CMS Report - all experimenters meeting

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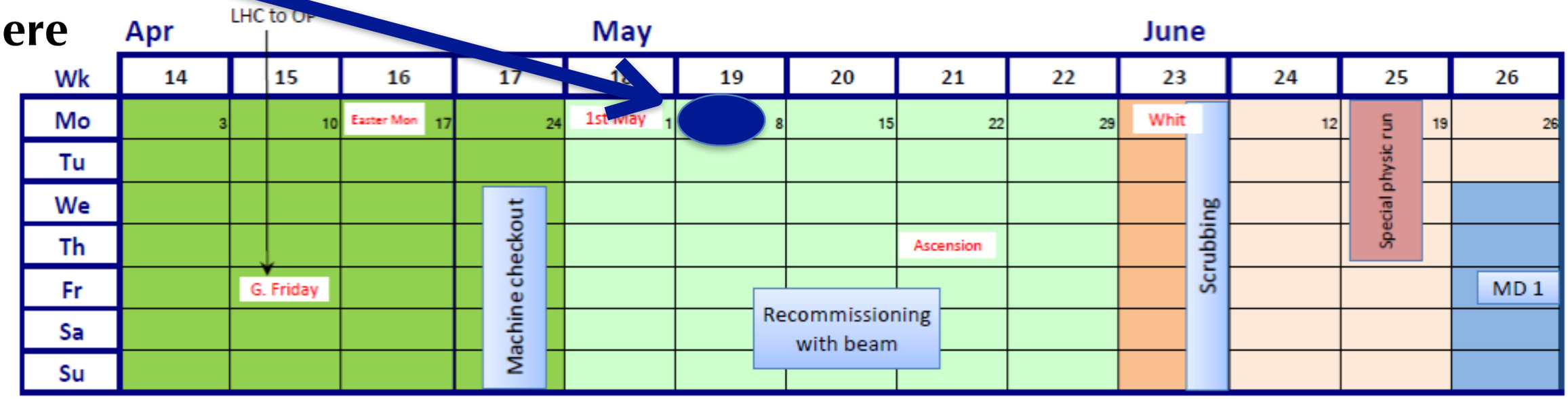
May, 8 2017

