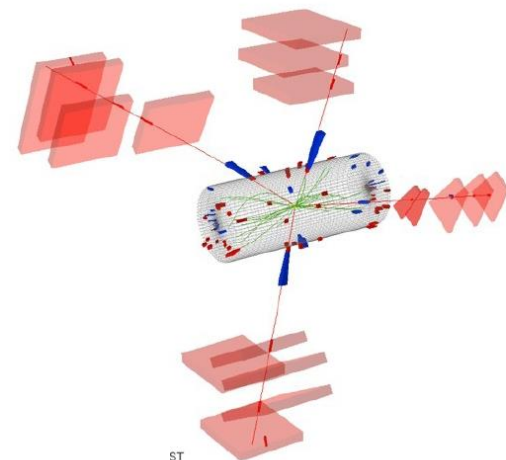


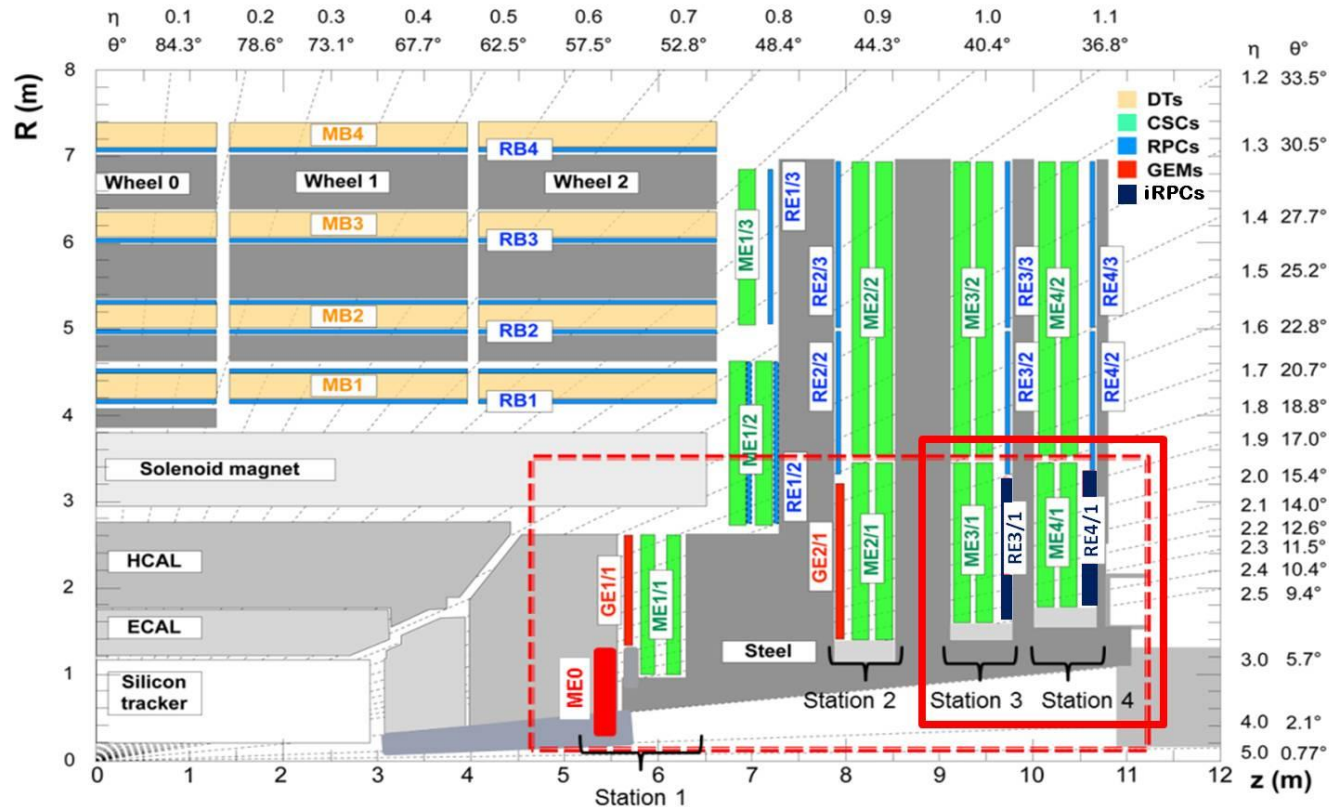


CMS/RPC upgrade Status Report



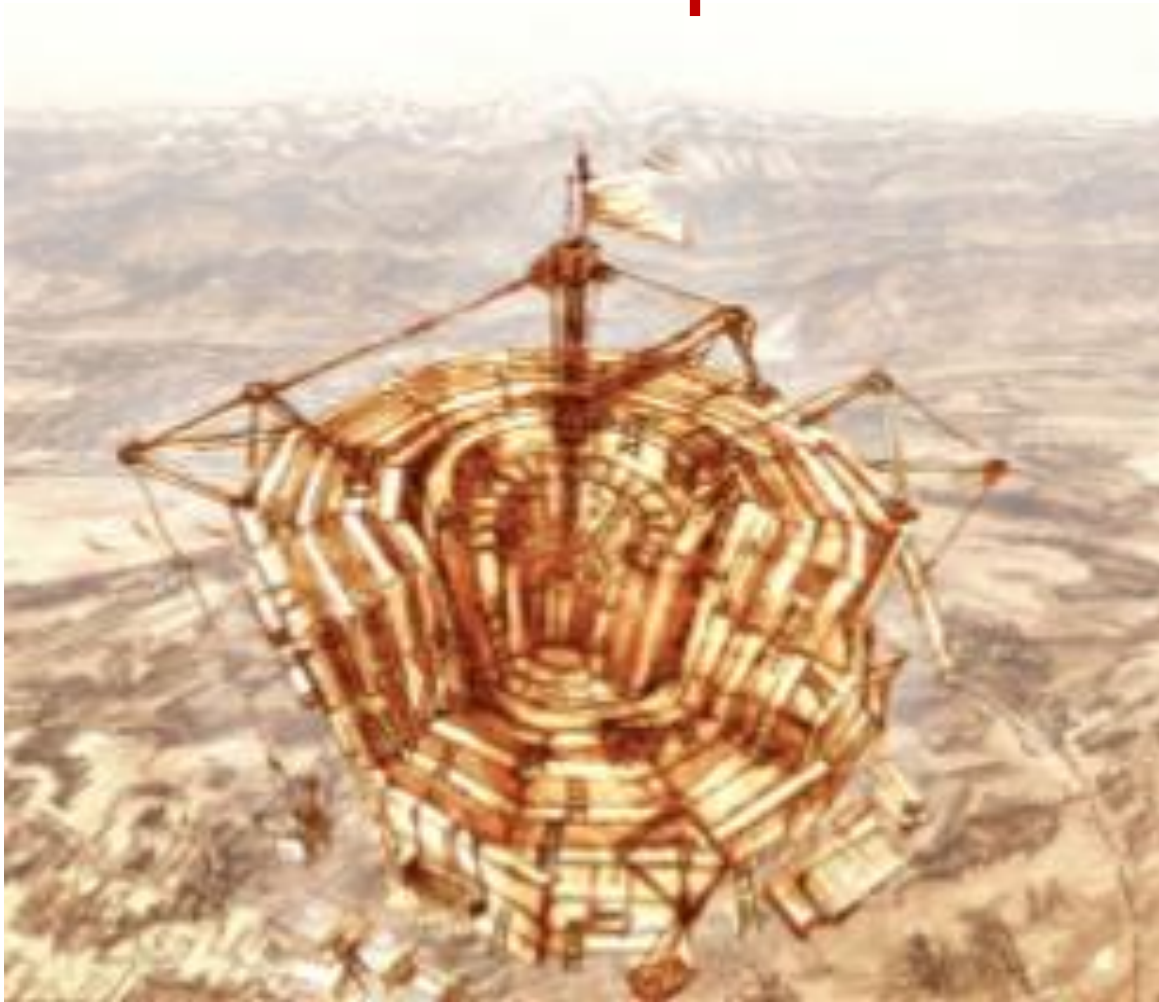
M. Abbrescia
18th CMS RPC General Meeting

RPC Upgrade phase II - proposal



- **Consolidation:** keep the performance of the present detectors stable
 - ✓ Despite ten more year and factor ten more luminosity
- **Upgrade:** keep the performance of the present system stable
 - ✓ In particular in terms of trigger rates and thresholds

Technical Proposal



➤ Description on how to perform RPC Consolidation and Upgrade has been codified in the TP

✓ Very nice document, well written and structured

✓ Still under approval

➤ At the end of 2014 CMS requested the development of scenarios dealing with a 12.5% and 25% budget reduction

✓ In both scenarios RE3/1 and RE4/1 are delayed after LS3

Parts relative to RPCs were smoothly accepted substantially without changes

Activities 2013/14 → 2015

➤ Motivations for the Upgrade

Included in the TP

- ✓ Background simulation (including sensitivities)
 - ✓ The “redundancy” argument
 - ✓ Trigger and reconstruction simulation
 - ✓ Physics performance of the system
- ✓ A strong effort still needed here → TDR 2017

➤ Prototypes Construction

- ✓ Sustain 2 kHz/cm^2 and 2 C/cm^2 (corresponding to $5 \times 10^{34} \text{ Hz/cm}^2$ and 3000 fb^{-1})
- ✓ Low resistivity, thinner gap/electrodes double gap RPCs
- ✓ Standard and low resistivity multi-gap RPCs (talk by K.S.Lee)
- ✓ Craftpaper ordered at the factory (will arrive in two months)
