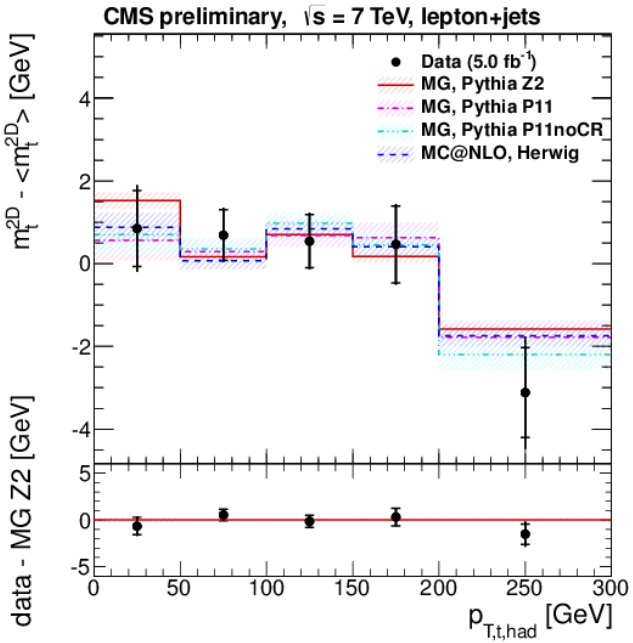


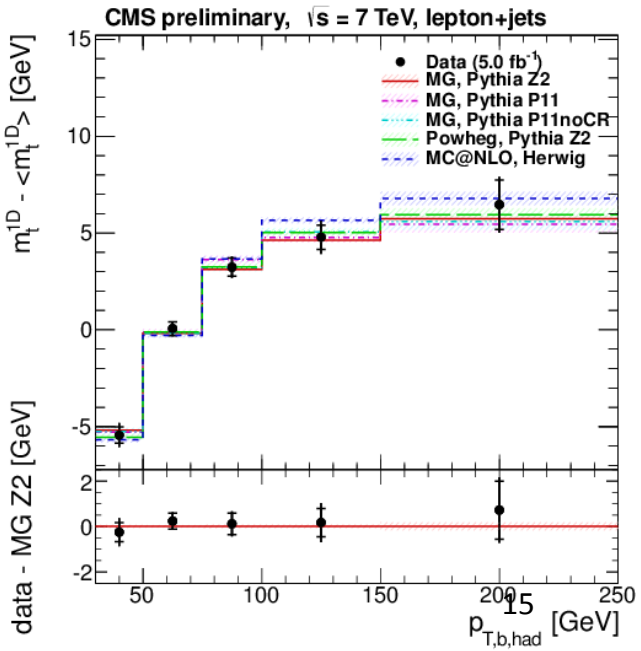
Abbiamo una TOP Factory !

- **Esempio tra i tanti: prima misura differenziale della massa del top** →How does the measured m_t relate to the fundamental m_t parameter in the SM?
  - The relation contains (non)perturbative QCD corrections, expected to depend on event kinematics
  - Good data/MC agreement rules out dramatic effects



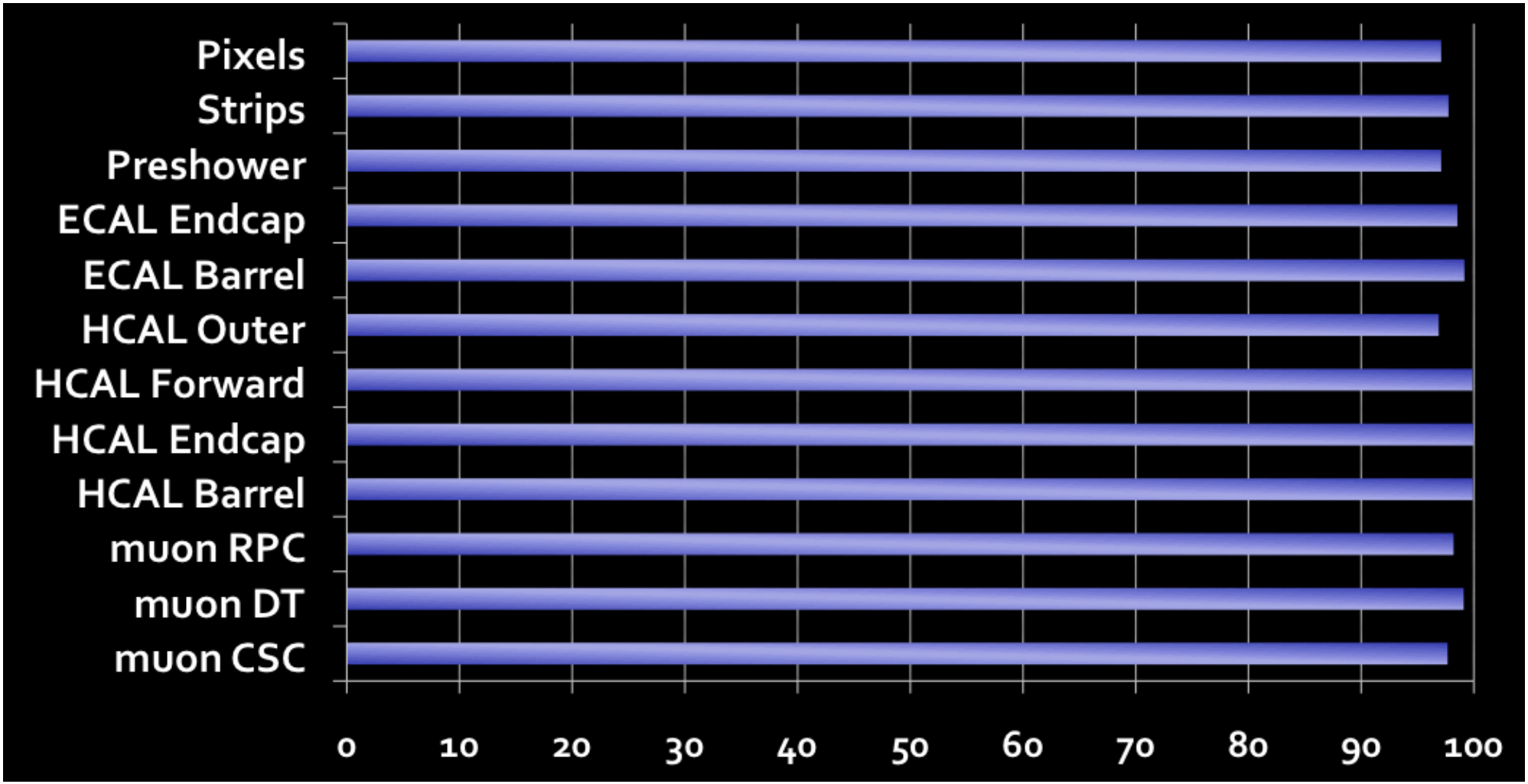




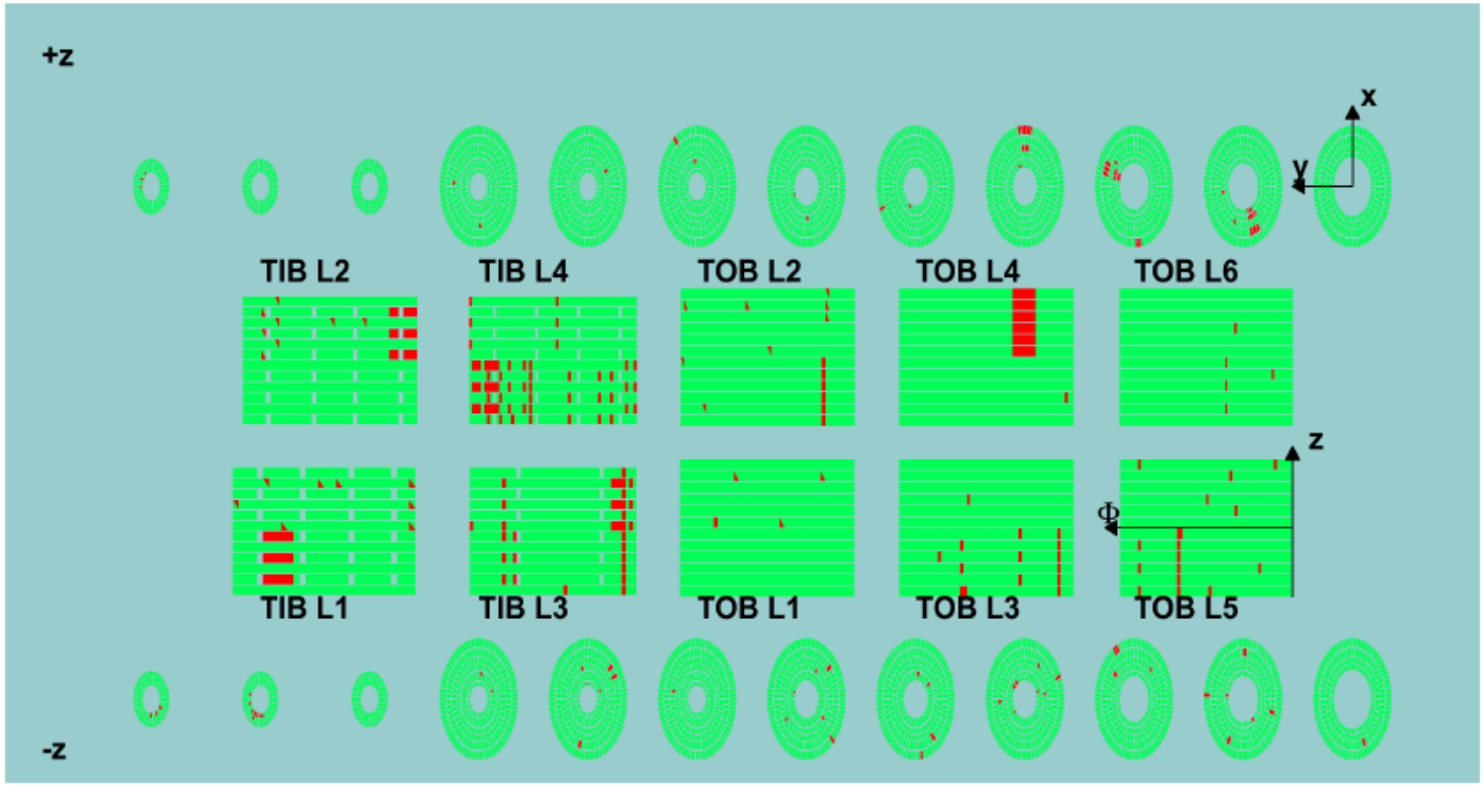


STATO DEL TRACCIATORE

Operational status of CMS in 2012



Canali del Tracciatore funzionanti nel 2012 (situazione uguale al 2011)