LHC near-term schedule

http://beams.web.cern.ch/content/accelerators-and-schedules

We are here

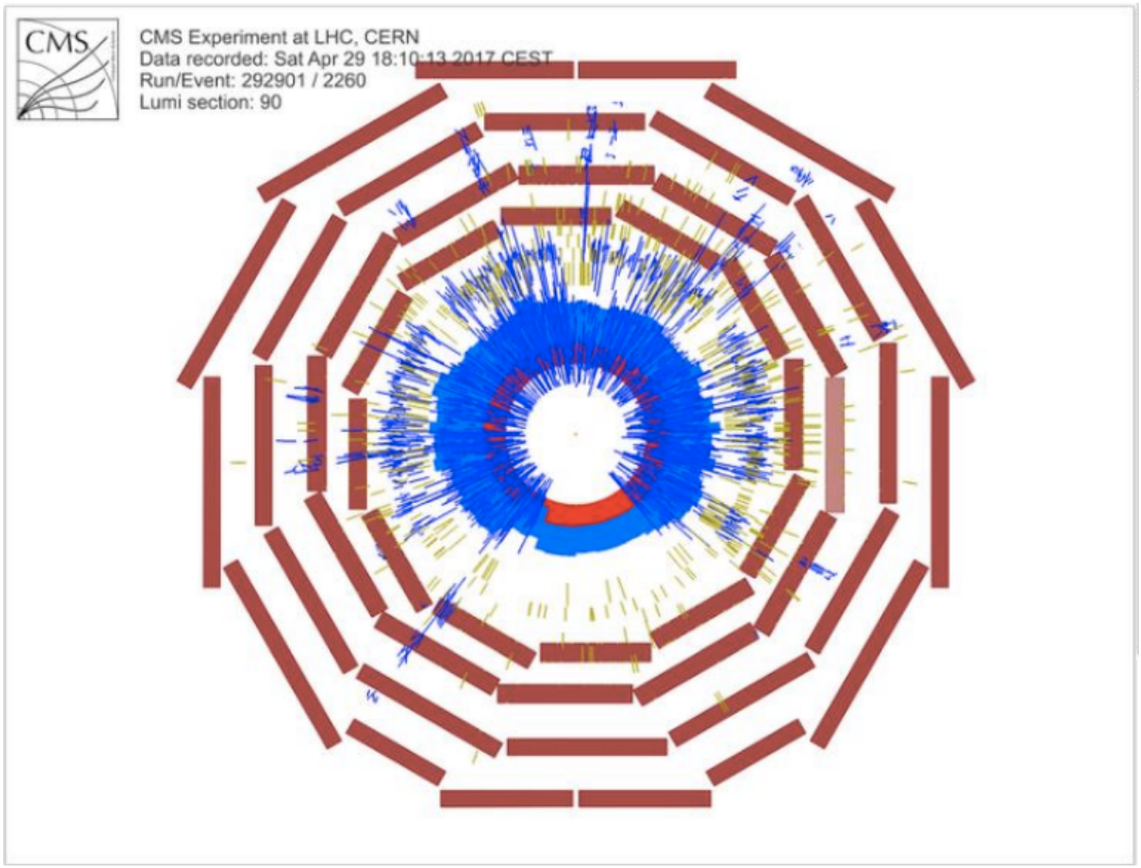


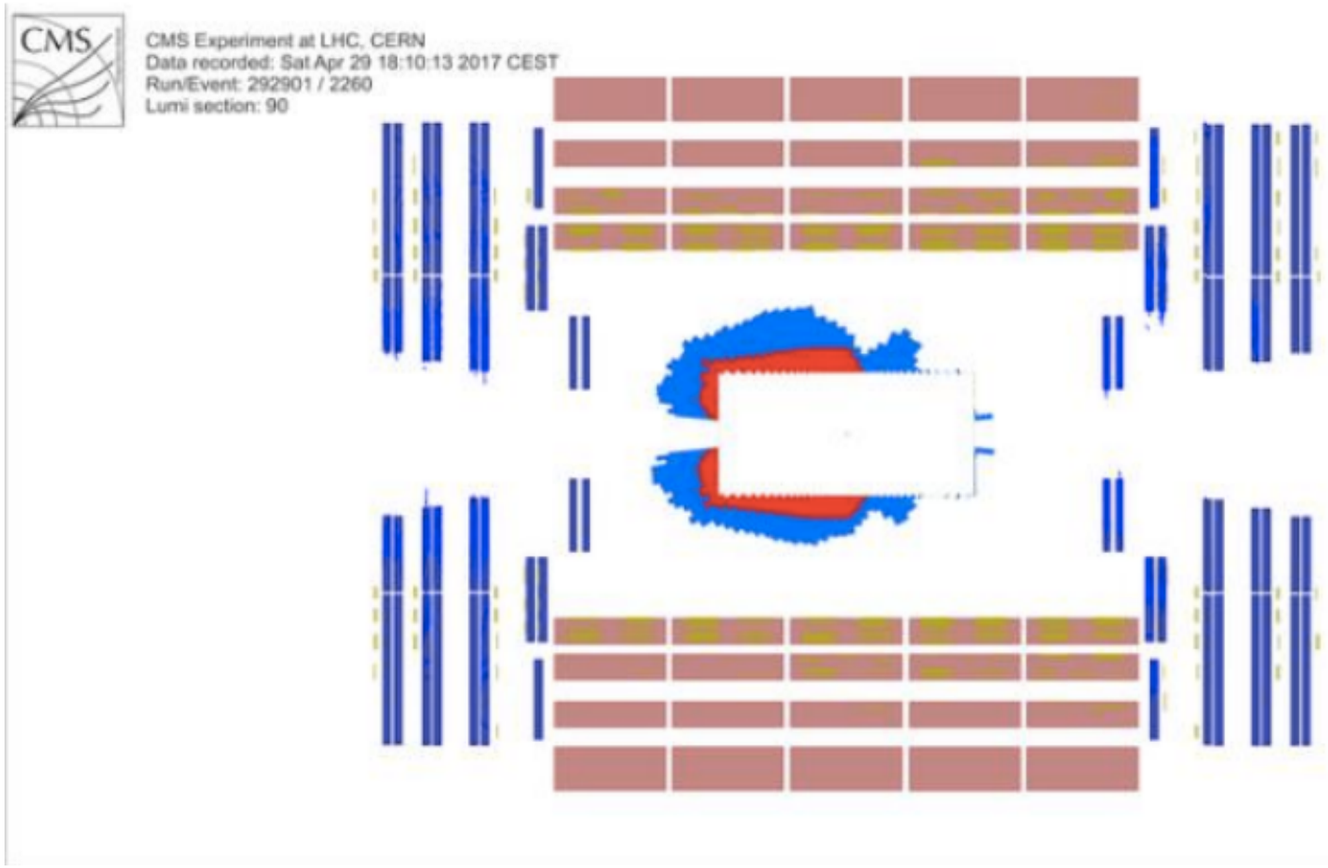
Expectations…

- Week of 1 May: splashes
- Week of 8 May: test collisions as part of LHC commissioning program
- Week of 15 May: likely more test collisions
- Week of 22 May: Stable Beams on track to be EARLY in week