- ✓ 15-20 foils or resistivity centered at $1 \times 10^{10} \Omega \text{cm}$, thickness = 1.6, 1.8, 2.0 mm
- ✓ “Low” resistivity glass RPCs (talk by Imad)
- ✓ New ATLAS electronics (talk by Michael)

Test Activities at CERN in 2015

➤ Set-up of the GIF++

- ✓ both for Consolidation and Upgrade
- ✓ Delicate task, requires interaction with other subsystem and careful planning
- ✓ A lot of work is ongoing

➤ Beam tests in 2015

- ✓ Defined the protocol to be followed (**measurement to be performed and how to perform them**) and written in a detailed document (please Isabel, circulate it again!)
- ✓ Two periods asked: July and November (two weeks each)
- ✓ The present counter proposal is three weeks in August

✓ Task force will be needed for common data analysis: please volunteer
(I will follow closely this delicate task)

✓ In the critical path to understand the effectiveness of the various solutions proposed

Other important activities

➤ The eco-gas quest

- ✓ Quite important, the gas is the “core” of a gaseous detector
- ✓ First promising candidate spotted
- ✓ First interesting results obtained (talk by Davide)

➤ Integration in CMS

- ✓ Official CMS drawings examined to determine available space (talk by Pigi/Pino)
- ✓ Critical to understand if the extension could arrive up to $\eta=2.4-2.5$

RPC Upgrade co-coordinator

- I had the pleasure of having Archana Sharma as RPC Upgrade co-coordinator in the period July-December 2014
 - ✓ Together we contacted many institutions representatives and members to steer the relevant work
- Many many thanks for support, suggestions, hard work and friendly chats!