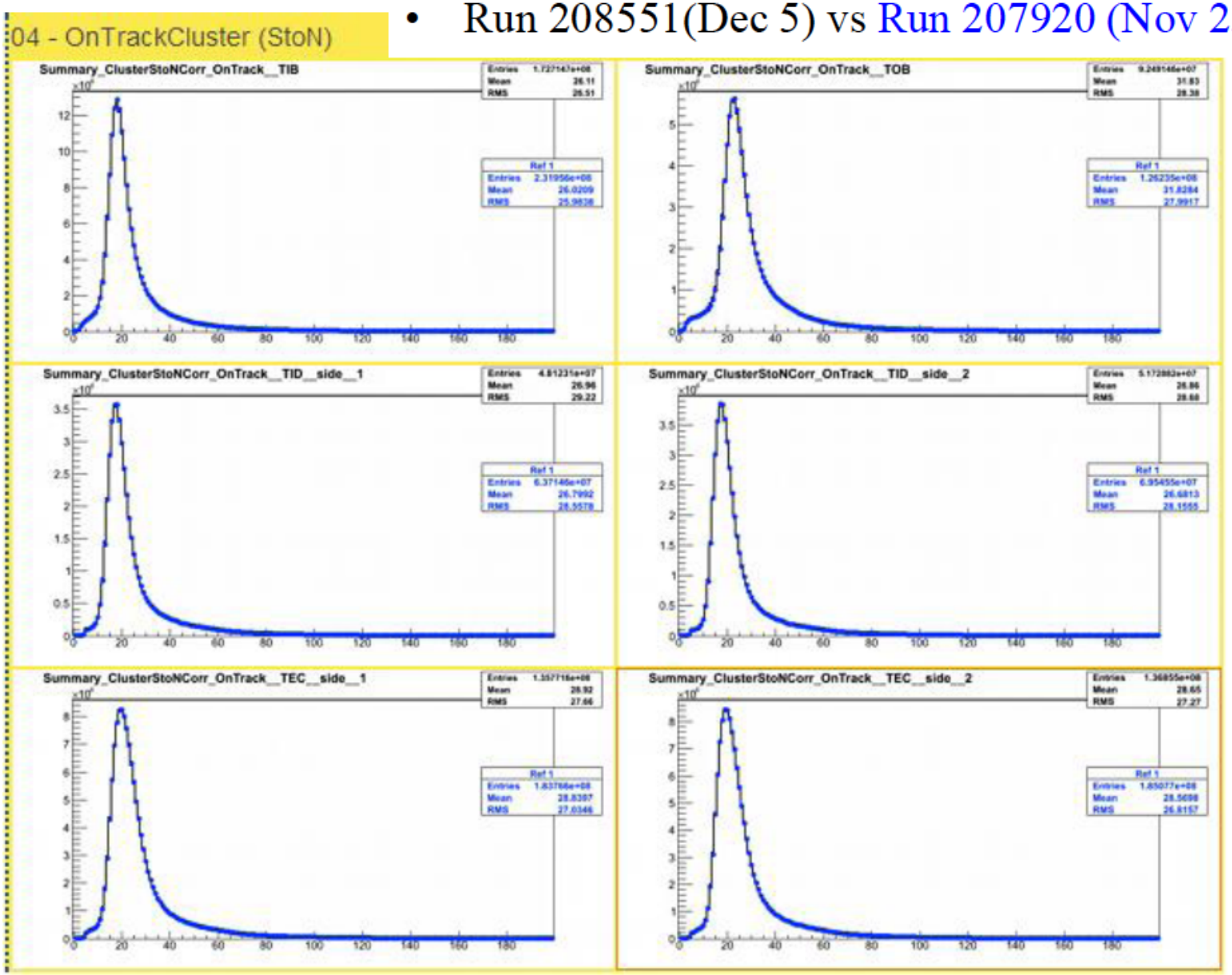
Active

Not Active

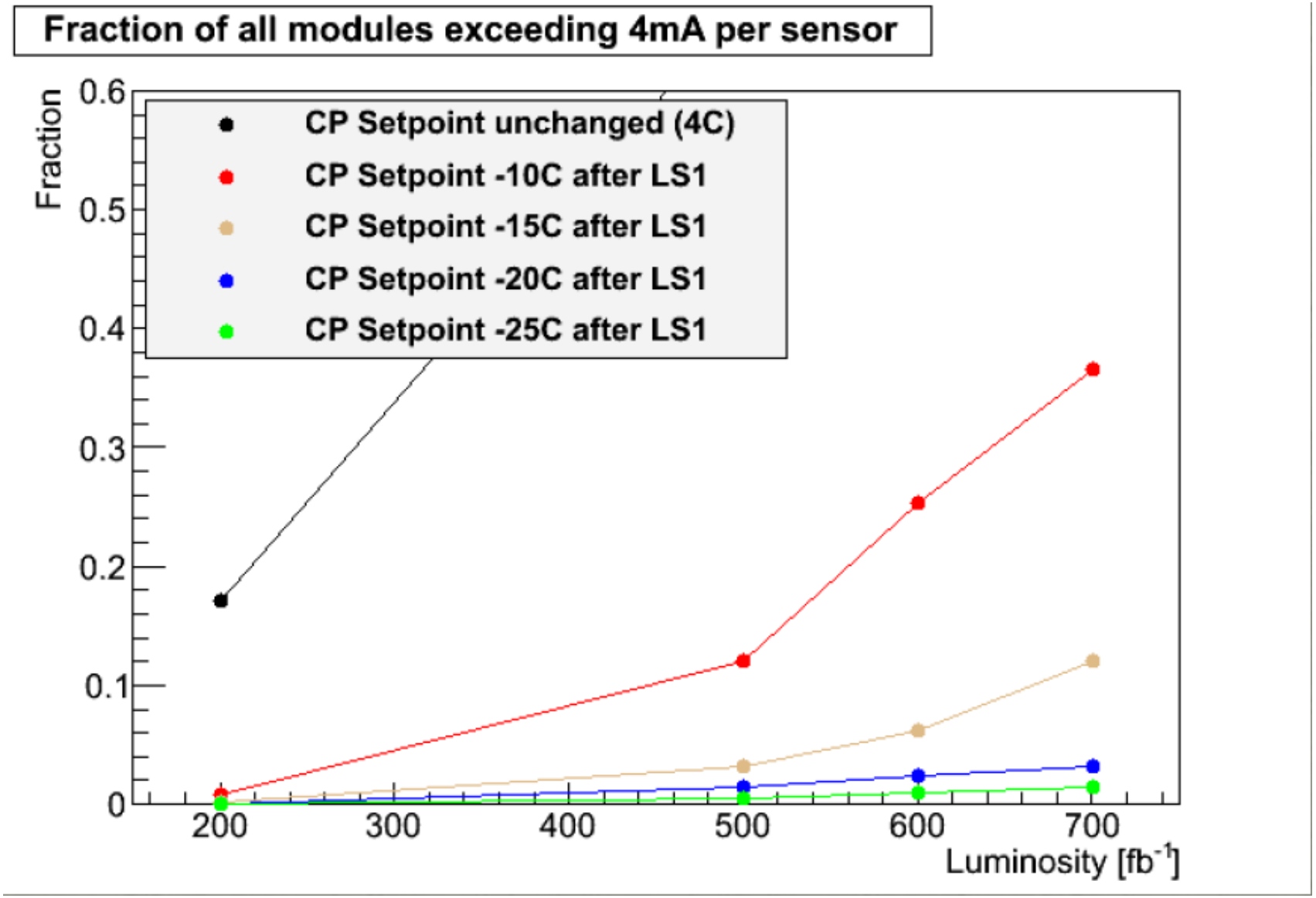
TIB/D	94.63 %	95.02
TOB	97.79 %	98.13
TEC+	98.81 %	98.81
TEC-	99.13 %	99.13
Tracker	97.48 %	97.75

Strip: S/N

- Run 208551(Dec 5) vs Run 207920 (Nov 25)



frazione di moduli a rischio di **thermal runaway** in funzione dalla luminosita' integrata e per diverse temperature della cooling plant



LAVORI NEL LONG SHUTDOWN (LS1)

Scope of LS1 infrastructure work

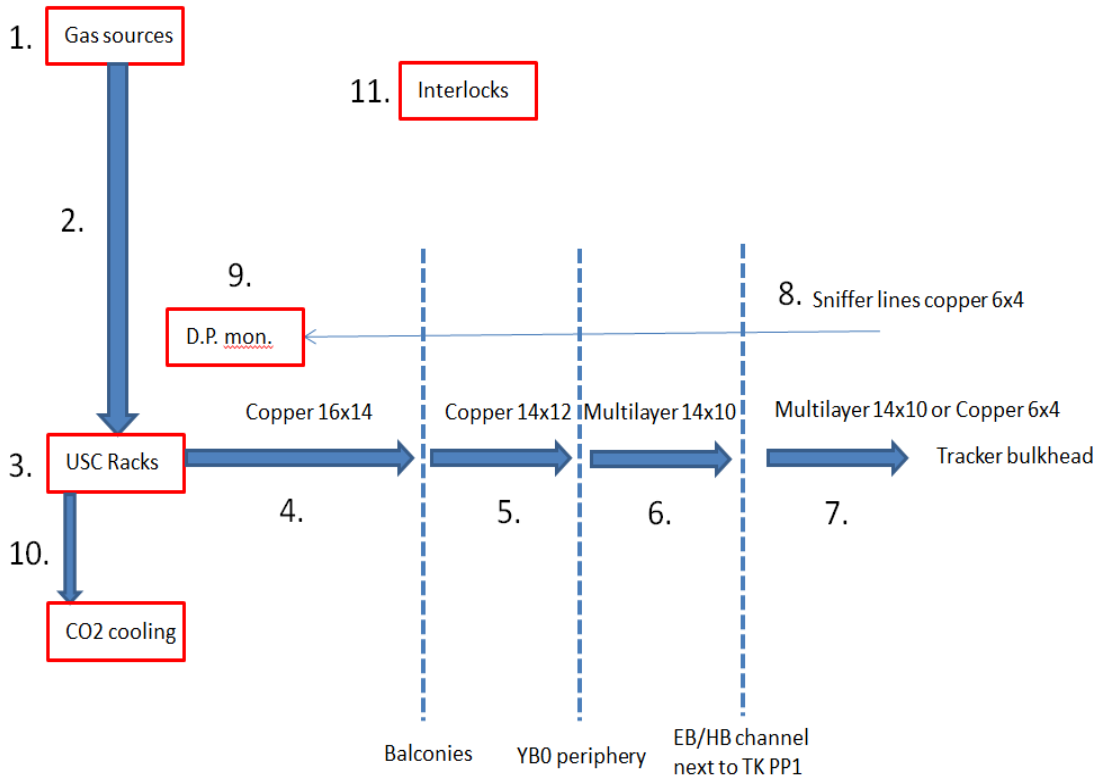
- **Main objective: After LS1 the Tracker must run cold.**
  - **Need -10^0 C on sensors**
  - **Need -20^0 C** (or -25C, if possible) **coolant in Tracker**
  - At present, lowest SST coolant temperature is +4C

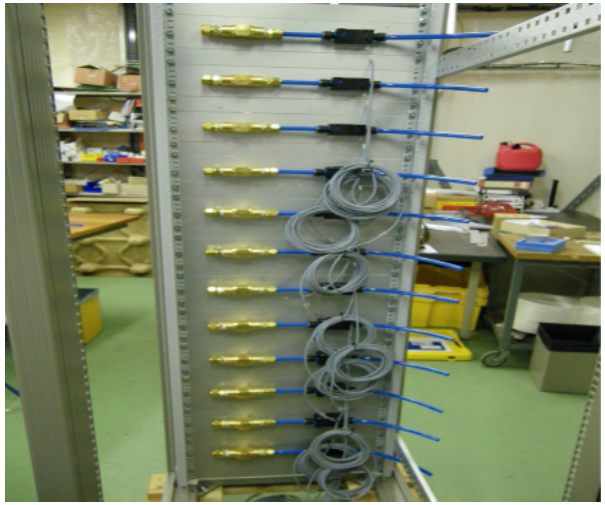
- Current obstacles on lowering the temperature:
  - **Humidity levels too high:** Dew point ~ 0C in the TK service channels inside YB0
  - **Cooling capacity** of the SS and 'brine' cooling plants **not sufficient (min. -4^0 C)**

- In addition, improvements needed on performance and reliability of many related sub-systems: dry gas, dew point measurements, Pipes insulation, heaters, thermal screens, etc.

Dry gas supply system upgrade

- Plenty of new equipment
  - Only section 2 in the diagram is already existing at CMS.
- Dry nitrogen / air plant (membrane system) 400 m3/h, is now commissioned.
- **2 Racks built November '12-February '13. INFN Pisa Techs**





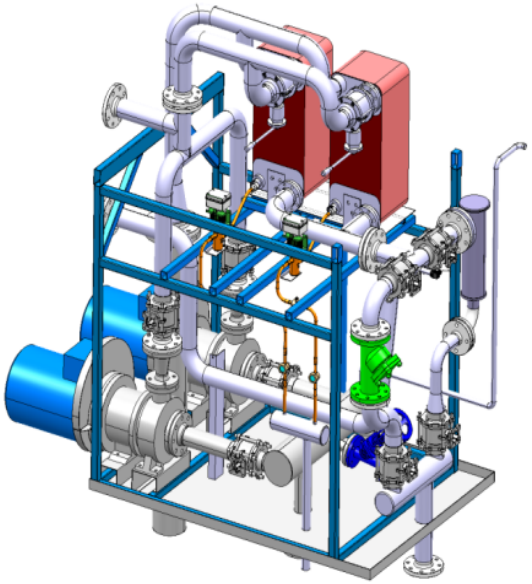
LS1: Towards Cold Tracker, indico 229139

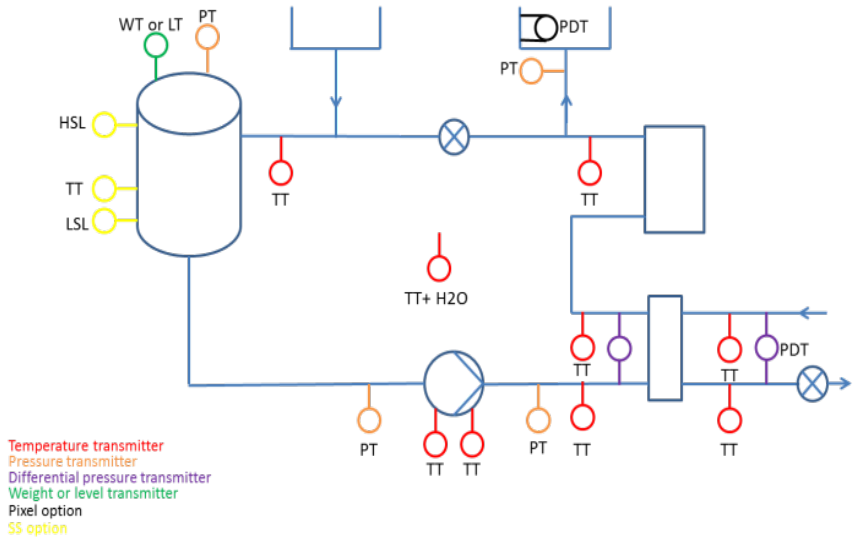
sniffer rack

INFN Pisa techs participate to the assembly of the rack (April '13)

C6F14 cooling refurbishment

- 1st aim: Remove bottle-necks to reach the needed cooling power at low temperature
  - Performance was reduced in 2008 when brine was replaced by C6F14 (for safety against heat-exchanger leaks)
  - Replacement of heat-exchangers, modification of filter circuits, etc.
- 2nd aim: Electrical and Pneumatic upgrade
  - Installation of new cables and electrical cabinets.
  - "Standardisation" of sensors and sensor positions in Silicon strip, Pixel and Preshower cooling plants.
  - New pneumatic cabinet





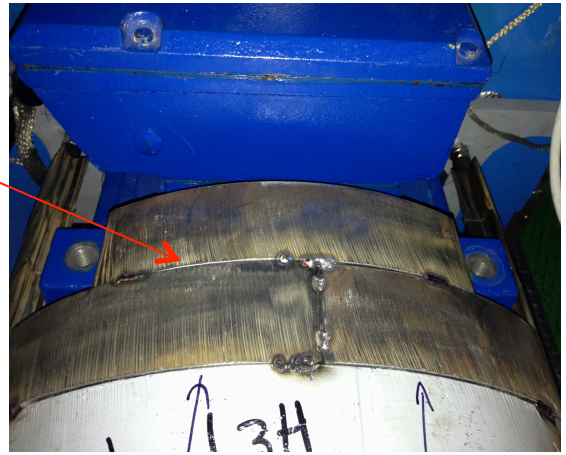
C6F14 cooling refurbishment

- 3rd aim: Maintenance
  - General maintenance (filters, etc.)
  - Replacement of pumps
  - Mechanical modifications for new sensors and to reduce leaks.

