ALICE Extraction/Injection/User permits

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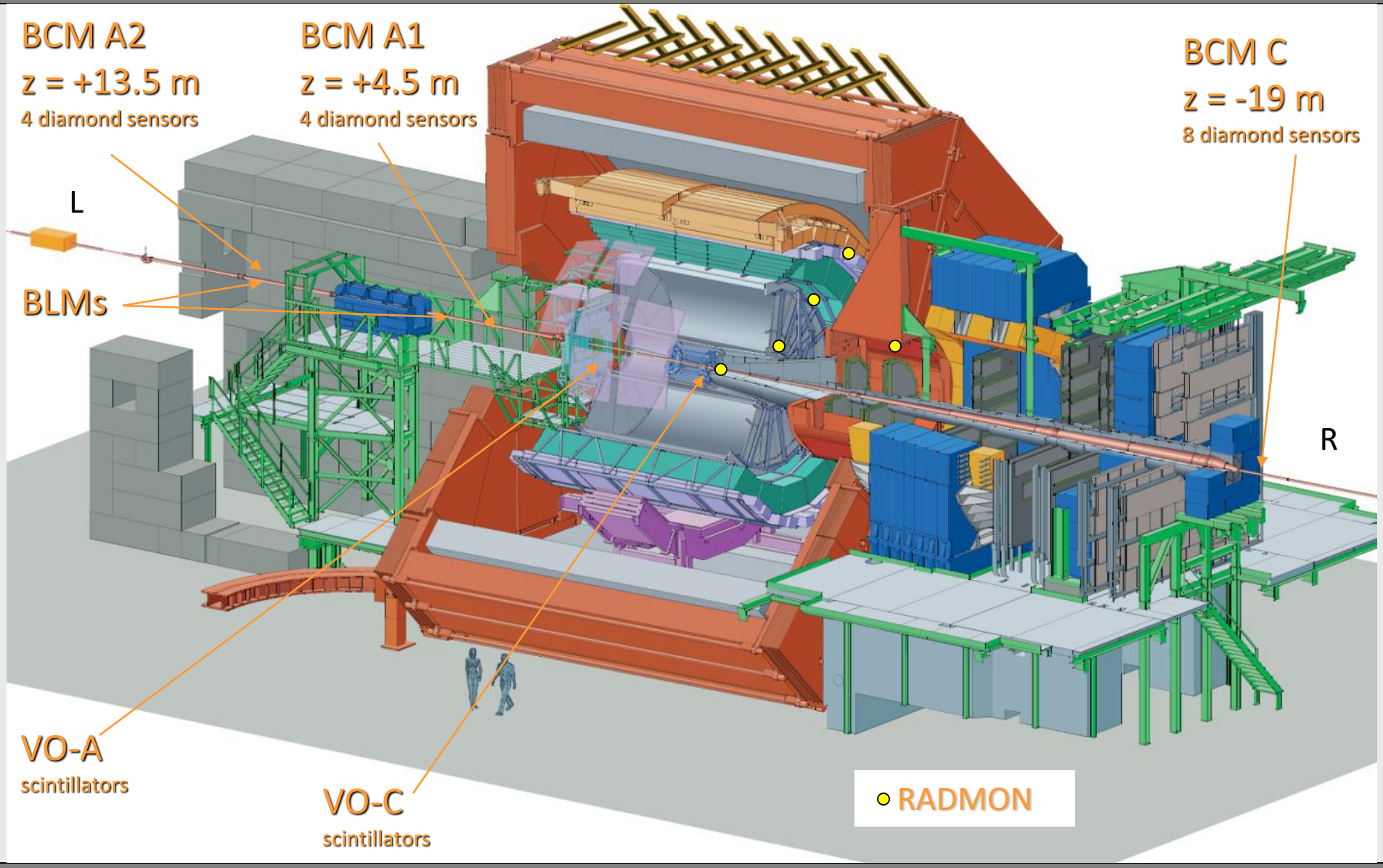
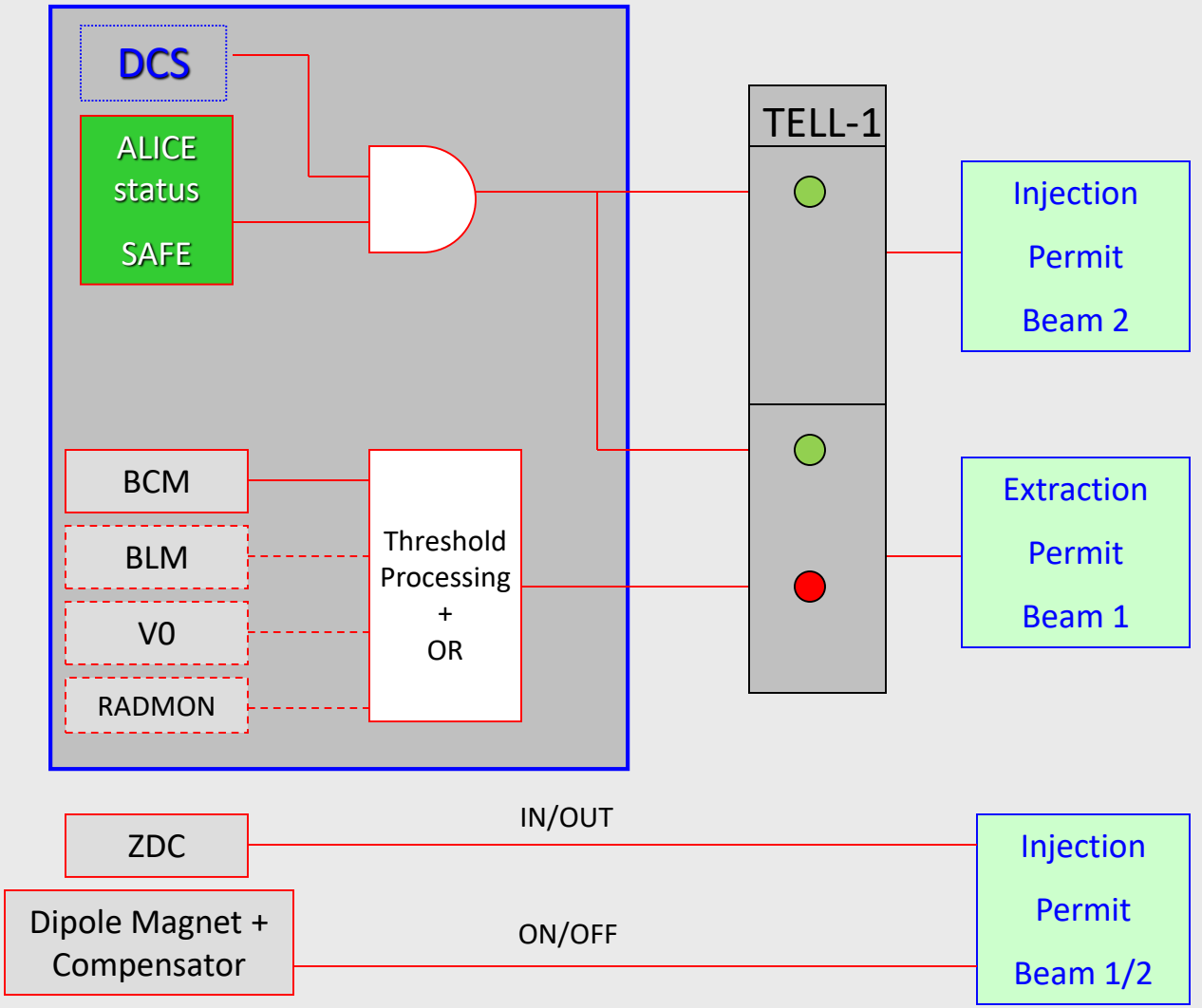
LMPP, 03/07/09

