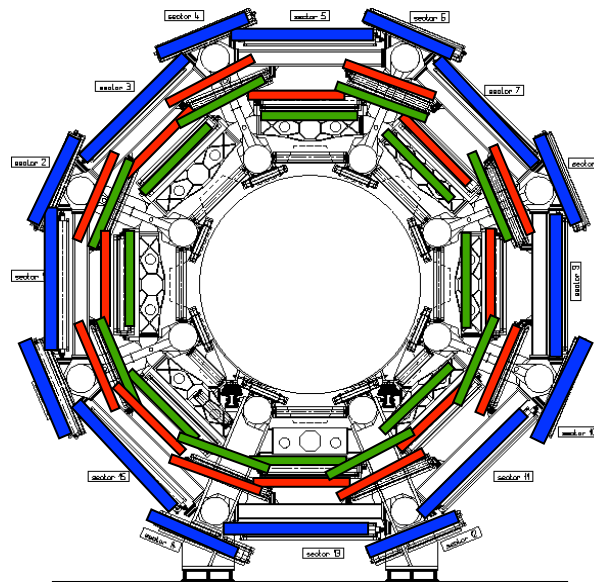


# RPC funding requests 2013 and Request forecasts until end-of-shutdown in 2014

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on behalf of the RPC groups



ATLAS Referees - Roma, 05/09/2012

# Gas leak repair

## Standard repairs (i.e. non-BOL stations)

Most of the detected leaks are due to broken gas inlets on chamber which can be fixed in most of cases, providing sufficient access

Estimated 30 repairs to be done:

- $30 \times 2d \times 2FTE = 4m \text{ FTE}$

## Repairs in not directly accessible regions (i.e. BOL stations)

In about 50 cases accumulated up to now the standard repair is not applicable due to lack of access on the broken inlet. Alternative methods are under test

Estimated activity:

- tool development and tuning of the repair technique: 1.5m FTE
- repairs:  $(50 \times 2.5d \times 2FTE = ) 8.5m \text{ FTE}$

Total = **10m FTE**

# Noise reduction

About 200 thresholds over 3000 have been set to harder values due to e.m. radio-frequency pickup noise. The Faraday cage of the affected chambers can be enhanced by restoring the ground contact between readout panel and chamber chassis via installation of appropriate plates (cable-stops) to the front-end output signals. The expected recovery in efficiency is ~1%.

Estimated activity:

- $200 \times 0.33d \times 2\text{FTE} = \mathbf{4m\ FTE}$

# Upgrade in the spectrometer feet region

20 additional RPC chambers installed since 2007 to recover 2.8% of acceptance loss due to the support feet of the barrel toroids  
Gas is flowing in the chambers but cabling, powering and commissioning are needed

Estimated activity:

- cabling rack-side: 2m FTE
- cable test and cabling chamber-side: 2m FTE
- power-on test and debugging: 3m FTE
- DCS update: 3m FTE
- monitoring update: 1m FTE

Total = **11m FTE**

**Racks, crates and PS boards already available paid by M&O: 110k€**

**Trigger electronics already available paid by ATLAS: 147k€**

*Parallel request to CSN1 for the trigger commissioning: 10.5m FTE*

# Upgrade in the elevator region

Barrel spectrometer acceptance loss due to the elevator holes: 1.4%

Recoverable by installing 2 BM + 2 BO chambers: ~1%

Activity foreseen for the RPC installation in the elevator region:

- integration with MDTs
- test with cosmics
- installation in ATLAS
- commissioning

Total = **4m FTE**

Otherwise, only the measure of the second coordinate will be provided, guaranteed by funding of Rome II University

**Trigger electronics already available paid by ATLAS: 28kE**

# Funding for elevator region

Proposal: production of 2 BM + 2 BO chambers to recover 1% acceptance

	kE
Gas volumes + readout panels + mechanics	45
Front-end electronics	45
Boards (1 HV, 1 LV, 1 48V PS)	24
Cables + connectors	10
<b>Total</b>	<b>124</b>
funded by Rome II	30
<b>Requested to CSN1</b>	<b>94</b>

*To be added to the total cost of the project: trigger electronics already available and paid by ATLAS: **28kE***

# DCS upgrade

Adjusting the DCS to the LHC high luminosity period will require:

- replacement of obsolete PCs (>3 years old)
- implementation of luminosity dependence in the control parameters
- monitoring improvement for gas and environmental system

Furthermore, the integration of LVL1 info into the DCS will carry on  
Currently, only the rates from low-pt trigger towers are included

Estimated activity: **6m FTE**

# Activity coordination

The technicians involved in the different operations will be coordinated by the physicists responsible of the relative activity:

- Boscherini (gen.)
- Polini (DCS)
- Sekhniaidze (gas)
- Cardarelli (FEE)
- Aielli (HV/LV)

