



Contribution ID: 360

Type: Poster

## Electron identification and trigger performance of the ALICE Transition Radiation Detector in p–Pb collisions

*Tuesday 15 May 2018 19:10 (30 minutes)*

The Transition Radiation Detector (TRD) of the ALICE detector at the LHC provides electron identification and an online trigger on high- $p_T$  tracks of electron candidates, to significantly enrich samples of electrons originating from open heavy-flavour and heavy quarkonia decays.

The TRD consists of 522 chambers arranged in 6 layers. Each chamber comprises a radiator and a MWPC with pad read-out. When electrons with  $p > 1 \text{ GeV}/c$  travel through the radiator, crossing many boundaries between media with different dielectric constants, TR photons with energies in the X-ray range may be created. These photons are detected using the MWPC filled with Xe/CO<sub>2</sub>, where they deposit their energy on top of the ionisation signals from the particle track. The ALICE TRD is uniquely designed to record the time evolution of the signal. This functionality allows electrons and pions to be better discriminated compared to a 1d-likelihood on the total integrated charge measured in a chamber, because of the preferential TR absorption at the entrance of the MWPC (corresponding to large times).

In addition, chamber-wise track segments from fast on-detector reconstruction are read out with position, angle and PID information. In the Global Tracking Unit these track segments are matched and used for the reconstruction of transverse momenta and electron identification of individual tracks. These tracks form the basis for versatile and flexible trigger conditions, such as electrons with high  $p_T$ .

We present the electron identification and trigger performance in p–Pb collisions recorded during the LHC Run 2. The first is addressed with various methods, e.g. 1d- and multidimensional likelihood as well as neural networks. The second is quantified in terms of efficiency, purity and enhancement factors of physics observables.

### Content type

Experiment

### Collaboration

ALICE

### Centralised submission by Collaboration

Presenter name already specified

**Primary author:** Dr PACHMAYER, Yvonne Chiara (Ruprecht Karls Universitaet Heidelberg (DE))**Presenter:** Dr PACHMAYER, Yvonne Chiara (Ruprecht Karls Universitaet Heidelberg (DE))**Session Classification:** Poster Session

**Track Classification:** Future facilities, upgrades and instrumentation