- **INFN Pisa techs contribute to first step of the maintenance of the Silicon Strip plants (Feb '13)**

  and

  to the final part of the maintenance: pipes insulations, pumps magnetic shield revision (June '13)



Heating wires system: cables

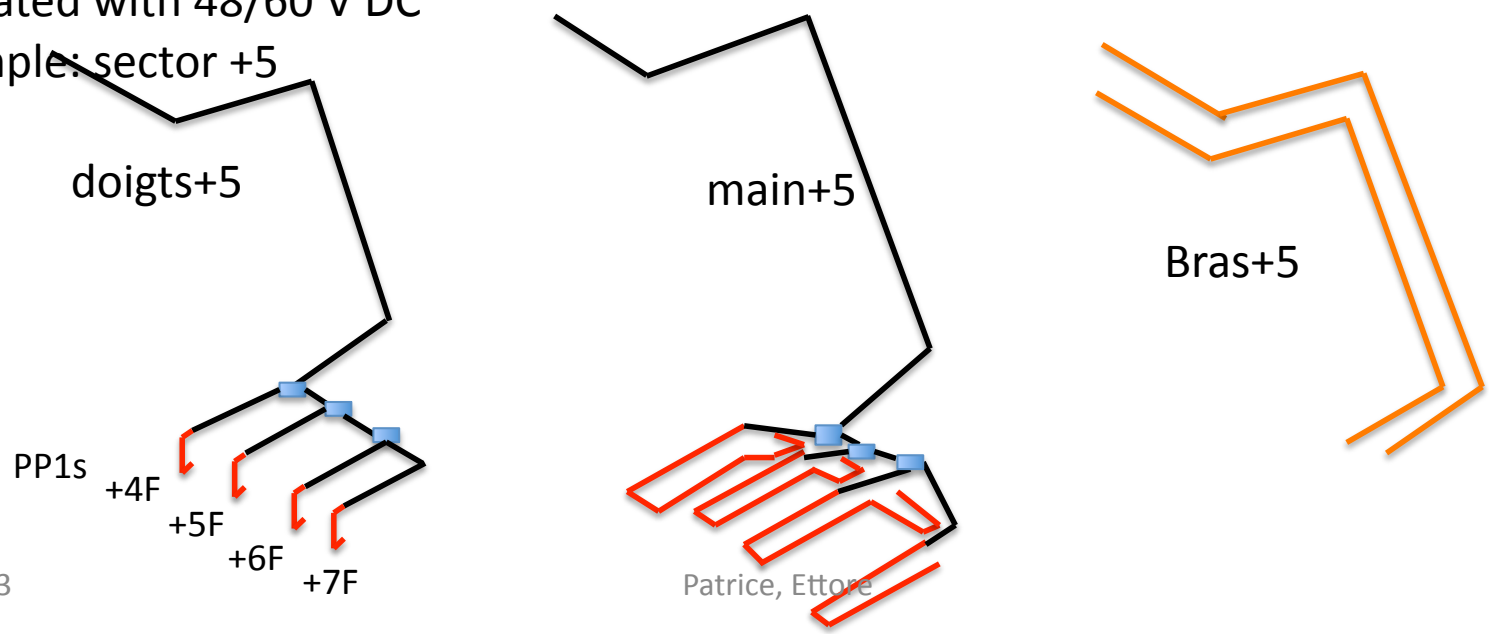
To avoid condensation on the TK cooling bundles, each cooling pipe bundle has 3 different types of heating cables:

1) front of the vactank , DOIGTS , to be placed in operation as soon as the TK operational temperature is T < 0 C
2) Longitudinal part of the vac tank, where the branching to the different PP1s take place, MAIN, to be operated when fluid T<-20 C
3) Radial part of YB0 up to the PP2s locations, BRAS, to be operated when fluid T<-20 C

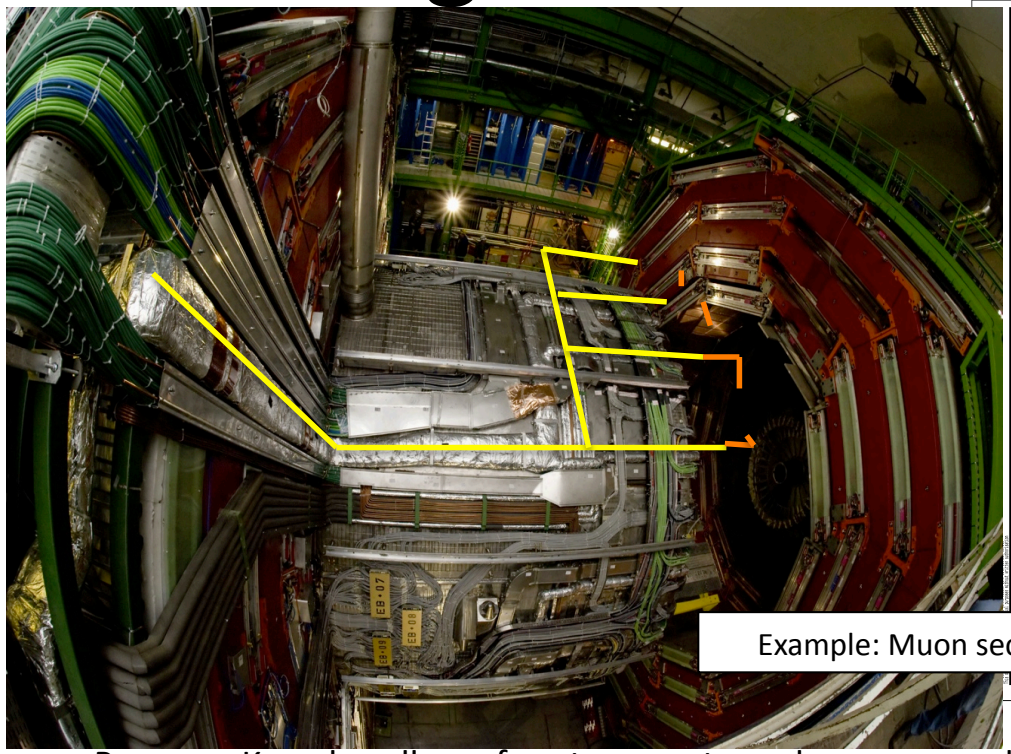
Pisa Engineers responsibles for the cables definition from the detector 3D model.

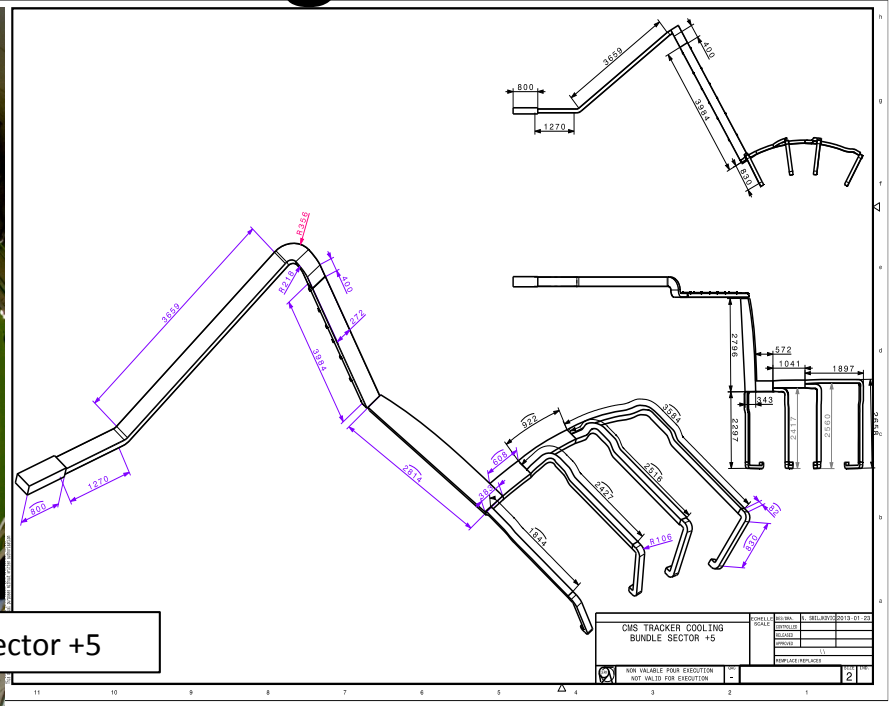
Heating cables are produced by FLEXELEC, Lyon: they are serie resistors type, 20 W/m, operated with 48/60 V DC

Example: sector +5



Heating wires for Cooling bundles





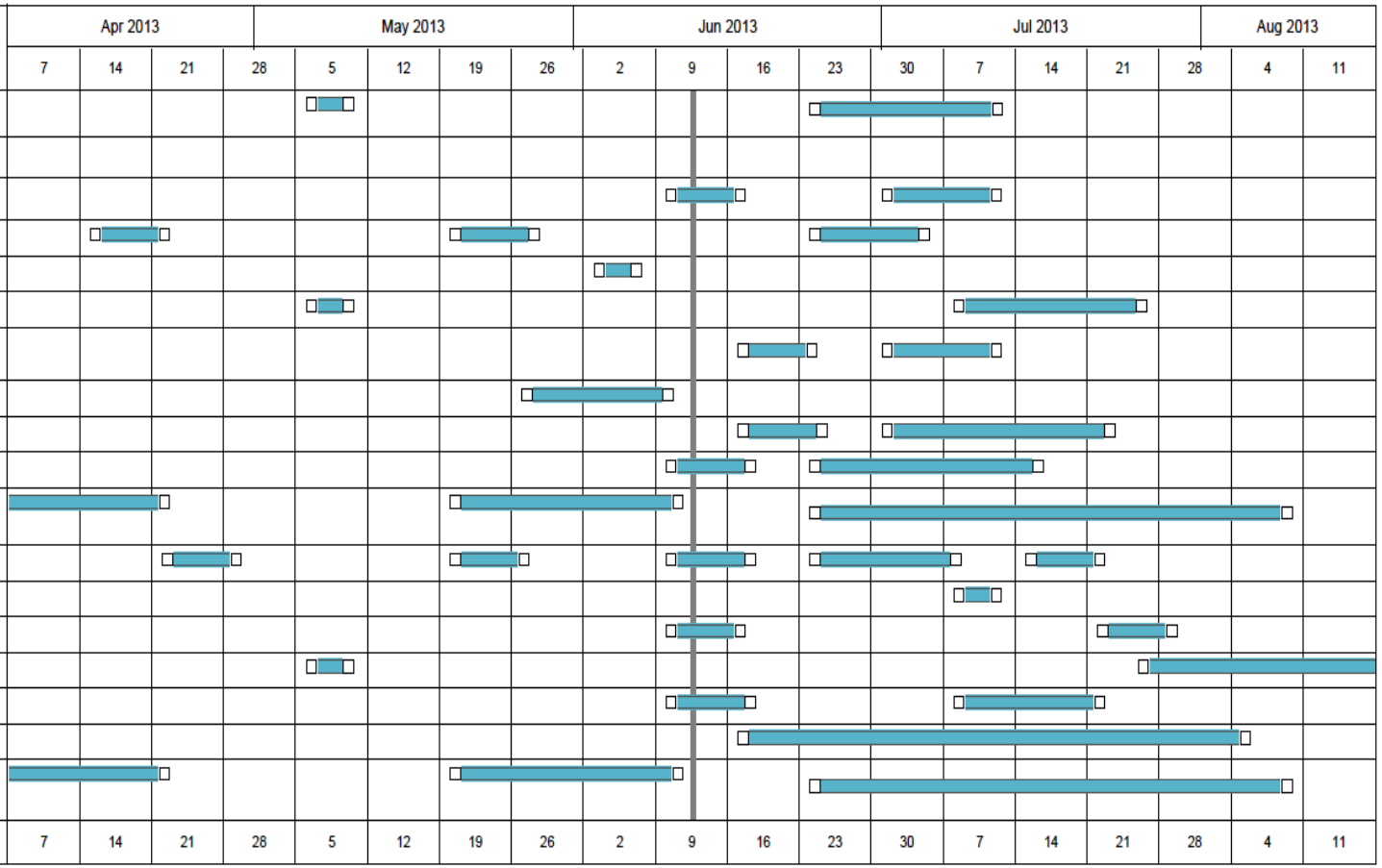
Example: Muon sector +5

- Purpose: Keep bundle surface temperature above cavern dew point (+13C).
- Extensive tests done with bundle mock-ups.
- Need heating wires of 20 W/m
- DC powering will be used
- Prototype of sector +5 produced and tested in spring 2013
- 59 heating wires have been produced, received early June.
- **Installation in July '13. INFN manpower will be used for the installation.**

  one team per side (4 people+1 supersvisor per team) will be used.

