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OCTOBER 09, 2006

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Forthcoming activities

October

- **Lower HF+- into UXC**
- **Start of magnetic field mapping**
- **End of MTCC**
- Installation of TIB+ into TOB+
- Start of Tracker commissioning in 186
- End of CSC installation
- Preparation of DTs complete
- End of long-term tests of RPCs

November

- Start of ES cosmic calibration
- Start of HO installation
- DT installation on YB-1 and YB-2
- Start of YB0 cabling and commissioning
- **Lower YE+3, YE+2, YE+1**
- **Remove HB+**

December

- 20 EE supercrystals on one Dee
- Install all 18 ECAL supermodules on + side
- Mechanical support for BPIX ready
- End of DT installation
- Start of online computing installation
- **Lower YB+2, YB+1**

Updated information should be sent to cmstimes@cern.ch

Introduction

New CMS Brochure

A new 4-page CMS brochure for distribution to visitors has been designed and is currently being printed (5000 copies should be available in the CMS secretariat by the end of October). This new brochure is largely the work of Dave Barney and Jim Virdee, with help and advice from many others including Dan Karmgard, Sergio Cittolin, Christine Vanoli, Christine Sutton, Corinne Menard and Fabienne Marcastal. Initially produced in English, the brochure is currently being translated by CMS colleagues into French, Spanish, Italian, German, Greek, Russian, Serbian, Polish, Portuguese, Dutch, Chinese and Finnish. Translation into other languages is welcome!

Please contact cmstimes@cern.ch for details of how you can help.

You can download a PDF file (screen quality) from http://cmsinfo.cern.ch/outreach/temp/brochure/CMS_English.pdf

Feature Stories

ECAL Does It with Cosmics



F. Ferri (Milano) with one of the ECAL supermodules in its cosmic-ray test frame in the CERN H4 beam area.

Since early summer, ECAL has been intercalibrating the 1700 channels in each Supermodule with cosmic ray muons. This was proposed due to the lack of CERN Test Beam in 2005, and now it is planned for all Supermodules. In addition 10 Supermodules will be calibrated with electrons in beam.

The signals from cosmic muons passing the entire length of a crystal are only 6 times the expected electronics rms noise. However, the Avalanche Photo-diodes which detect the light are only accepted if they operate quietly at 6 times the nominal gain. Thus their gains can safely be raised by a factor of 4, improving the signal to noise by that amount. Crucially, it also allows all the crystals around the struck crystal to be used as effective veto counters, restricting the data to muons traversing the full crystal length. Tests and simulations suggested that a clean signal with an acceptable rate could be obtained and a short run in 2004 confirmed this. However, although full simulations suggested that a cosmic muon intercalibration with 250 MeV energy deposit should be equivalent to one using 120 GeV electrons, it was not clear whether there are effects (eg Cerenkov light), which would introduce biases.

Supermodules have now been intercalibrated with both cosmic muons and 120 GeV electrons. A first analysis has shown 1.5% rms agreement between the two methods over a whole supermodule, for a 1 week cosmics run. At low η the agreement is 1.2%, rising to about 2.5% at maximum η . This suggests that the cosmic intercalibrations will provide an excellent starting point for all the ECAL barrel, ensuring fast access to early data and quick convergence of the in-situ calibrations when CMS starts.

In addition to providing intercalibrations, the week of cosmic running provides a further very valuable burn-in test.

Submitted by:

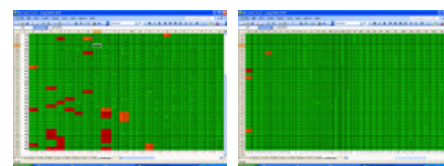
MTCC Latest News

Crucial activities in the last week were: closing the +ve endcap for beginning the field mapping phase, and gearing-up the field mapper for measurements in the central volume of the detector. Closing the YE+1 disk was quite impressive, an overall accuracy of 2 mm in X and Y has been achieved. An exercise of closing YE+2 and YE+3 together was also performed; YE+2 has also been locked with similar accuracy and YE+3 will be locked imminently.



Closed positive end of the CMS detector for MTCC Phase II.

Today the magnet will be ramped up to 2 teslas to begin the field mapping campaign. Over the last few days, data at B=0 were taken to test out the data taking algorithms. The snapshot on the left shows the first measurements: green indicating that the three values of the B-field as well as the temperature have been recorded, while the orange indicates that one measurement is missing. The red values indicate that no measurements were taken. The rows represent different values of phi (a total of 48) while the columns represent each z-axis measurement. As is evident from this diagnostic plot the measurements are improving with time (left to right) and that now we have an error free 'green zone' in the field mapping measurements.



The data have been handed over to the offline team to verify the formats for the real magnetic field data.

Preparations for data taking during MTCC Phase II are already under way: DTs, RPCs, HCAL, RCT (Regional Calorimetry Trigger), DQM, Event Display, Trigger and DAQ teams are back in the green barrack and activity is again gaining momentum. All detectors are up and running in local mode; soon they will be integrated globally after being timed in with the new Central LTC.

You can watch the activity in the green barrack at P5 for MTCC Phase II: <http://forwardrpc.cern.ch>



People

IPHC (Institut Pluridisciplinaire Hubert Curien)- IReS in CMS



Technicians and Administratives from PHC-IReS working for CMS came to CERN to celebrate the successfull end of the TEC and hybrids production. (the group leader - Jean-Marie Brom- first from the right).

