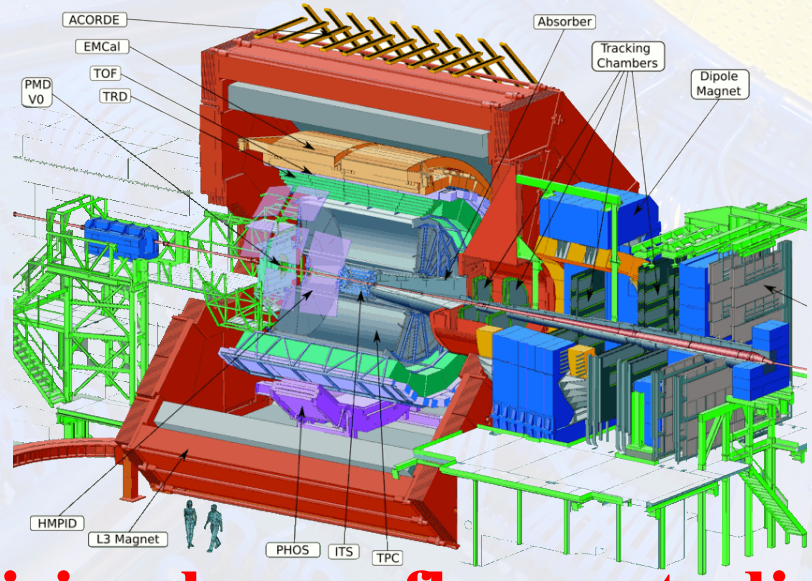
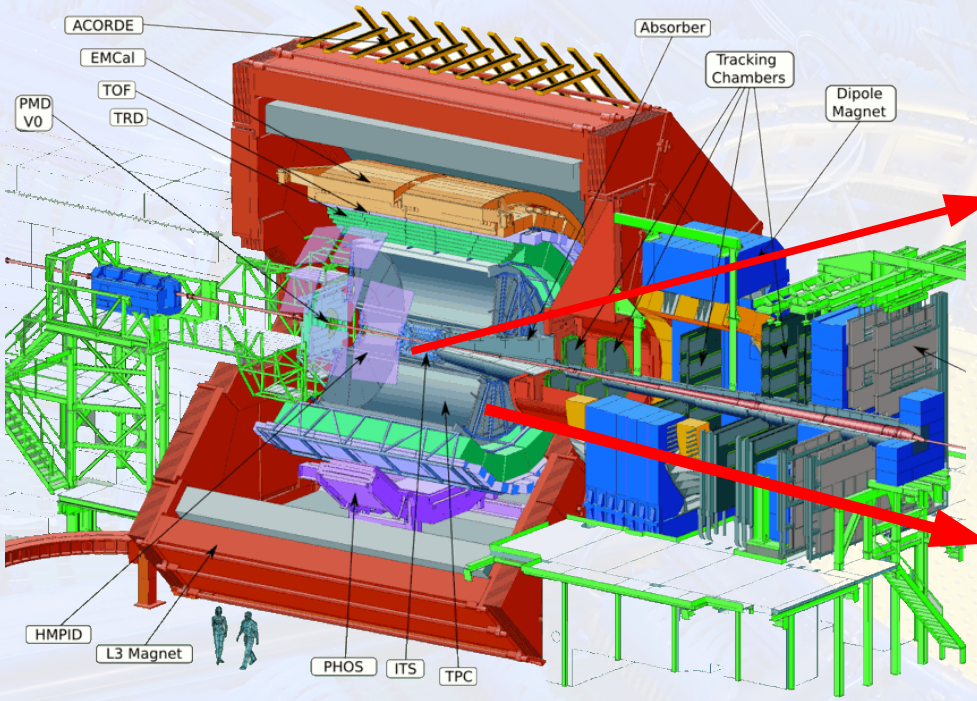
ALICE Upgrade allows

- Precision heavy flavor R_{AA}
- With separation of c, b
- Heavy flavor jet quenching
- Heavy flavor baryon/meson ratio
- Low mass di-leptons
- Improved low p_T reach



Precision heavy flavor studies with ALICE upgrades key to quantitatively determining properties of the QGP.