Splashes

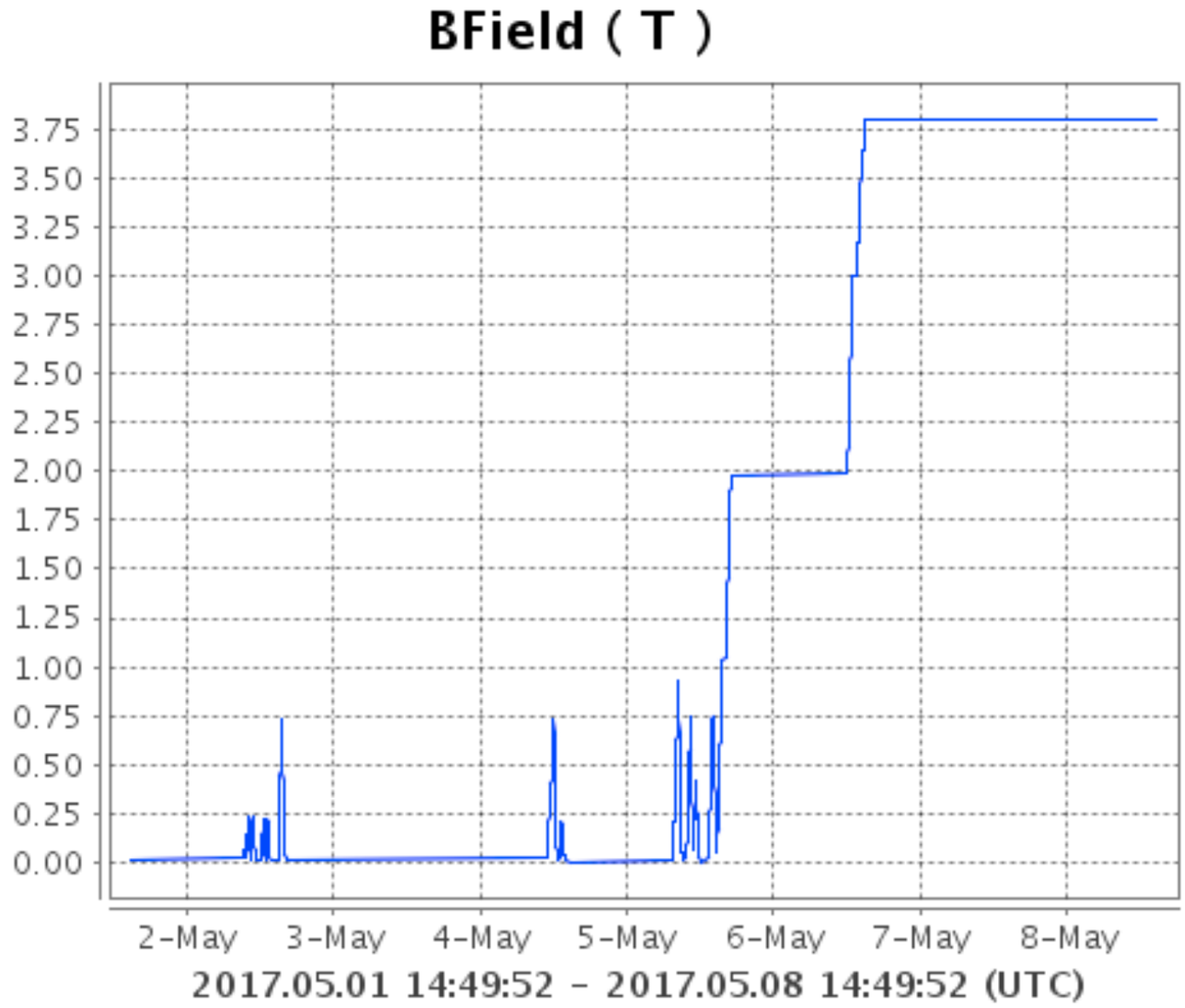
Beam operation starting 2 days earlier than scheduled (Sat 29th April)
Splashes when beams are first threaded through LHC





- Very valuable information for calorimeters (in particular for upgraded HF)
- Check data and trigger links
- Mainly validate timing in calorimeters (to few ns precision) and energy response

CMS magnet commissioning



- The magnet is up to the full field (3.8T) since May 6th 16:56 (Geneva time)

Tracker

- With the start of the LHC commissioning with beams the Strip and Pixel detectors are off most of the time.
- Before that managed to collect **cosmic data** with the **pixel detector** in global runs. Thanks to that:
  - Found an efficient **timing settings** around which we will perform the fine timing scan with the first collisions
  - Improved further the **alignment**
    - Forward pixel detector aligned atmodule level with cosmic muons at 100μm precision
- When without beams for at least 3 hours to perform tests in order to performing calibrations, take cosmic data and continue commissioning
- Pixel detector has to be checked again after the magnet ramp

Trigger

- Reviewing the status of the online reconstruction
  - reconstruction updated to 2017 detector: upgraded pixel detector, HCal, HF readouts
  - improvements to bring HLT objects closer to offline ones
- In parallel the Physics Groups are studying the trigger strategies based on 2016 data to avoid waiting too much for the object to be finalized.
  - main goal of ~1 kHz average physics rate for LHC fills with peak instantaneous luminosity of~2E34

Conclusions

- CMS is engaged on multiple fronts:
- Preparing for **legacy re-reconstruction** of **2016** data (36 fb-1)
  - First round of **2017 simulated samples** injected and studies of object reconstructions with new detector are on going
- Preparing for **LHCP (May 2017)**:
  - More than 15 new results based on the full 2016 dataset
- Preparing for **2017 data-taking** :
  - Commissioning of the detectors with first beams and cosmic data
  - Preparation of the trigger
- **Phase 2 upgrade**
  - TDRs are being finalized
  - a new addition: the MIP Precision Timing detector is being reviewed