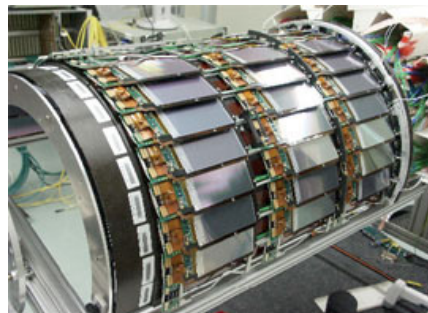
The Strasbourg CMS group includes physicists and engineers from the IPhC-IReS involved with CMS from the beginning (The Letter of Intent, 1992). Nowadays it comprises about 10 physicists as well as 15 technicians and engineers, lead by Jean-Marie Brom.

The Strasbourg CMS group played a major role in the MSGCs for the Tracker in the past. They are currently involved with many fields of CMS activities, such as: quality control for the Tracker Silicon, tests and assembly of around 1000 Silicon detectors for the TEC (including about 7 million wire bonds!), final assembly and conditioning of about 80 TEC Petals with 2 production lines, on-line Data Acquisition. In addition, Strasbourg was on charge of the Front End Hybrid for the whole Si Tracker (15 000 pieces) : from the early design to the final quality control, including prototyping and industrialisation.



Q. Ingram and P. Bloch

The assembly of the TIB/TID is now complete



The last TIB layer is now complete.

The final components of the Tracker Inner Barrel and Inner Disk detectors (TIB/TID) have been assembled. This was the last operation of an intense activity covering the last 3 years and involving more than 100 physicists, engineers and technicians of the INFN Tracker Consortium (Bari, Catania, Firenze, Padova, Perugia, Pisa and Torino). About 3500 sophisticated silicon detector modules, corresponding to about 2.5 million analog channels, have been assembled, tested and integrated on 22 light carbon-fibre supporting structures (16 half shells and 6 disks).

Each of the sub-detector components was subsequently operated for several days in a climatic chamber run at -10°C , the foreseen operating temperature of the CMS tracker. Data were collected to monitor the stability of the electrical and optical components, to evaluate the performance of the cooling elements as well as the overall quality of each individual analog channel. Stringent quality control procedures were applied to all components resulting in a yield of more than 99.9% good channels.



The last TID disc during the final assembly.

The main sub-detector assembly for the forward part (TIB/TID+) was shipped to CERN in June and is now being prepared for the insertion into the Tracker Outer Barrel (TOB). The backward part (TIB/TID-) will be shipped to CERN in October.

[/cms_forward_rpc/webcam/webcam.php](/cms_forward_rpc/webcam/webcam.php)

The CSCs will join tomorrow since the detectors could only be connected to services after the respective disks were in place, with ME1/1 station already operational.

Recently in the green barrack, the first trigger signals (generated from patterns) from the DT and CSC Track Finders were passed to the Global Muon Trigger and the Global Trigger. Corresponding L1A signals were successfully received back at the Muon Track Finders, therefore closing the trigger loop. The additional latency compared to the LTC use in MTCC Phase 1 was measured to be smaller than 15 clock cycles ($15 \times 25\text{ns}$). This additional latency will be included when running with the Global Trigger.

Submitted by



A. Sharma for MTCC team

Safety during MTCC

For the duration of the MTCC visits to the point 5 assembly hall are restricted to specific areas. A special safety card including a map of the allowed areas can be found here. Private visits to point 5 should be announced by sending an email to cms-experiment-visit@cern.ch.

Links

MTCC website: <http://cms.cern.ch/MTCC.html>
Agendas/minutes of all run meetings: <http://indico.cern.ch/categoryDisplay.py?categId=329>

CMS Outreach, Visits and Media

Stephen Hawking in CMS



Stephen Hawking visiting CMS.

Stephen Hawking, Lucasian Professor of Cambridge University and best-selling author of "A Brief History of Time", visited CERN from 24th September to 1st October. During this time he visited the CMS construction site at Cessy with members of the CMS collaboration.

From Physics World (October 2006):

Vintage years - Looking forward to the Large Hadron Collider

A special edition of the UK journal "Physics World" has just been produced, focussing largely on the LHC project and its experiments. Copies are available in the CERN press office.

Submitted by





Laurent Gross

My name is Laurent Gross, I'm 35 years old and I am a research ingeneer in CNRS (National Center for Scientific Research). I have been working since the year 2000 in the IPHC-IReS institute in Strasbourg. Since the beginning my main work has been contributing to CMS online software development.

In the context of that work I have made many visits of one or two weeks to CERN and I have had the opportunity this summer to work permanently at CERN for one year. Therefore my wife, our two daughters (4 and 6 years old) and I decided to move here. Hopefully as we all like walking in mountains and skiing, it was not too difficult to convince everyone to move from Strasbourg to CERN!

More personally I am happy to have had the luck to see and participate in the end of CMS construction and maybe even to see the start up of CMS in 2007. This is really great motivation for my daily work and certainly one of the main points which have helped the decision to move to CERN. e decision to move to CERN.

[Download a video interview with Laurent \(in French - 20Mbyte mp4 file\).](#)

PDF Version

[Click here to download printable PDF version.](#)

G. Tonelli



It can also be found online at:

<http://physicsweb.org/articles/world>

From Symmetry Magazine (a joint Fermilab/SLAC publication):

A special LHC issue of Symmetry magazine has also been produced. With

The cover of the latest edition of Physics World magazine.

articles ranging from physics to experiments to life at CERN, this is an excellent overview of the complete LHC project.

Copies are available in the CERN and Fermilab Press Offices as well as online at:



The LHC edition of Symmetry magazine.

<http://www.symmetrymagazine.org/cms/>

Links

- [LHC](#)
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Web-cam latest images (click picture to enlarge)