Heavy Flavor Physics with the ALICE Upgrade



Inner Tracking System

- Higher resolution (~3x)
- Lower material (~1.14%→~ 0.3%)
- Improve efficiency (10%→60% at 100 MeV/c) and p_T resolution at low p_T
- Fast readout (>50kHz)
- Improve impact parameter resolution ~3x

Time Projection Chamber

- Replacement of MWPCs with GEMs
- New readout electronics
- Fast readout (3.5 kHz→50kHz)

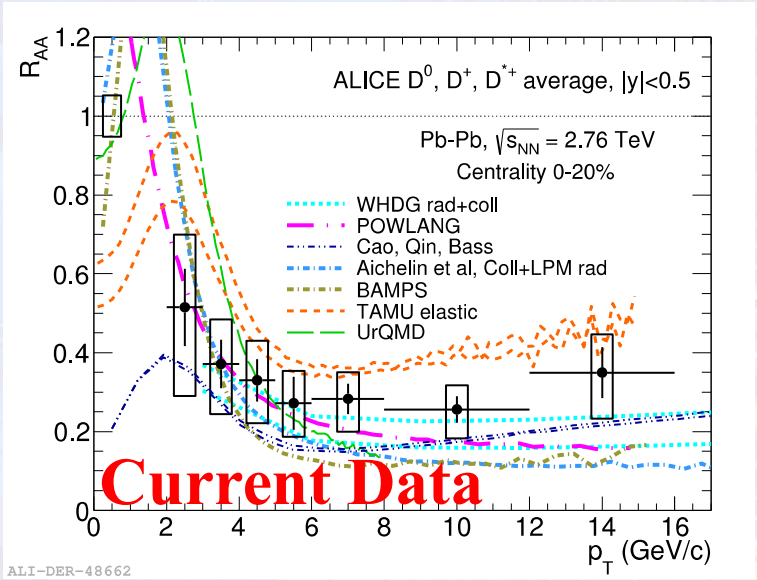
Computing

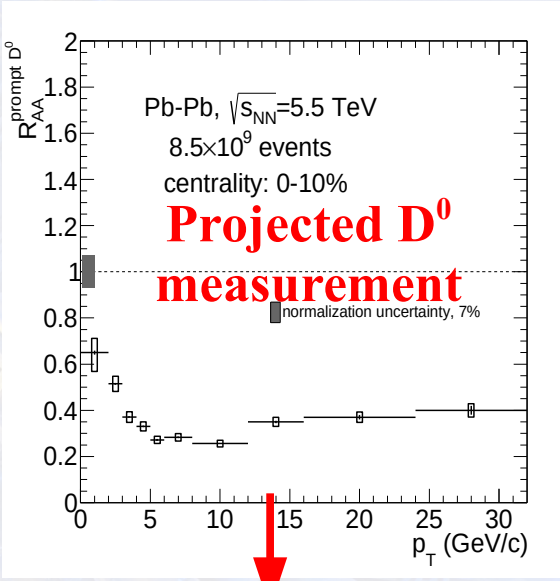
- Data rate increases 100x → online reconstruction and calibration
- Fast calibration procedures (50 kHz)
- Continuous track reconstruction
- Greater code optimization

~100x better statistics vs Runs 1 & 2 for min bias measurements
~10x better statistics vs Runs 1 & 2 for triggered measurements