Attivita' attuale Cooling Bundles

	hw x bundles	Duration (Work Months)	Start Date	Finish Date
1	Aisa Damiano (PG)	0.2 0.6	5/6/13 6/24/13	5/10/13 7/12/13
2	Balestri Gabriele(Pi)			
3	Basti Andrea(Pi)	0.4 0.2	7/1/13 6/10/13	7/12/13 6/17/13
4	Brianzi Mirko(Fi)	0.3 0.4	5/20/13 6/24/13	5/28/13 7/5/13
5	Dell'Olio Domenico (Ba)	0.2	6/3/13	6/7/13
6	Farnesini Lucio (Pg)	0.6 0.2	7/8/13 5/6/13	7/26/13 5/10/13
7	Ferlito Pietro (CT)	0.4 0.2	7/1/13 6/17/13	7/12/13 6/24/13
8	Ferorelli Lello(Ba)	0.5	5/27/13	6/10/13
9	Giudice Nunzio(CT)	0.3 0.7	6/17/13 7/1/13	6/25/13 7/23/13
10	Guardone Nunzio(CT)	0.3 0.7	6/10/13 6/24/13	6/18/13 7/16/13
11	Mariani Filippo(Pi)	0.6 1.6 0.7	4/2/13 6/24/13 5/20/13	4/22/13 8/9/13 6/11/13
12	Moggi Andrea(Pi)	0.2 0.5	3/4/13 6/24/13	3/11/13 7/8/13
13	Orsini Antonio (Pi)	0.2	7/8/13	7/12/13
14	Petragnani Giulio(Pi)	0.2 0.2	6/10/13 7/22/13	6/17/13 7/29/13
15	Piluso Anton Franco(Pg)	0.8 0.2	7/26/13 5/6/13	8/20/13 5/10/13
16	Salemi Maurizio(CT)	0.3 0.5	6/10/13 7/8/13	6/18/13 7/22/13
17	Serban Alin(Pi)	1.6	6/17/13	8/5/13
18	Tolaini Sergio(Pi)	0.6 1.6 0.7	4/2/13 6/24/13 5/20/13	4/22/13 8/9/13 6/11/13
		Tot: 19.4		



Attivita' LS1 nel 2014

Tracker Rough Sketch for 2014

- January/February:
  - restart operation @P5
  - tests with new TCDS in 186
- March: 1 week global run

Esperti DAQ

- Mid March - Mid April: beam pipe installation
- End April: 4 weeks of CV maintenance → Tk off

Tecnici

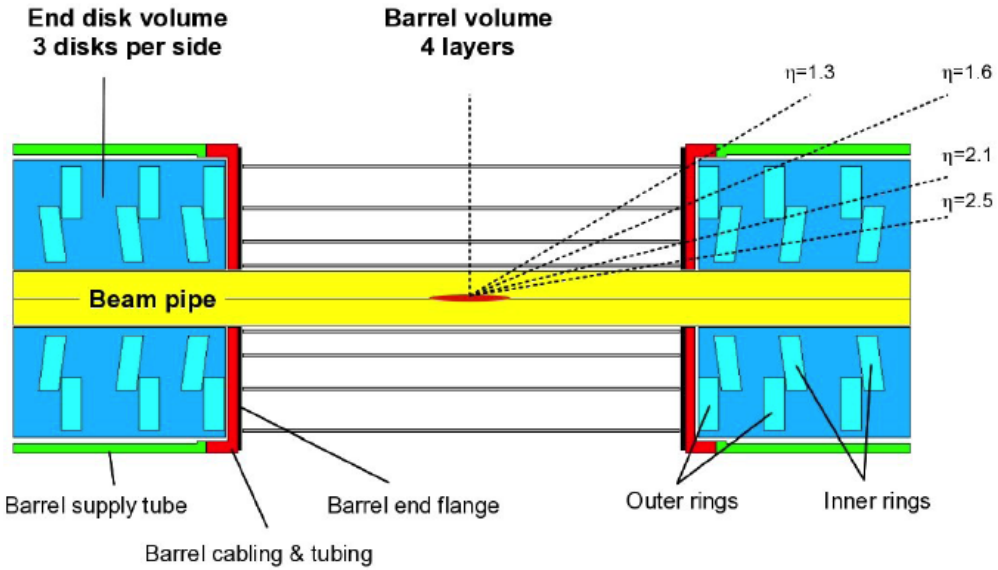
- in parallel: installation of DAQ 2 and new TCDS
- End May: re-commission tracker with new TCDS
  - global run with CMS as soon as tracker and cDAQ are ready

Esperti DAQ

- July: two mid-week global runs
- Begin August: Global run before magnet closure (at least one week, likely more)
- End August - Mid September: 4 weeks of CRAFT
- September/October: continue mid-week global runs
- November: cosmic challenge (4 weeks)
- December/January: get tracker ready for data taking with beam

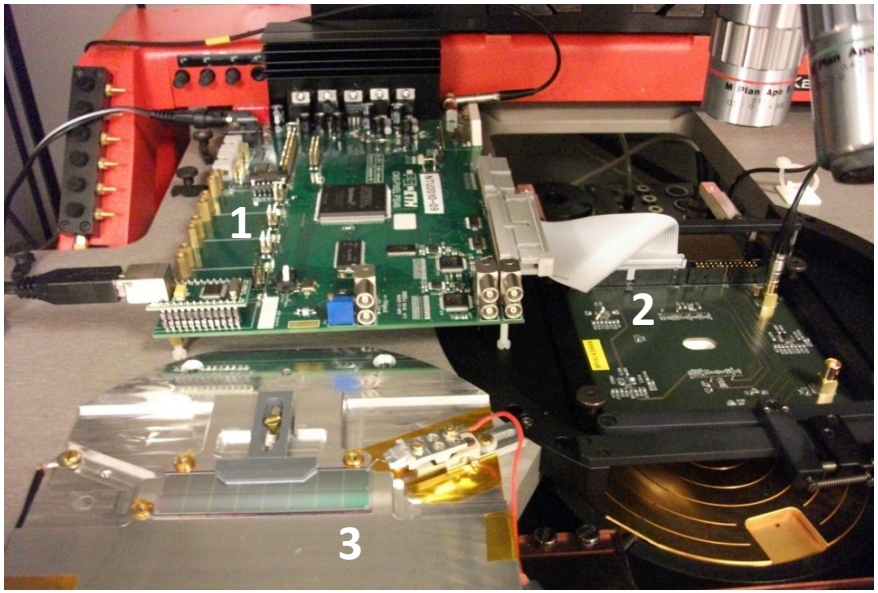
Esperti On Call, Turni

UPGRADE FASE 1: NUOVO PIXEL DETECTOR

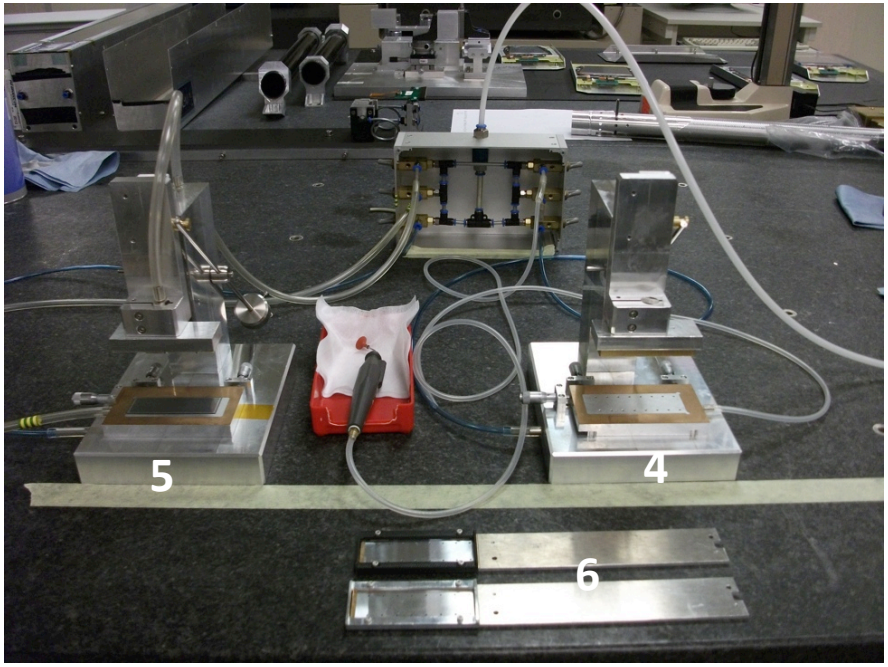


Pixel Phase I -2013 : QA + Assembly

– Test del Bare Module
  - Test Board for DAQ (1)
  - Probe card (2)
  - Bare module Jig (3)

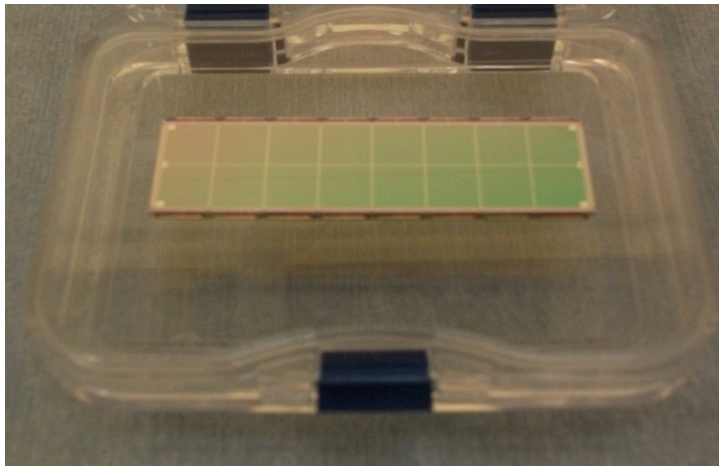


– Assemblaggio Base strips
  - Incollaggio Base strips (4)
  - Incollaggio bare module su base strips (5)
  - Module handle per trasporto (6)



Progetto Bump Bonding

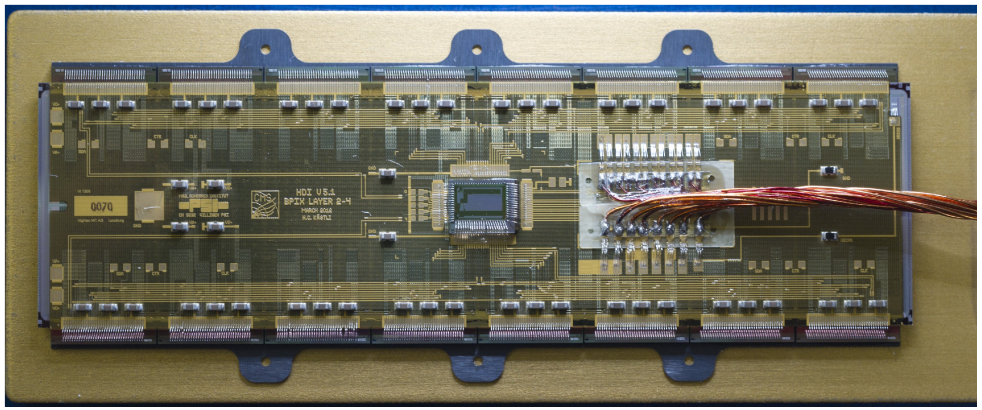
- 2 Linee di possibile produzione
  - Progetto con IZM (Bump Sn/Ag)
    - Prodotti I primi 4 Pixel Bare Modules
      - In testing a Pisa
  - Progtto con Selex (Bump In)
    - INFN + KIT
      - Produzione prevista a settembre



Bare Module BPIX
prodotto da IZM

Pixel Phase I -2013

- Entro 2013
  - Adeguamento set-up al nuovo ROC
    - Digitale
    - Nuova geometria
      - 4 wafers 8”gia disponibili: in QA al PSI
  - Pre produzione di ~10 moduli : pre produzione
    - Sblocco fondi 2013 s.j.



