

THE ALICE DETECTOR

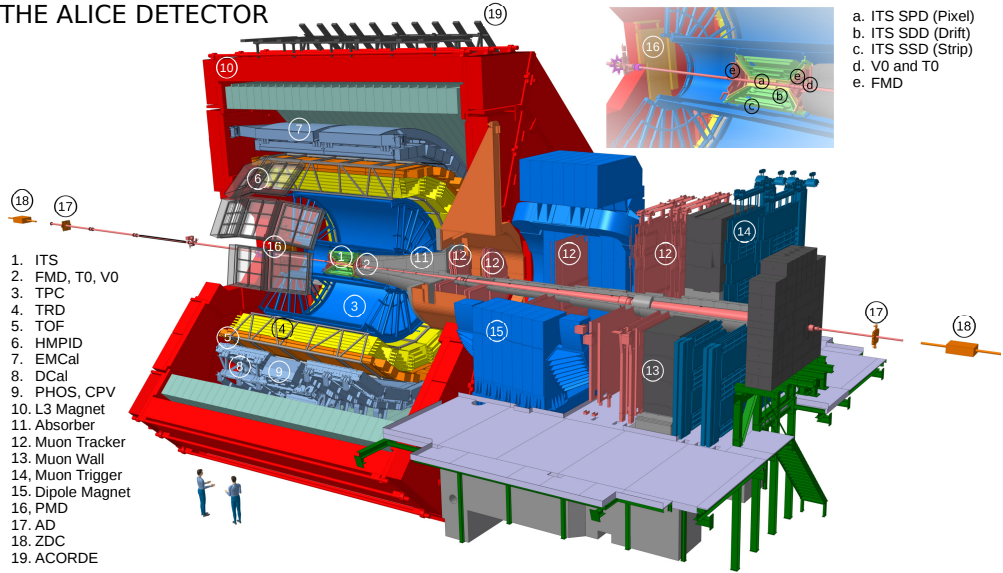


Figure 4.1 – Schematics of the ALICE detector. The subsystems relevant for this thesis are described in the text. Figure taken from Ref. [93].

spectrometer. The central barrel is contained within the L3 magnet, which is a warm solenoid magnet with a magnetic field of $B = 0.5$ T. The muon spectrometer extends only in the forward region (C side) and contains a dipole magnet ($B = 0.67$ T) which bends the muons away from the interaction vertex in the horizontal plane.

Closest to the interaction point, in the middle of the central barrel, is the Inner Tracking System (ITS), which is used for triggering and high-resolution tracking. This is further described in Section 4.2. Next to the ITS, in the forward and backward regions, are the T0 and VZERO (usually abbreviated V0) detectors. The T0 detector is used for measuring the time of the event, whereas the V0 detector is used for measuring the event multiplicity and additional triggering. The latter is described in Section 4.3. Surrounding the ITS, is the Time Projection Chamber (TPC), which is the main tracking device and is further described in Section 4.4. The next two layers of the central barrel are the Transition Radiation Detector (TRD), which is used for electron identification above $1 \text{ GeV}/c$, and the Time-Of-Flight (TOF) detector, which measures the velocity of the particles and is used to complement the PID information, in particular at intermediate p_T . The TOF detector is described in Section 4.5. Outside the TOF detector, there is no detector which covers the full azimuthal angle. The most important detectors here are the electromagnetic calorimeters, EMCAL and DCal, which are placed on the top and bottom of the central barrel, respectively. These measure the energy of photons and electrons.

The muon spectrometer has a conical shape which extends in the forward direction from the interaction point. First is an absorber which is used to stop less penetrable particles, so that mostly muons remain. Further away from the collision vertex are five double-planed Muon Tracking Chambers (MCH) perpendicular to the cone, which are