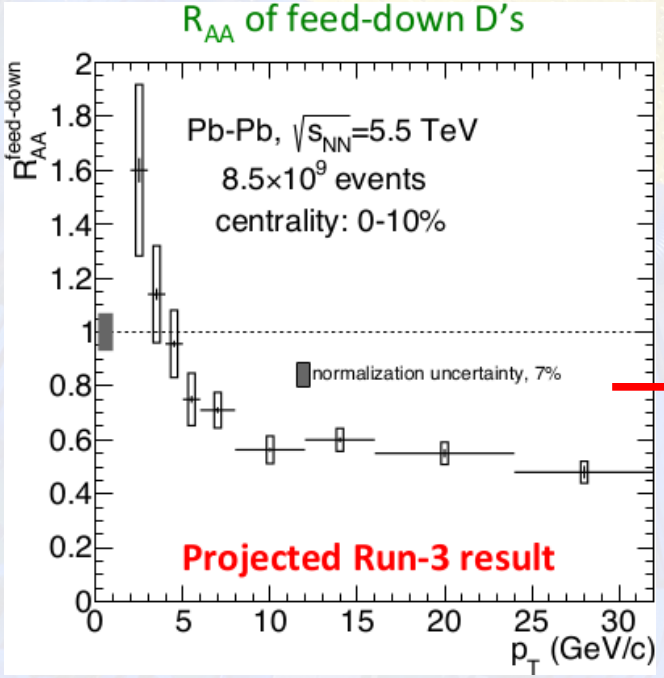
Heavy flavor energy loss

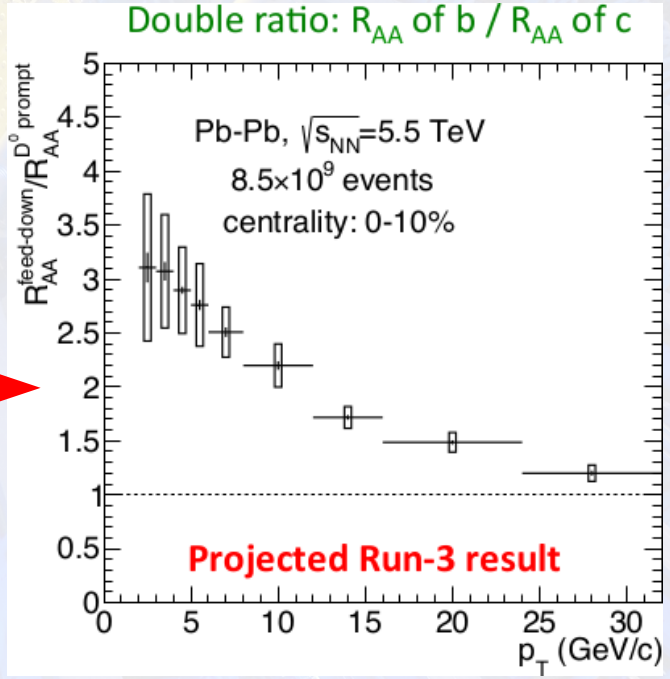
D meson R_{AA}

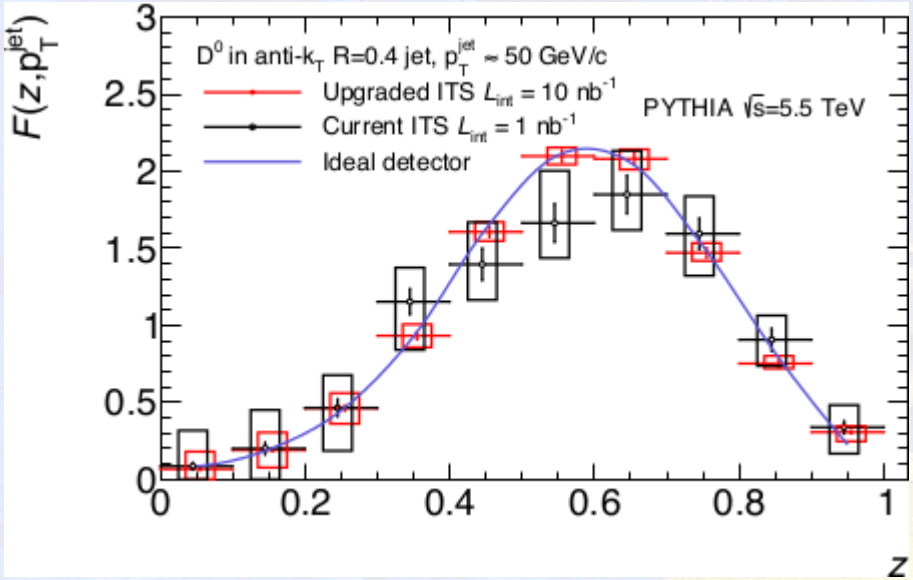




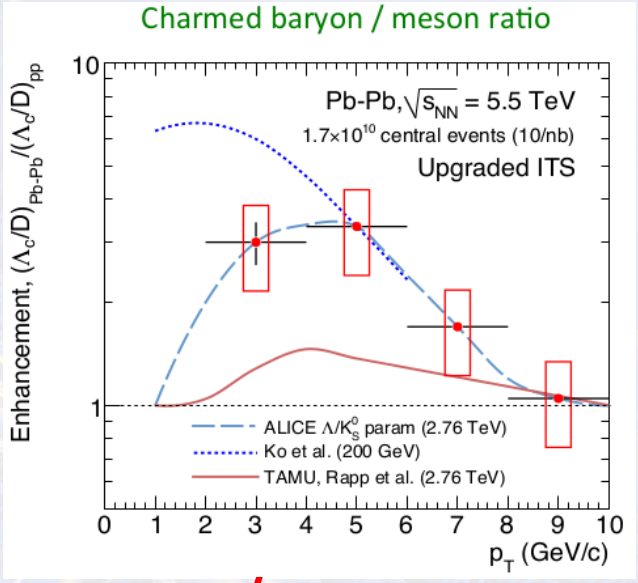
c vs b R_{AA}



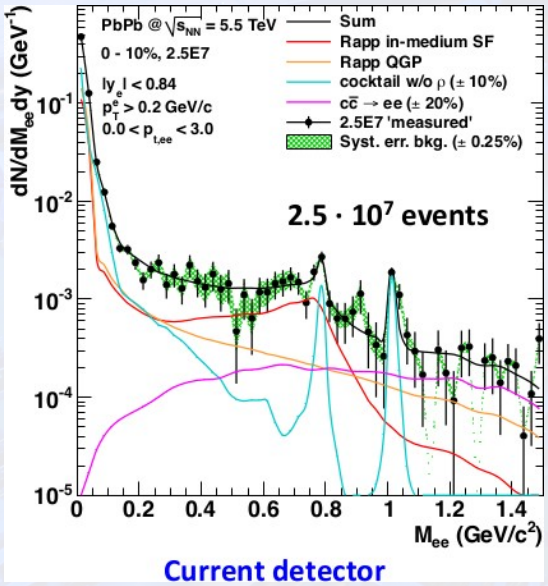