Primo prototipo BPIX Phase I
Costruito e qualificato al PSI

  - Procedura assegnazione gara di Bump Bonding per la produzione

Pixel Phase I 2014

- Inizio produzione di 270 moduli per la costruzione di ½ Layer 3
  - ROC
    - Engineering run gia concluso
    - Produzione wafers dopo qualifica dei primi prototipi
  - Pixel Sensors
    - Gia in ordine presso la CiS

- Tempo stimato di produzione 6 mesi
  - Inizio meta` 2014
  - Attivita previste per Pisa
    1. Pixel Wafer Sensors QA, ROC Wafers management
    2. Bump Bonding & Bare Module QA
    3. Assemblaggio Base strips
    4. Spedizione Bare modules
    5. Integrazione moduli su cilindro Layer 3

Persone coinvolte ora e in futuro in pixel fase 1

- Attualmente **A. Messineo , R. Dell'Orso, M.A. Ciocci, A. Rizzi, T. Boccali, K. Androsov**
- Nella fase di produzione e test tutto il gruppo contribuira' con uno sforzo medio di almeno 4 FTE
- Richieste Finanziarie Pixel fase 1
  - **Gara Bumb Bonding = 350 Ke (Pisa)**
  - set-ups, Jigs, assembly tools = circa 5 Ke
  - Trasporti = 2-3 Ke (centri di produzione)

UPGRADE FASE 2:

1) SENSORI PER PIXEL DETECTOR (*)
2) PIXEL TRIGGER+ OUTER TRACKER TRIGGER (MA)
3) ROC CON TECNOLOGIA A 65 NM (*)

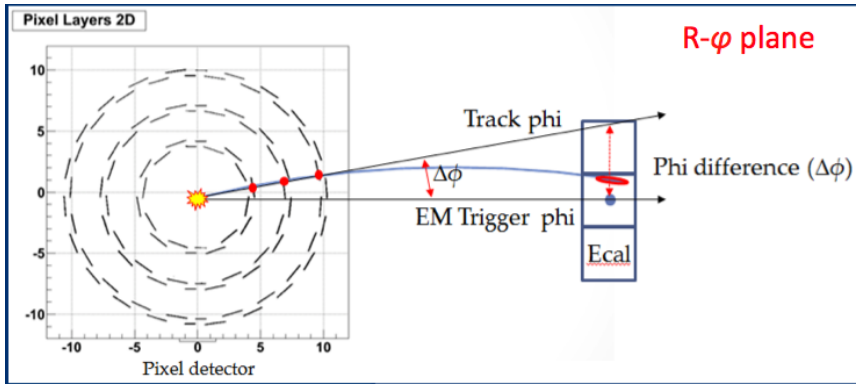
(*) CALL IN GRUPPO V IN PREPARAZIONE

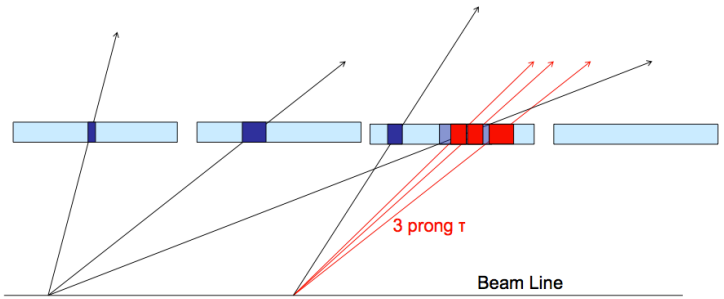
1) SENSORI PER PIXEL DETECTOR (*)

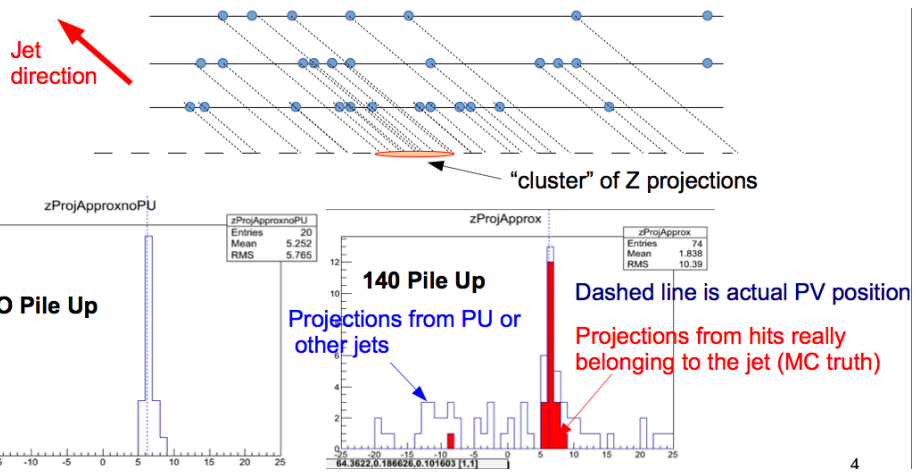
- Attività tecnologiche "core pixel" Call con sigla ACTIVE
  - sembra convergere sulle 4 attività seguenti:
  - Sensori a Pixel 3D
  - Sensori a Pixel 4D
  - Bump-bonding
  - Microcooling
- Capofila **Alberto Messineo**, e altri 3-4 membri di CMS Pisa al 20%-30% FTE cadauno su GR V da scorporarsi dall'anagrafica CMS una volta chiariti i dettagli

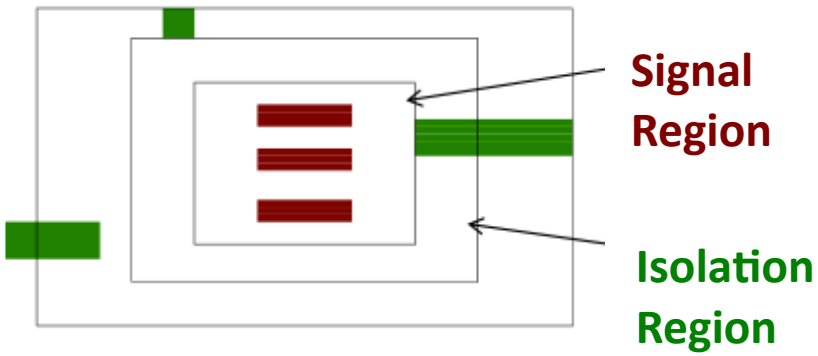
2) Pixel usage @L1: Fast 2D clustering

- Jet-Vertex identification
  - Assign the vertex to each jet out of ~200 vertices/bx
  - A. Rizzi, S. Donato, J. Bernardini
- Tau➔3 prongs identification
  - Compatible clusters in a chip
  - K. Androsov, M. T. Grippo, F. Palla, M. A. Ciocci, G. Bagliesi
- Match pixel hits with ECAL
  - Tracks from pixel layers to identify electrons
  - C.S Moon, A. Savoy-Navarro





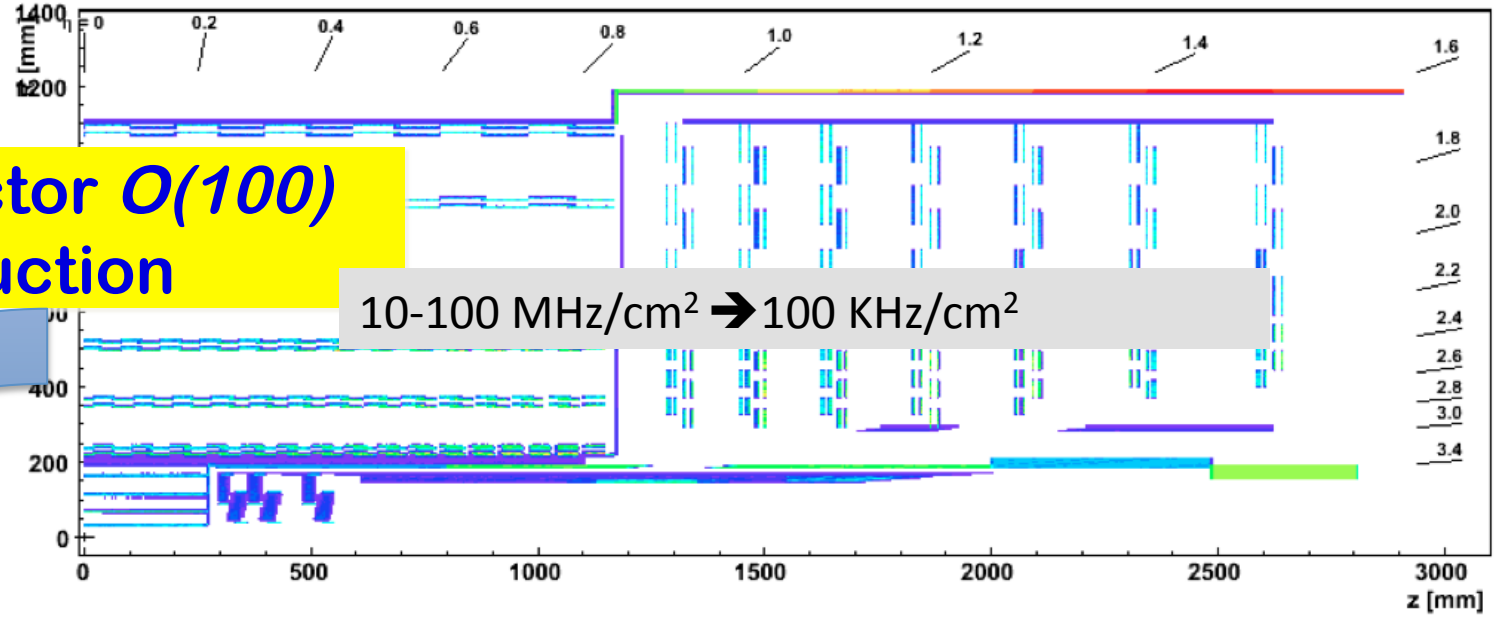


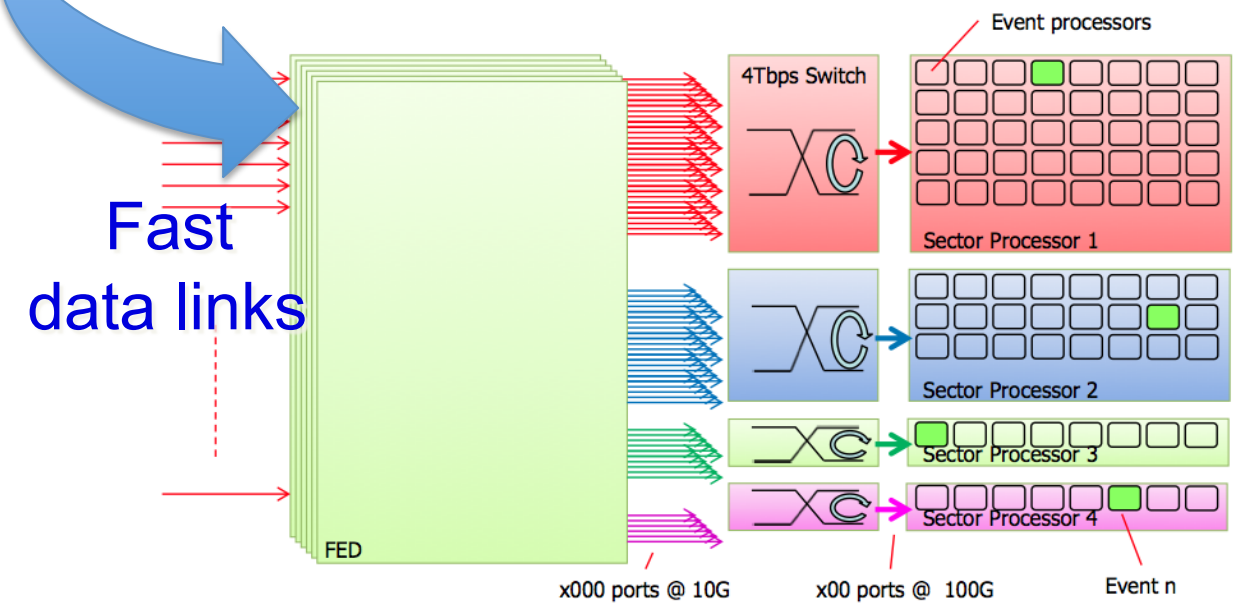


2) Outer Tracker Trigger @L1: a two step approach

On detector *O(100)* data reduction

10-100 MHz/cm^2 ➔ 100 KHz/cm^2





OFF DETECTOR

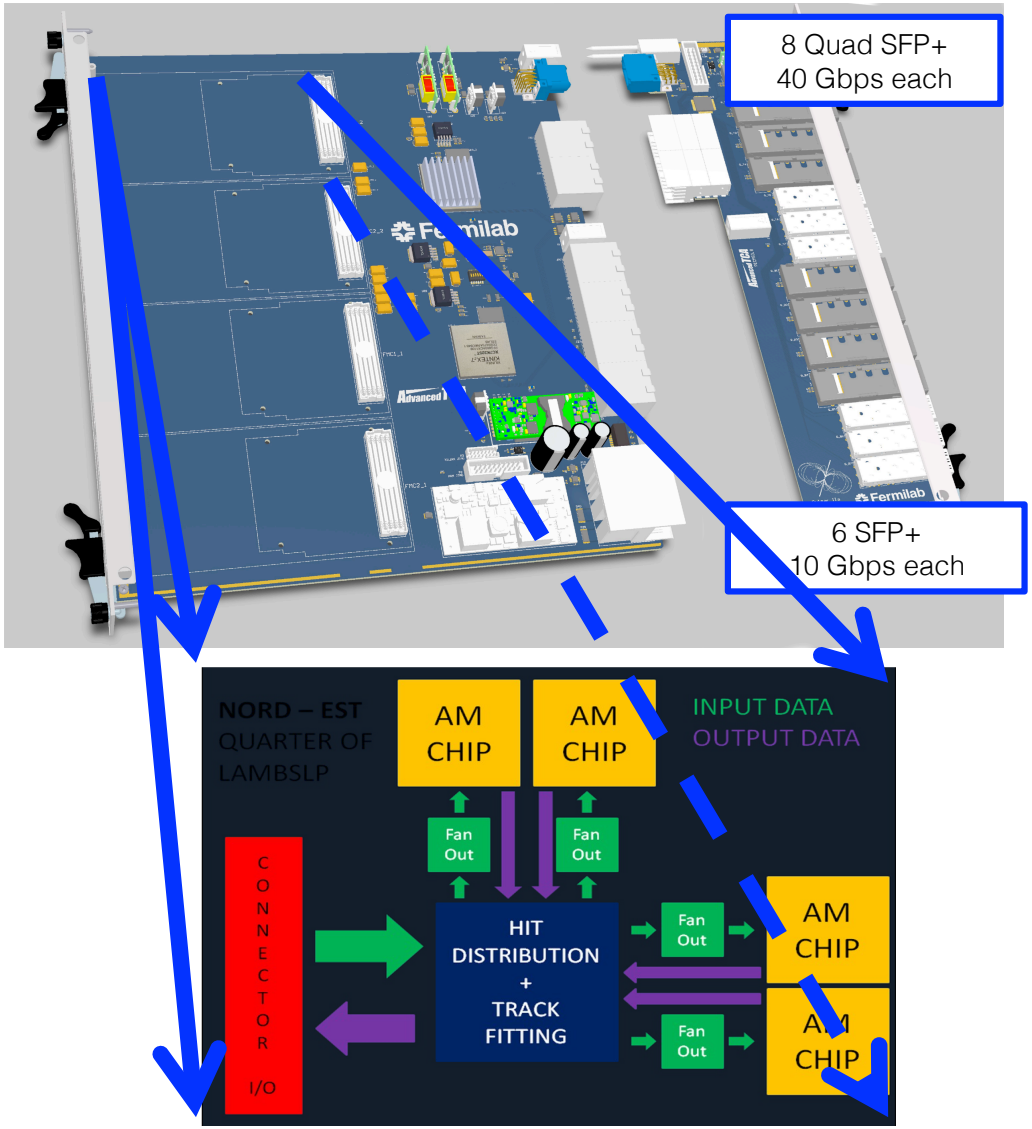
- Data formatting
- Fast (~µs) pattern recognition
- Tracking

2) Attività a Pisa

- Dimensionamento dei settori di trigger
  - L. Martini, R. Dell'Orso, A. Giassi, F. Palla
- Abbiamo contribuito a misure di latenza con delle boards di CDF.
  - E. Pedreschi, D. Magalotti (PG)
- In discussione con la sezione di Pg di attrezzarsi per uno sviluppo di nuove mezzanine per studi di latenza.

