

All Experimenters' Meeting

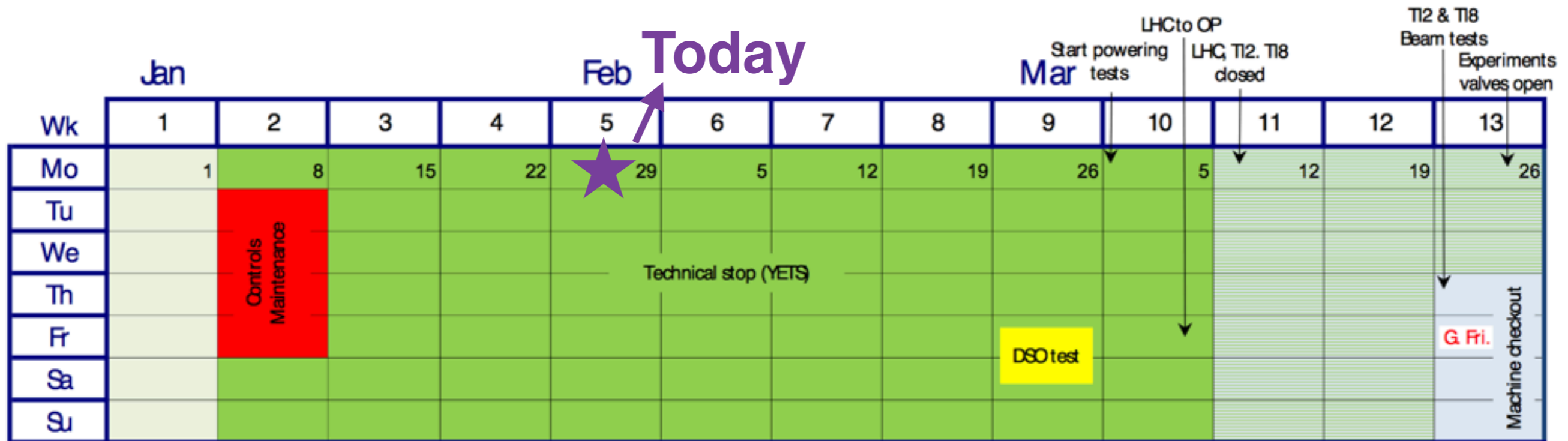
CMS and LHC report

Nadja Strobbe (Fermilab)

