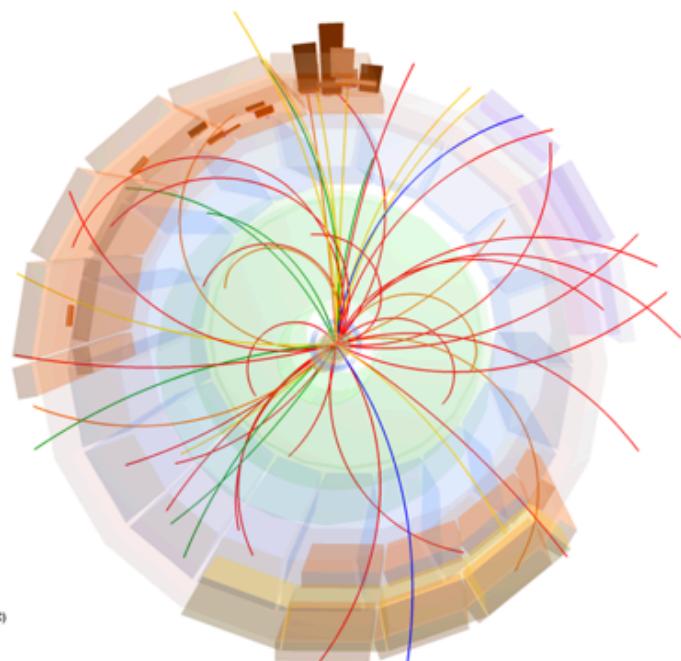


EMCAL and o^2 Status and Plans



Run:266438
Timestamp:2016-11-26 17:57:12(UTC)
System: Pb+p
Energy: 8.16 TeV
EMCal L1 jet triggered event

Markus Fasel (ORNL)
For the EMCAL collaboration

ALICE Offline Week, Nov 8-10, 2017



Current status

- Simulation:
 - Geometry – implemented
 - Hit creation – implemented
 - Digitization – work started
- Reconstruction
 - Raw decoder on FLP – pending
 - Clusterizer – pending
- Calibration
 - Not yet started
 - Feasibility for (partial) online calibration yet to be determined

EMCAL geometry in o2

EMCAL will stay with run2 geometry (12 EMCAL supermodules + 8 DCAL supermodules)

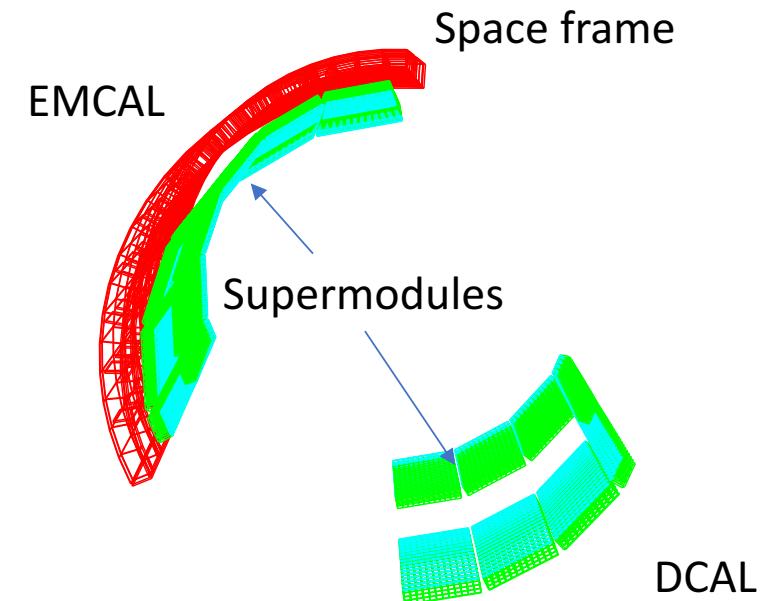
`o2::EMCAL::SpaceFrame`

- Based on ROOT TGeo interface

`o2::EMCAL::Geometry`

- Based on TVirtualMC
- Materials defined in `o2::EMCAL::Detector`
- Extra class (`ShishKebabTrd1Layer`) for supermodule description

Some cleanup can be done



Sensitive volumes: Scintillator material in towers

Hit creation

o2::EMCAL::Detector

Bool_t ProcessHits(FairVolume *v)