2) Proposed R&D – TBC con Pg

- **Low latency, high bandwidth AM pattern recognition**
  - Limitations from CMS (from ECAL electronics) is 4 µs
  - Trigger sectors with up to 1 Tb/s data and ~1 Million pattern banks needed for 1 trigger sector
  - ATCA standards offers this opportunity. Boards are being developed for FTK, which could be easily adapted for CMS
  - In order to limit the latency want to use a novel concept in which the AM chips, and a FPGA (data organizer and track fitter)sit on the same mezzanine.



3) Pixel chip per HL-LHC

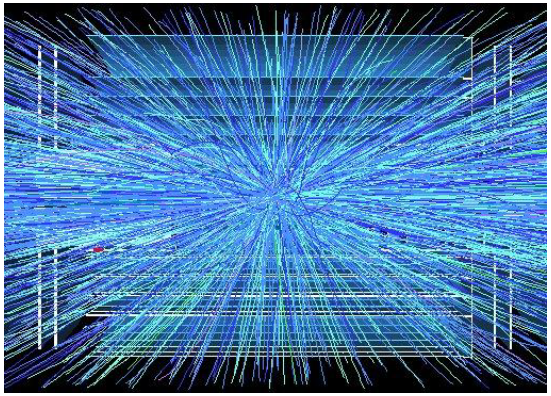
- Data la fluenza e le funzionalità richieste sia ATLAS che CMS hanno concordato che il prossimo chip sia in tecnologia 65 nm
  - TID Radiation tolerance, SEU con logica ridondante, tuttavia rimane da capire se tollerante fino a 1 GRad
  - Velocità di clock 4 volte maggiori ai 250 nm
  - Maggiore densità di porte logiche
  - Minore potenza
  - Molti metal layers
    - distribuzione della potenza, dei segnali, bus di colonna ecc.
  - Chiaramente i costi non ricorrenti sono tra le 2 e le 4 volte maggiori che non il 130 nm
    - possibile mettere assieme più istituti
  - Anche lo sviluppo richiede competenze tecnologiche che difficilmente si trovano in un unico laboratorio
- Per questi motivi è nata l'esigenza di uno sviluppo comune tra le comunità ATLAS e CMS.

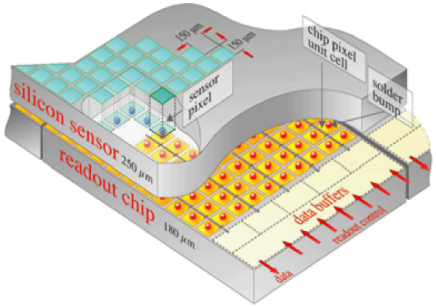
3) Data rate e funzionalità

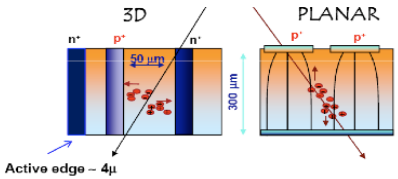
- Level 1 Accept rate O(200-500) MHz
- Latenza non ancora definita, ma è probabile che sia dell'ordine di 20 μs (adesso 3.4 μs) - ~800 clock cycle
- On-detector "intelligence" – clustering
  - Data rate reduction
  - Capacità di contribuire al primo livello di trigger
    - ➡ Selective trigger – ad es. Da jet ricostruiti a Level-0: ~100-1000 kHz per O(10%) dei chip
    - ➡ Self-triggering: ad es. pattern compatibili da provenire da segnali di tau rate~ 300-400 KHz

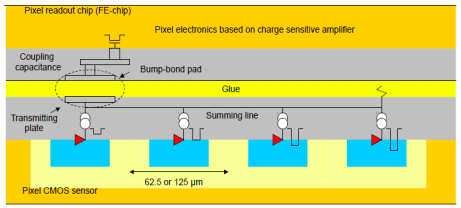
3) Phase 2 pixel challenges

- ATLAS and CMS phase 2 pixel upgrades very challenging
  - Very high particle rates: 500MHz/cm^2
    - Hit rates: 1-2 GHz/cm^2 (factor 16 higher than current pixel detectors)
  - Smaller pixels: ¼ - ½ (25 – 50 um x 100um)
    - Increased resolution
    - Improved two track separation (jets)
  - Participation in first/second level trigger ?
    A. 40MHz extracted clusters and shape (outer layers) ?
    B. Region of interest readout for second level trigger ?
  - Increased readout rates: 100kHz -> 1MHz
  - Low mass -> Low power
  - Very similar requirements (and uncertainties) for ATLAS & CMS
- Unprecedented hostile radiation: 10MGy(1Grad), 10^{16} Neu/cm^2
  - Hybrid pixel detector with separate readout chip and sensor.
  - Phase2 pixel will get in 1 year what we now get in 10 years
- Pixel sensor(s) not yet determined
  - Planar, 3D, Diamond, HV CMOS, , ,
  - Possibility of using different sensors in different layers
  - Final sensor decision may come relatively late.
- Very complex, high rate and radiation hard pixel readout chips required









ATLAS HVCMOS program

3) RD53 collaboration recently approved by LHCC

- Similar requirements, same technology choice and limited availability of rad hard IC design experts in HEP makes this ideal for a close CMS – ATLAS RD collaboration
  - Even if we do not make a common pixel chip
- Initial 2day workshop between communities confirmed this.
  - Workshop: http://indico.cern.ch/conferenceDisplay.py?confId=208595
- Forming a RD collaboration has attracted additional groups and collaborators
  - Synergy with CLIC pixel (and others): Technology, Rad tol, Tools, etc.
- Institutes: 17
  - ATLAS: Bonn, CERN, CPPM, LBNL, LPNHE Paris, NIKHEF, New Mexico, RAL, UC Santa Cruz.
  - CMS: Bari, Bergamo-Pavia, CERN, Fermilab, Padova, Perugia, Pisa, PSI, RAL, Torino.
- Collaborators: 99, ~50% chip designers
- Collaboration organized by Institute Board (IB) with technical work done in specialized Working Groups (WG)
- Initial work program covers ~3 years to make foundation for final pixel chips
  - Will be extended if appropriate:
    A. Common design ?,
    B. Support to experiment specific designs

3) Progetto di R&D in gruppo 5 - CHIPIX65

(Vedi presentazione Palla e Beccherle lunedi)

WP0: Gestione del progetto		
WP1 Radiation Hardness	**Bari**	
WP2 Elettronica Digitale	**Bergamo-Pavia**	
	Padova	
WP3 Elettronica Analogica	**Perugia**	
	Pisa (WP2, WP4)	F. Palla 20%, R. Beccherle (D) 30%, L. Fanucci 20%, G. Magazzù (D) 30%, F. Morsani(D) 30%, S. Saponara 20%, M.Minuti 30% (D)
WP4 Chip Integration	**Torino**	

L'unita' di Pisa intende lavorare alll'architettura digitale del chip, con particolare interesse all'utilizzo dei dati per un contributo al L1 di trigger dell'esperimento, sia per una soluzione di regional readout out che di self-trigger. Validazione del disegno del chip con tools industriali complessi (System Verilog, UVM).

STATO T2 CMS PISA E RICHIESTE RELATIVE

Il sito funziona regolarmente: ecco site readiness e availability

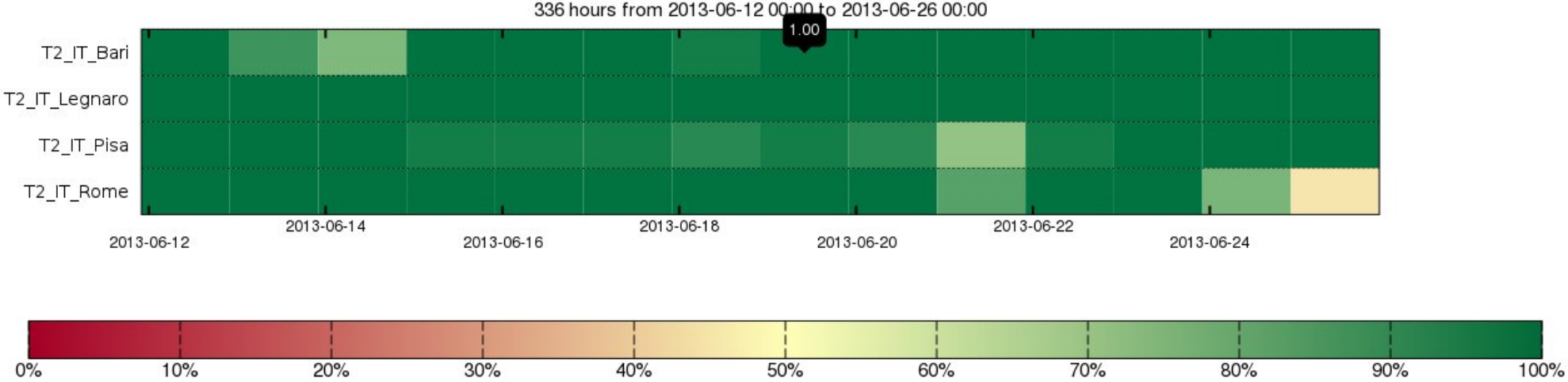
T2_IT_Pisa

Site Readiness Status:	R	R	R	R	R	R	R	R	R	R	W	R	R	R	R							
Daily Metric:	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	E	O	O	O	O	
Maintenance:	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	Up	
HammerCloud:	97%	70%	78%	98%	98%	99%	98%	98%	98%	98%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SAM Availability:	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96%	96%	96%	92%	96%	92%	67%	100%	100%	100%	100%	
Good T2 links from T1s:	0/9	0/9	0/9	0/9	0/9	8/9	7/9	8/9	9/9	8/9	8/9	8/9	8/9	8/9	8/9	8/9	5/9	8/9	8/9	8/9	9/9	
Good T2 links to T1s:	8/8	8/8	8/8	8/8	8/8	8/8	6/8	7/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	6/8	8/8	8/8	8/8	8/8	
Active T2 links from T1s:	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Active T2 links to T1s:	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Jun																					

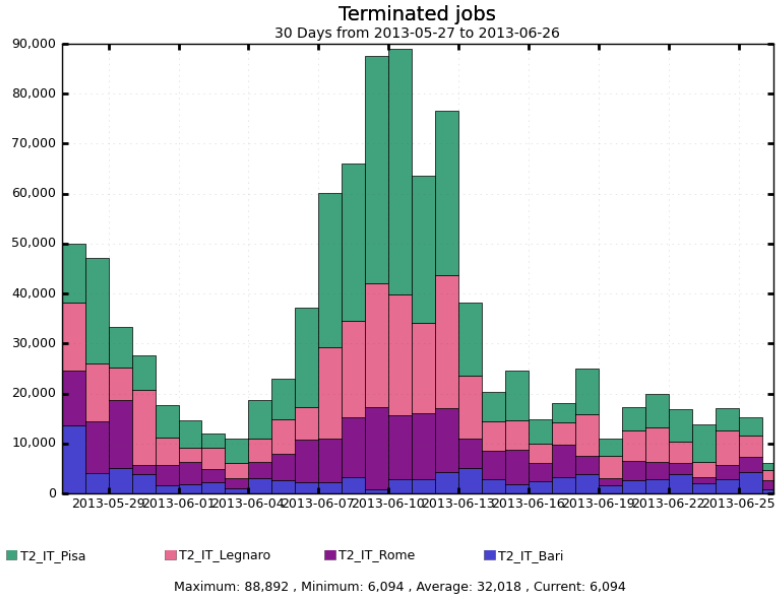
Report made on 2013-06-26 02:30:01 (UTC)