ALICE Beam/Radiation Monitoring



Extraction/Injection_permit

- Before Stable_Beams, all detectors have to be in SAFE state. The permit is set ON if ALICE is in SAFE. ZDC and magnets are connected to independent CIBU's.
- The permit will be set OFF on anomalous signal above given threshold (e.g. ~ 60% dump level in BCM). Presently this is managed by PVSS, via TELL-1 dedicated registers; typical response time ~ 1 s.
- We plan to implement a faster system (HW interlock) based on existing devices and additional scintillators.



User_permit

The user_permit (HW interlock) is based on the BCM-CFC-TELL1 chain developed by LHCb.

- Fast abort on RS2 (2x40μs CFC integration frames) coincidences:
  Dump the beam if 3 adjacent diamond sensors out of 4 show a current > thr_{RS2}
- Slow abort on ΣRS32 (32x40μs):
  Sorting out the two highest and the lowest of 8 sensors, dump the beam if ΣRS32 > $thr_{\Sigma RS32}$

Actual guess for thr_{RS2} ~ 5000 nA and for $thr_{\Sigma RS32}$ ~ 250 nA (to be x-checked …)

BCM currents from FLUKA simulation of injection failures by B. Pastirčák (ALICE Int. Note 2001-03), updated in Nov 07

(pilot bunch 5×10^9 p)

	RS2 [nA]	RS32 [nA]
BCM A	≈500-750	≈30-50
BCM C	≈100	≈6

TDI grazing (pilot bunch 5×10^9 p)

	RS2 [nA]	RS32 [nA]
BCM A	≈900-2700	≈55-170
BCM C	≈325	≈20