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LHC schedule



Mid-April: first stable beams

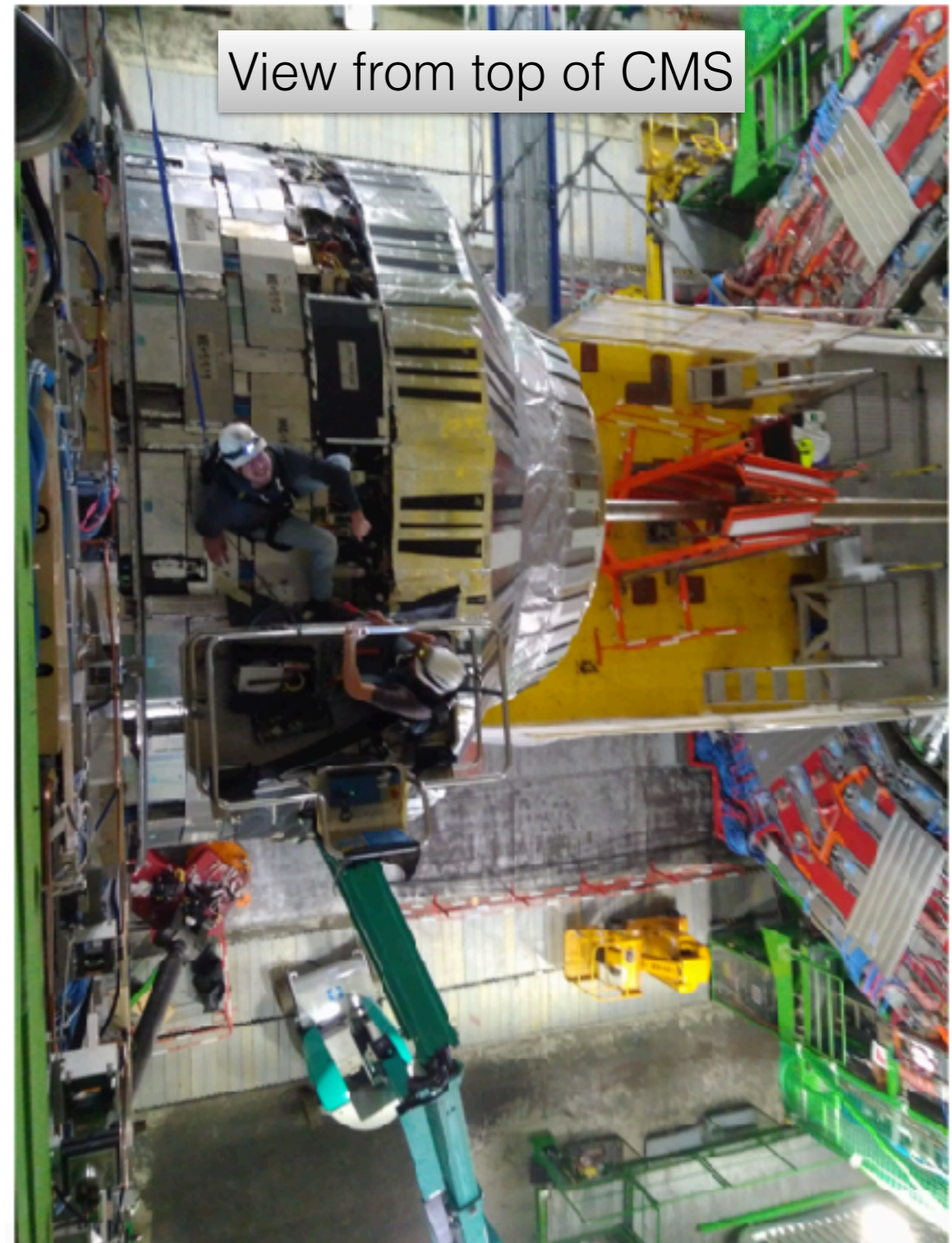
Early May: start physics run

CMS schedule

- Year End Technical Stop ongoing, focusing on:
 - FNAL • Pixel tracking detector intervention related to the failing DC-DC converters
 - FNAL • Installation of new photosensors and readout electronics for the hadron calorimeter endcap (HE)
- Preparation for collisions
 - Mid-Week Global Run #1: 25-26 Jan
 - Mid-Week Global Run #2: 7-9 Feb
 - Mid-Week Global Run #3: 21-23 Feb
 - Global cosmic running: 5 March

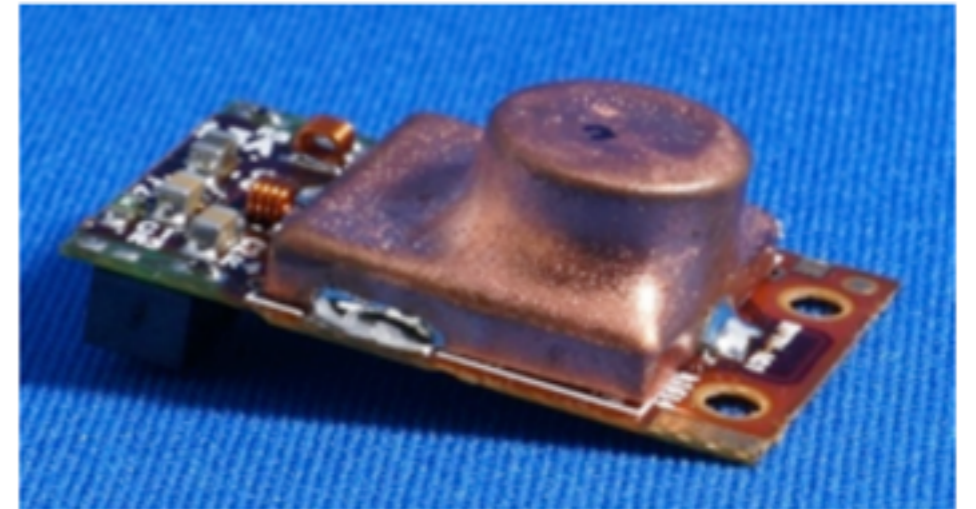
HE upgrade

- 3 tasks to be completed:
 - hardware installation
 - commissioning
 - Co60 sourcing
- Installation of HE+ side of detector is complete, ahead of schedule, initial checkout good, sourcing ongoing
- Work on HE- side started
- Note: DC/DC converters used in 2017 in the 1 upgraded HE box are all functioning normal



Pixel status

- Reminder: during the last 2 months of 2017 running (starting early Oct) the **DC/DC converters** powering the pixel modules started **failing** after power cycles needed to reset TBM chips affected by SEU
- Immediately after the end of the run, CMS was opened and some pixel sectors were removed for inspection
- After lots of long hours and many types of checks, we currently know that the **damage is located in the FEAST ASIC** itself, not on the rest of the board
 - Specifically in a 3.3V driver regulator
 - CERN designers heavily involved in investigation



Pixel status

- **Symptoms can be induced by flaky connection of an external capacitor** connected to the 3.3V pin on the chip
 - However, studies of this capacitor show no issues so far
- Failure is typically found after a power cycle, but the power cycle is not the underlying cause of the damage.
- About **30% of still working converters show abnormal I-V characteristics**, probably early sign of failure
- Pixel modules left under HV with the DC-DC unit failed have **broken pixels** apparently because of radiation damage while in this state
- **Plan is to replace all DC-DC converters and most of the modules in Layer-1 of Barrel Pixel**
- Operational plan for 2018 in progress
- Plan for full fix during long shutdown (2019) being discussed

FPIX inner ring module: charge injection test

One example of PixelAlive for a DCDC module FPix_Bpl_D2_BLD1_PNL2_RNG1