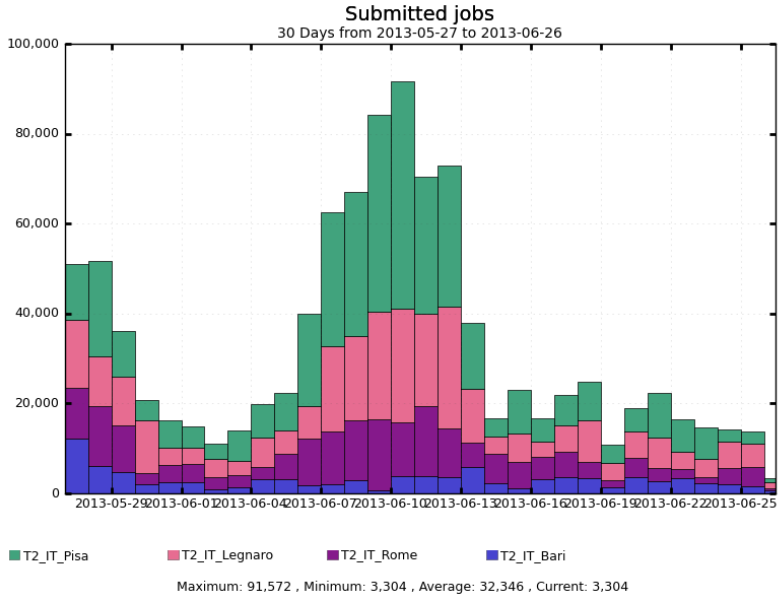
Site availability using CMS_CRITICAL_FULL

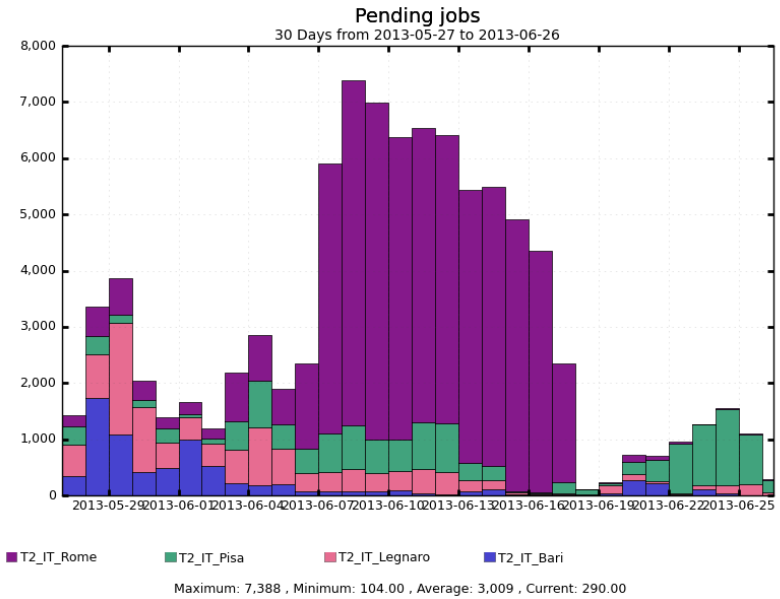
336 hours from 2013-06-12 00:00 to 2013-06-26 00:00

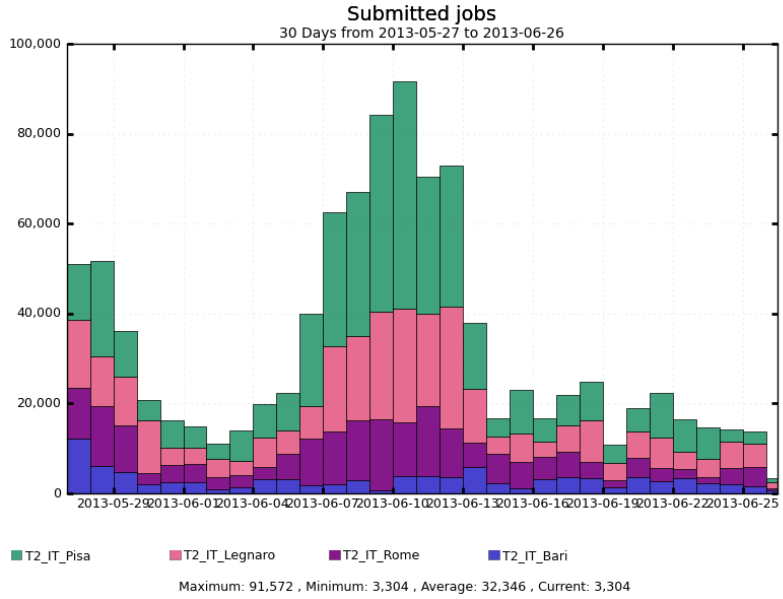


Attività (job) nell'ultimo mese (rispetto a T2 italiani)

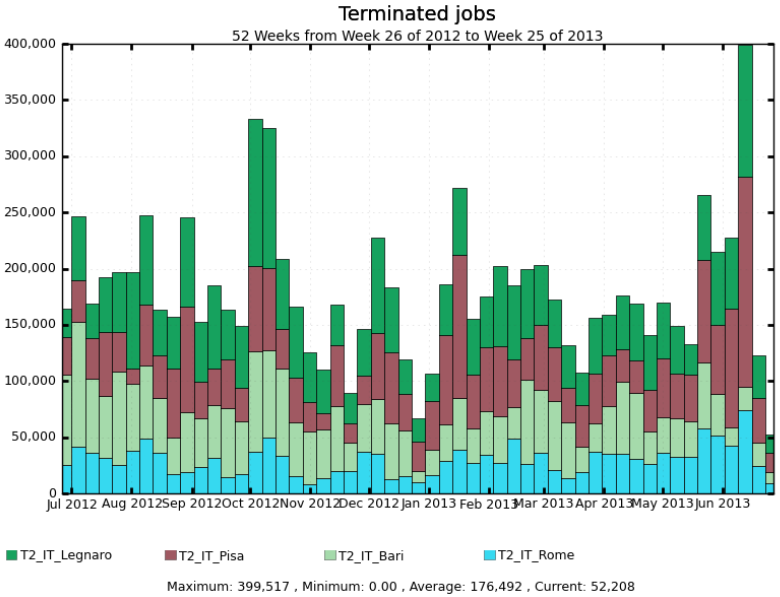


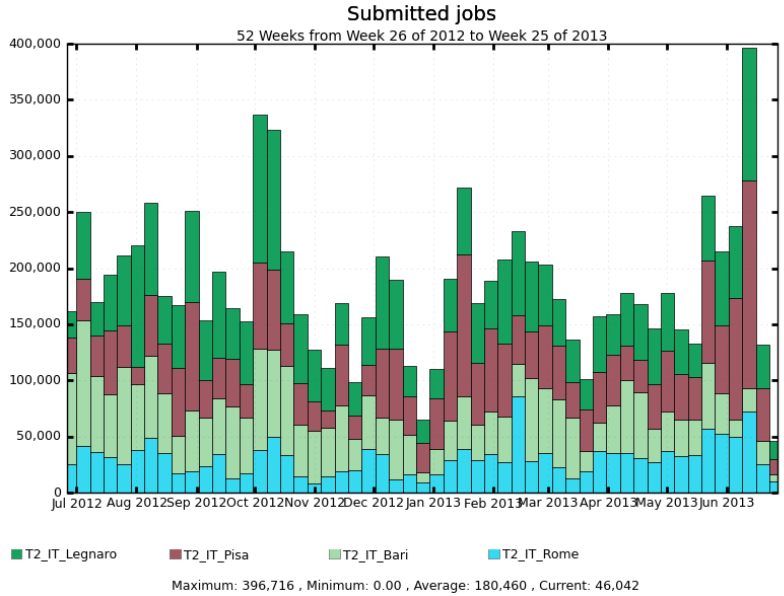


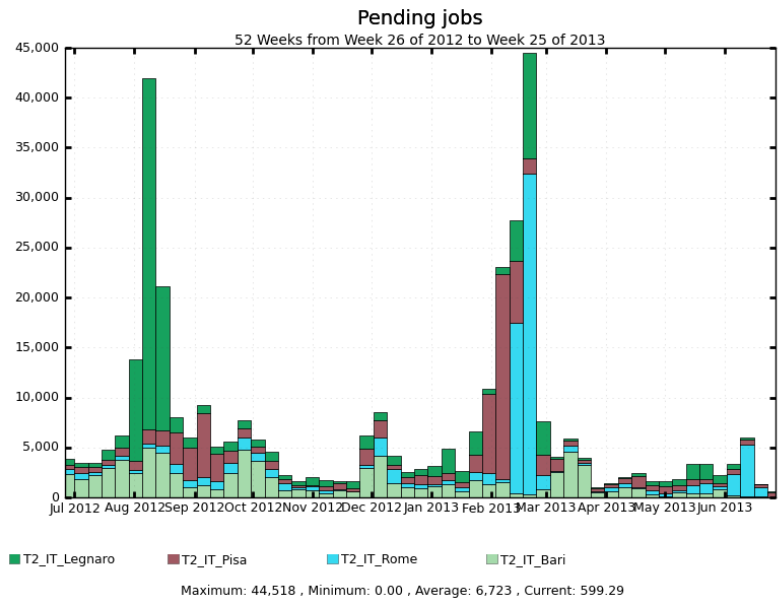




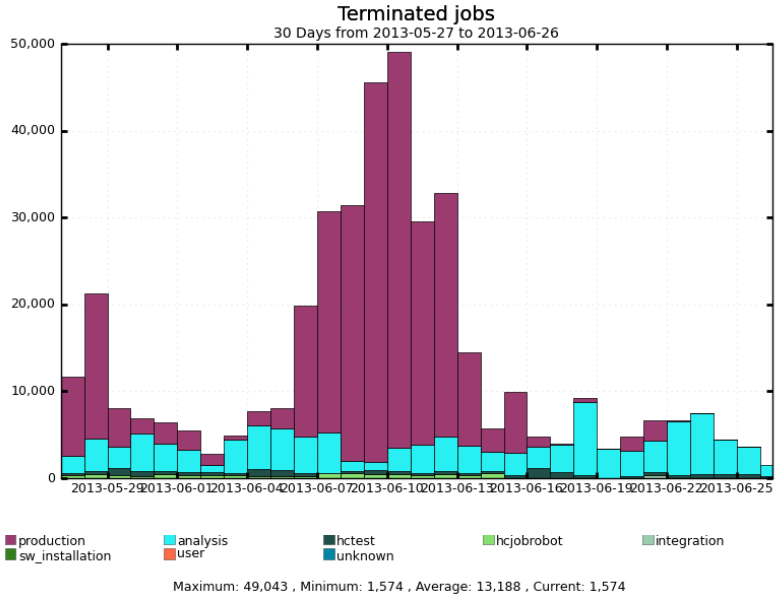
Attività (job) nell'ultimo anno (rispetto a T2 italiani)