Total = **6m FTE**



# Summary of 2013 funding requests

*Full year considered as shutdown*

Activity	FTE (months)
Gas leak standard repairs	4
Gas leak repairs in difficult regions	10
Noise reduction	4
Upgrade feet regions	11
Upgrade elevator regions	4
DCS upgrade	6
Activity coordination	6
<b>Total</b>	<b>45</b>

# Request forecasts for 2014 (until end of LS1)

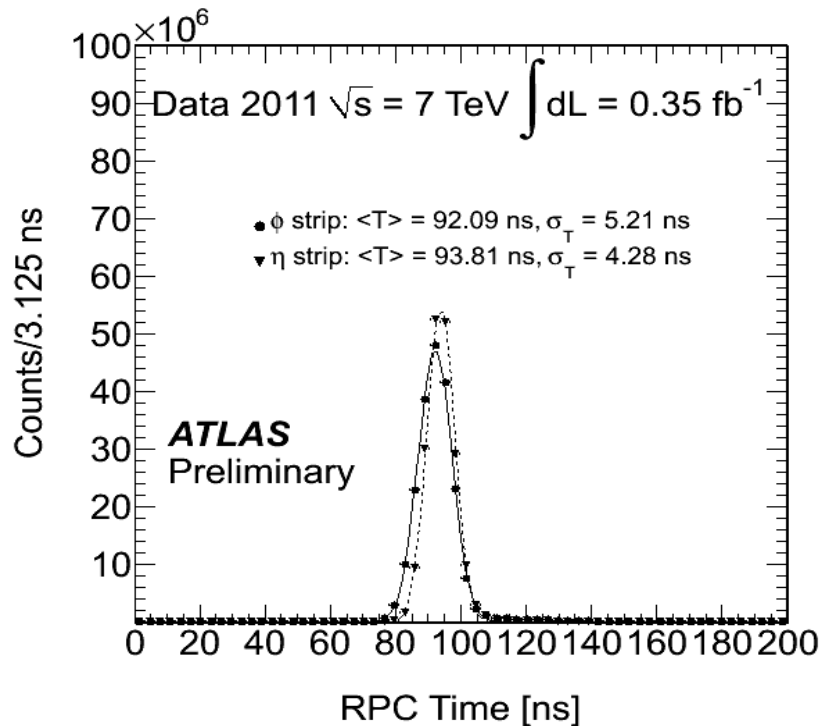
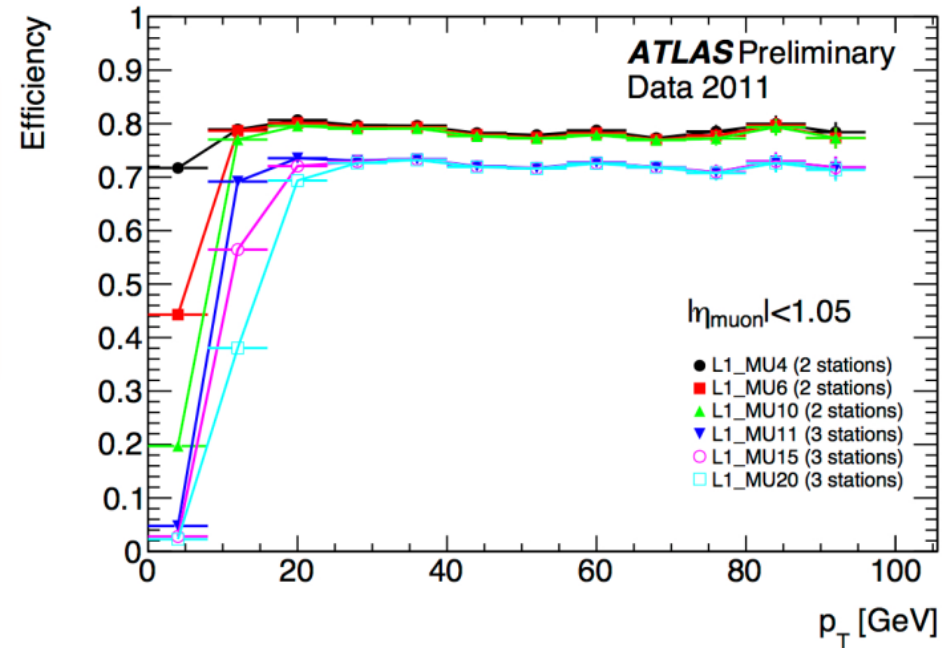
*Data taking period not included*

Activity	FTE (months)
3/12 (?) x 2013-activities	11
Replacement of gas impedances (~2000) <i>Current impedances unsuitable for high gas flow</i>	2
Re-starting: power-on + debugging + cosmics	4
<b>Total</b>	<b>17</b>

**Backup**

# Detector performance

- Efficiency convoluted with acceptance
- Acceptance  $\sim 80\%$
- High-pt trigger requires additional hits in outer chambers



- Online time resolution: 4-5 ns
- Offline, after calibration: 1.9-2.0 ns very close to the expected value of 1.75ns