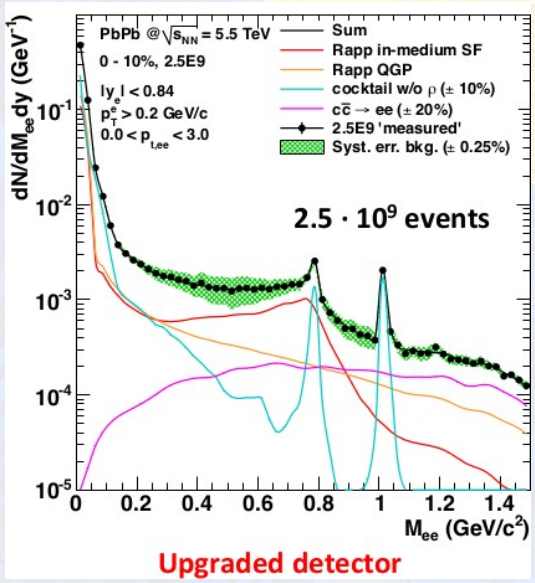


Charm in jets

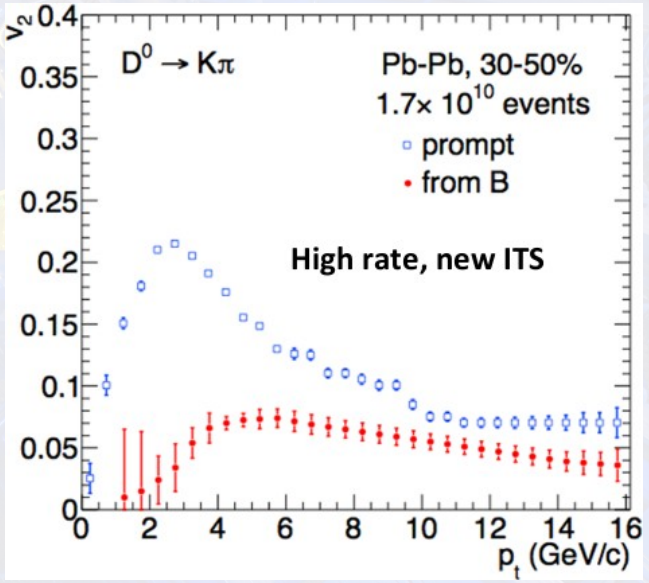


Baryon/meson ratio





Low mass di-leptons



D v_2

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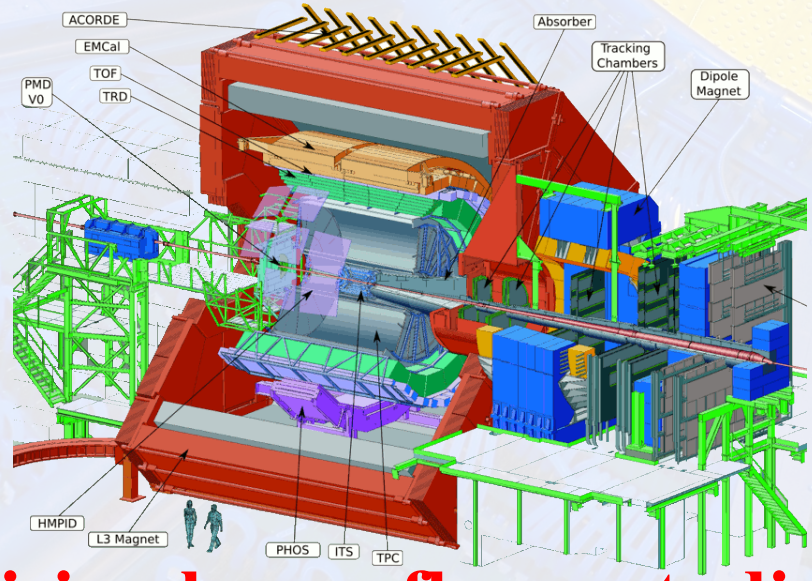

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