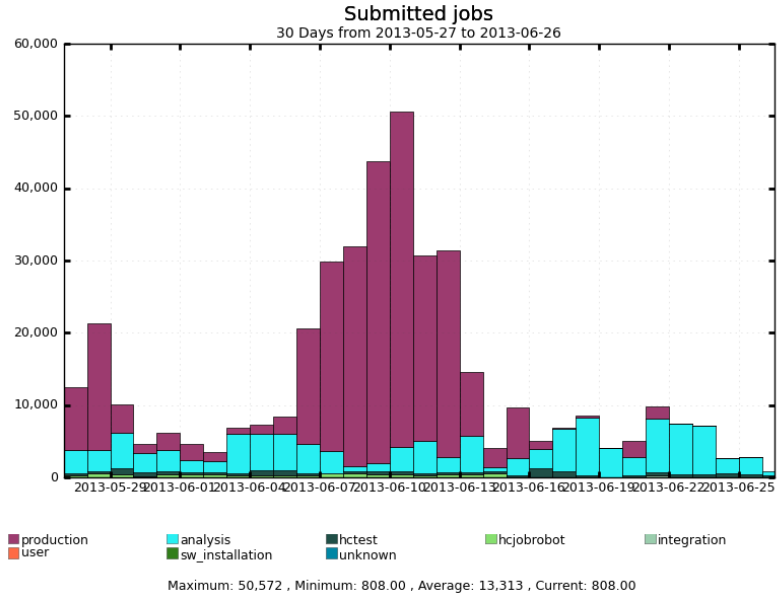


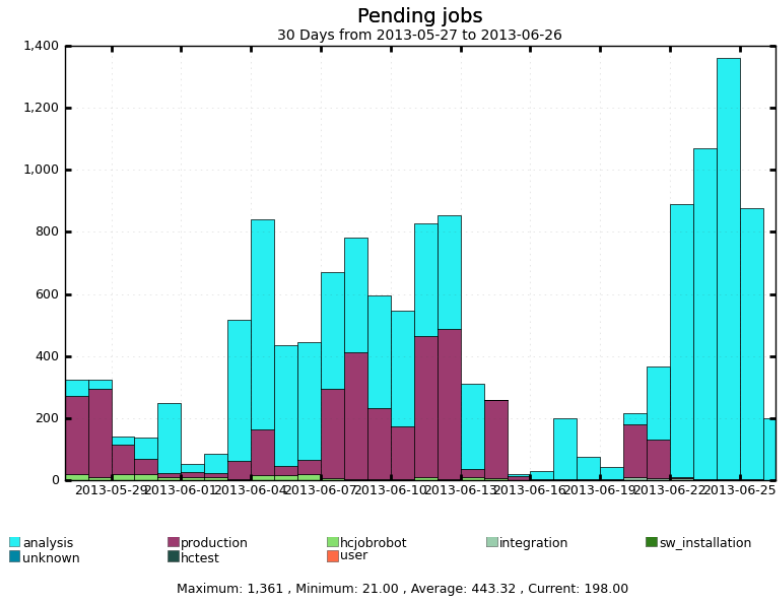


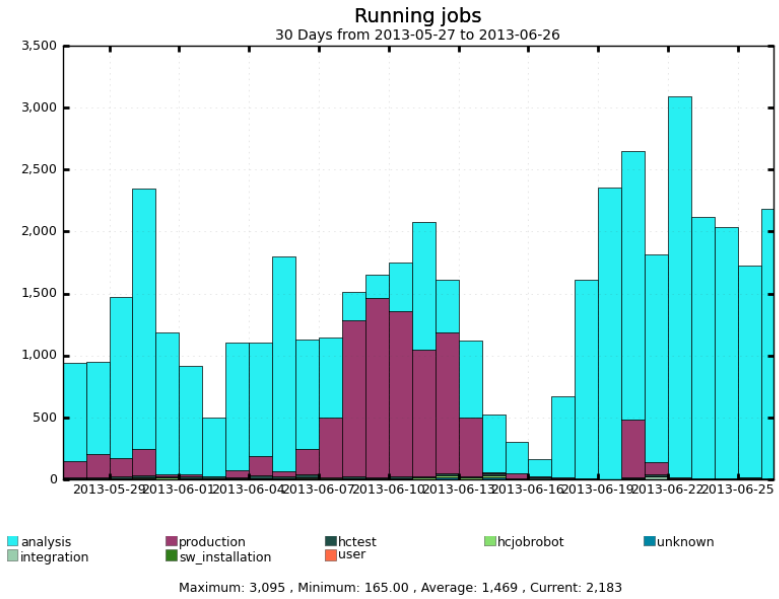


Tipo di job che girano a Pisa

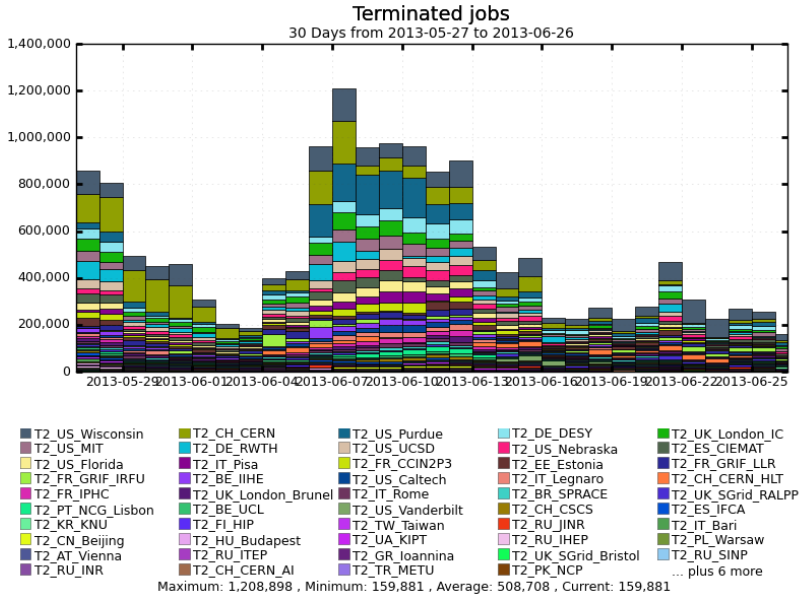


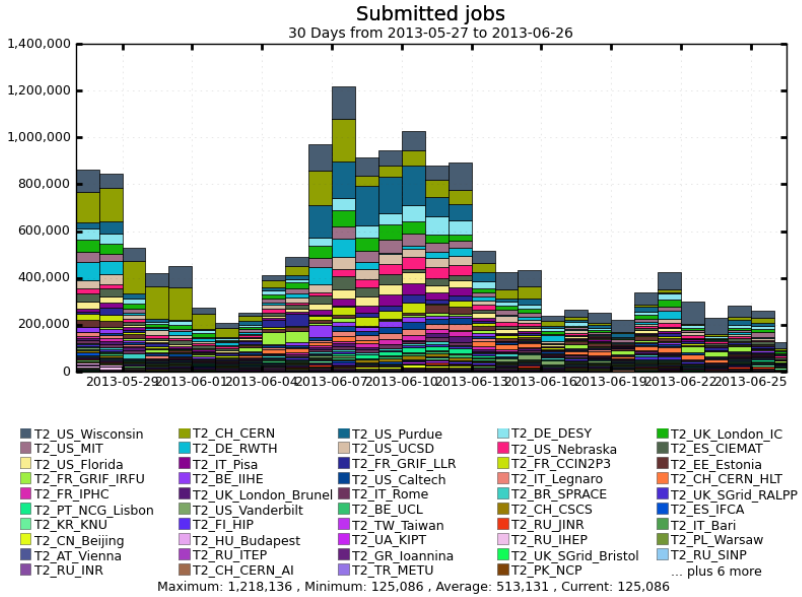


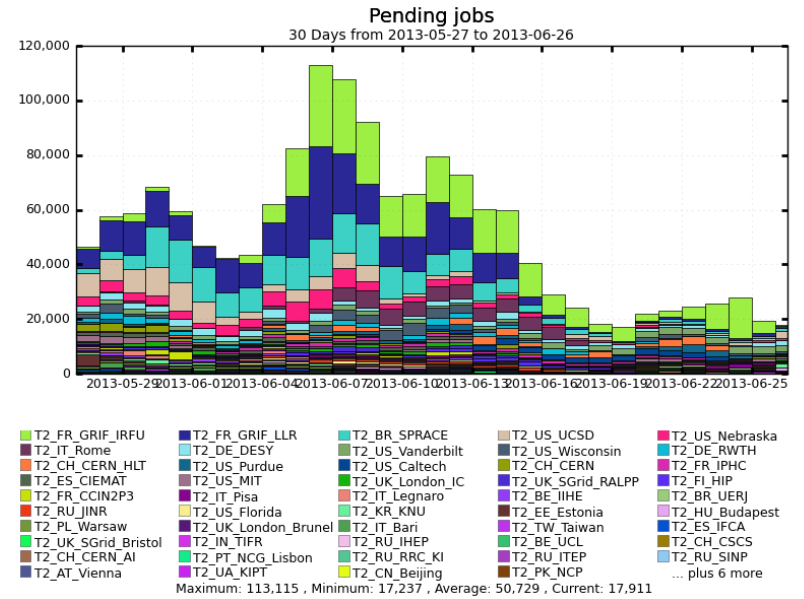


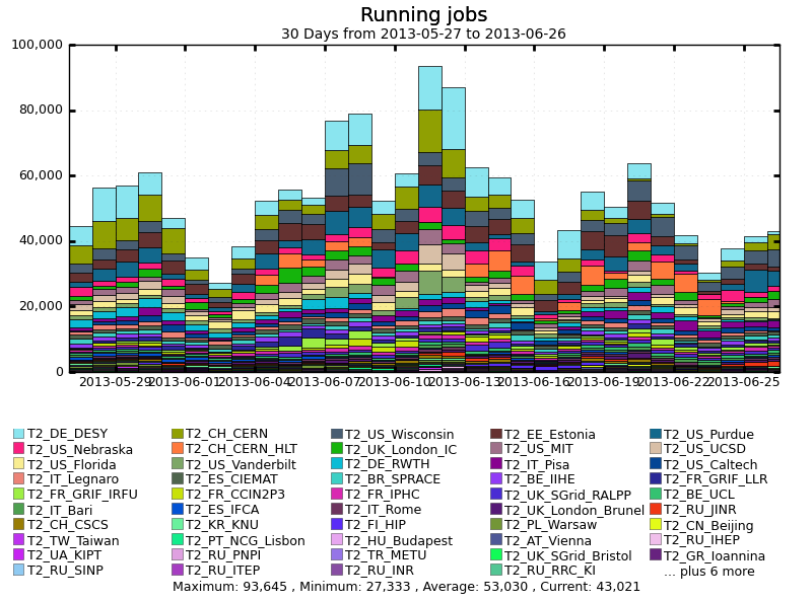


Job a livello globale T2s CMS: Pisa è nelle prime posizioni ed il primo degli italiani









Richieste 2014

	Attuali 2013	Dismissioni 2014	Aquisti 2014
CPU (kHS06)	12.6	12.6	13.9*
Disco (TB)	1025	0	0

* l'acquisto di CPU è fatto dalle dismissioni e da quanto necessario per raggiungere il pladge assegnatoci per il 2014
Le risorse da aquisire nel 2014 sono state valutate in modo che i T2 italiani coprano il 13% delle CPU e il 13% del disco di CMS globale oltre le dismissioni.
Valutando 350 €/TB il disco e 12€/HS06 la CPU e considerando gli overhead per rete e server le richieste economiche sono:

	k€
CPU	167.0
Disco	0
Rete	8.5
Server	12.0

RESPONSABILITA’ , ANAGRAFICA 2014 E SOMMARIO RICHIESTE

Responsabilita' Computing e Fisica

- Computing
  - G. Bagliesi – Responsabile T2 CMS Globale
  - T. Boccali – Responsabile Calcolo CMS Italia
  - E. Mazzoni – Responsabile T2 Pisa
- Fisica
  - R. Tenchini – Convener Fisica top quark (L2)
  - A. Rizzi – Convener Higgs bbar (L3)
  - F. Palla – Convener decadimenti rari B (L3)
  - P. Azzurri – Convener Vector Boson+forward jets (L3)

Responsabilita' Tracker

- A. Venturi Deputy Project Manager (L1)
- A. Giassi INFN DAQ coordinator (L3)
- A.Messineo INFN Tech Coord Upgrade (L3)
- F.Palla MB Fase 2 (L3)
- P.G. Verdini Tracker Safety System (L3)

Anagrafica Ricercatori

	Nome	Età	Contratto	Qualifica	%
1	Androsov Konstantin		Associato	Dottorando	**100**
2	Azzurri Paolo		Dipendente	Ricercatore	**100**
3	Bagliesi Giuseppe		Dipendente	Primo Ricercatore	**100**
4	Boccali Tommaso		Dipendente	Ricercatore	**100**
5	Castaldi Rino		Associato	Dirigente di Ricerca	**100**
6	Ciocci Maria Agnese		Associato	Ricercatore	**70**
7	Dell'Orso Roberto		Dipendente	Primo Ricercatore	**100**
8	Donato Silvio		Associato	Dottorando	**100**
9	Fiori Francesco		Associato	Assegnista	**100**
10	Foa' Lorenzo		Associato	Ass.Senior	**0**
11	Giassi Alessandro		Dipendente	Ricercatore	**100**
12	Grippo Maria Teresa		Associato	Dottorando	**100**
13	Ligabue Franco		Associato	Ricercatore	**100**
14	Lomtadze Teimuraz		Dipendente	Primo Ricercatore	**70**
15	Maestro Paolo		Associato	Ricercatore	**30**
16	Martini Luca		Associato	Dottorando	**100**
17	Messineo Alberto		Associato	Ricercatore	**100**
18	Moon Chang-Seong		Associato	Ricercatore straniero	**100**
19	Navarro Savoy Aurore		Associato	Ricercatore straniero	**100**
20	Palla Fabrizio		Dipendente	Primo Ricercatore	**100**
21	Rizzi Andrea		Associato	Ricercatore	**100**
22	Rolandi Luigi		Associato	Prof. a Contratto	**100**
23	Serban Alin Titus		Associato	Ricercatore straniero	**100**
24	Spagnolo Paolo		Dipendente	Ricercatore	**100**
25	Tenchini Roberto		Dipendente	Dirigente di Ricerca	**100**
26	Tonelli Guido Emilio		Associato	Prof. Ordinario	**100**
27	Venturi Andrea		Dipendente	Ricercatore	**100**
28	Verdini Piero Giorgio		Dipendente	Primo Ricercatore	**100**
29	Vernieri Caterina		Associato	Dottorando	**100**
				Numero Totale Ricercatori	**26.7**

Anagrafica Tecnologi

	Nome	NOTA	Contratto	Qualifica	%
1	Arezzini Silvia		Dipendente	Primo Tecnologo	**30**
2	Basti Andrea			Tecnologo	**30**
3	Beccherle Roberto	CALL GR 5	Dipendente	Tecnologo	**30**
4	Bosi Filippo			Tecnologo	**30**
5	Carboni Andrea		Dipendente	Assegno di Ricerca	**50**
6	Ciampa Alberto		Dipendente	Primo Tecnologo	**30**
7	Coscetti Simone			Dottorando Ing.	**70**
8	Fanucci Luca			Tecnologo esterno	**30**
9	Magazzu' Guido	CALL GR 5		Tecnologo	**30**
10	Mazzoni Enrico		Dipendente	Tecnologo	**70**
11	Moggi Andrea		Dipendente	Tecnologo	**50**
12	Morsani Fabio	CALL GR 5		Tecnologo	**30**
13	Saponara Sergio	CALL GR 5		Tecnologo esterno	**30**
				Numero Totale Tecnologi	4.8

NOTA ALCUNI DI QUESTI SONO NELLA CALL GR 5 ROC E ANDRANNO SCORPORATI
LO STESSO PER ALCUNE PERCENTUALI RICERCATORI RELATIVAMENTE MODESTE

RICHIESTE FINANZIARIE

- **Non elenco le richieste che si evincono dall'anagrafica e responsabilita' (MI, ME, Met)**
- **A queste vanno aggiunte attivita' di LS1 2014 (vedi slide apposita) da armonizzarsi con gruppo tracker CMS Italia**

- Calcolo

	k€
CPU	167.0
Disco	0
Rete	8.5
Server	12.0

- **Gara Bump Bonding 355 kEuro**
- **Camere pulite e trasporti (6+2 kEuro)**
- **set-ups, Jigs, assembly tools = circa 5 Ke**