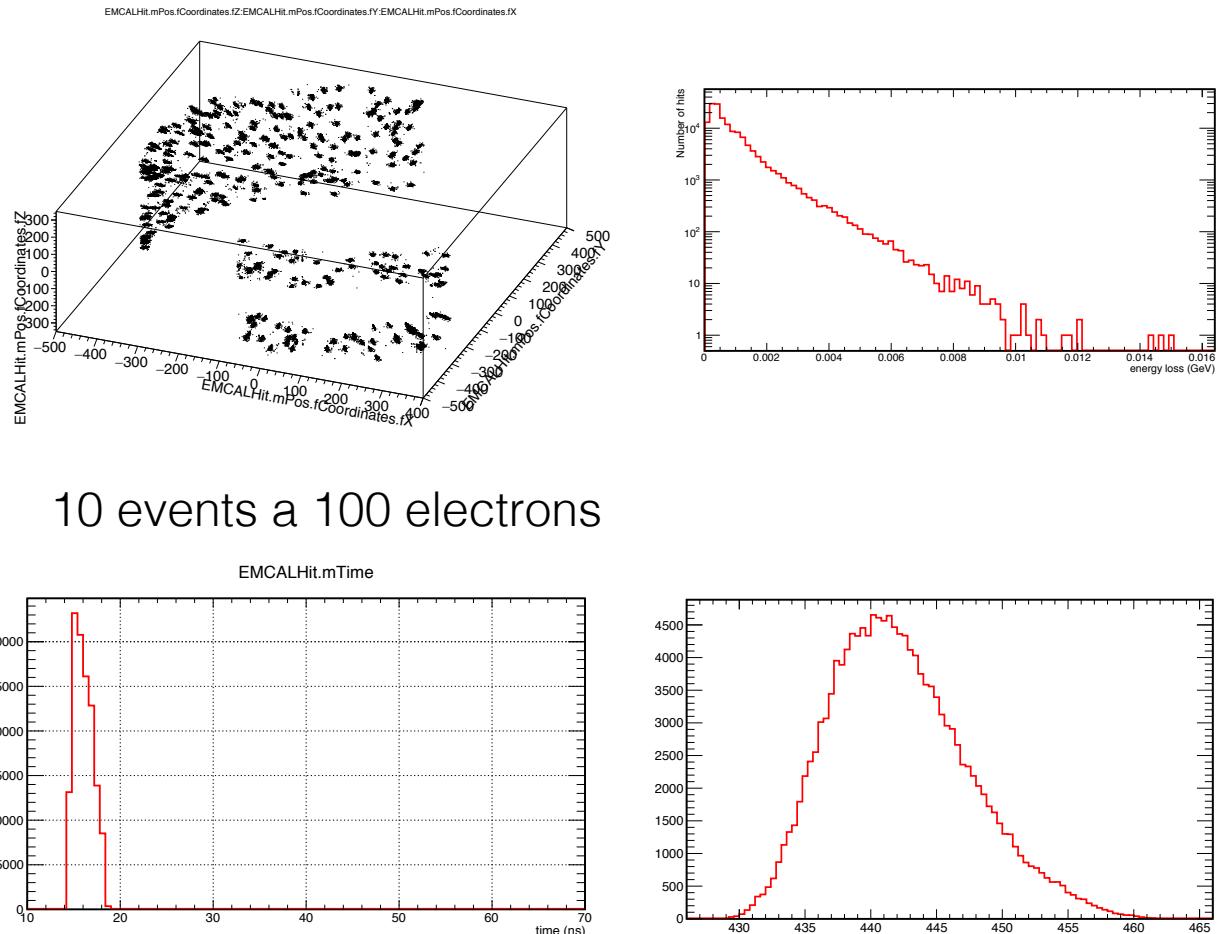
- One hit per primary particle and tower
- Neutral particles (photons): Full energy deposit
- Charged particles: Birk's law

$$\frac{dL}{dx} = \frac{dE/dx}{1 + k_b * \frac{dE}{dx} + C * (dE/dx)^2}$$

More checks (in particular comparison to AliRoot simulation) needed

Tests:

- Box generator (100 electrons, $p_t \sim 5$ GeV/c, flat in φ , $|\eta| < 0.9$): macros/run_sim_EMCAL.C
- EMCAL part of o2sim



10 events a 100 electrons

Plans

- Digitization
 - First version by the end of the year
 - Refinements (particularly time response) by the beginning of 2018
 - Trigger simulation 2018-2019
- Clusterization
 - Starting in the beginning of 2018
 - First version by middle of 2018
 - (simulation level)
- Raw analyzer
 - To be defined, probably late 2018

Plans digitization

- Two levels (similar to ITS)
 - DigitizerTask
 - Digitizer
- Startup: Porting algorithm as used in AliRoot

Plans clusterization

- Based on EMCAL HLT clusterizer and data formats
- Speedup of the components
- Potentially tested with ALICE run2 data

Manpower

- Current:
 - 2 people, fraction of time spent for o2
- Expected (2018):
 - 4 people, fraction of time spent for o2
- We will assign the open tasks until the end of the year
- Other parts (calibration, QC) foreseen for 2019
- Situation reflects the ongoing developments still necessary for run2