

Abstract

As LHC machine is a top quark factory, remeasuring the top quark properties like top mass and top-pair cross section has a high priority in CMS experiment. In addition, with four jets (two b-jets), leptons and missing transverse energy, top-pairs are powerful tools for the detector commissioning.

To find the $t\bar{t}$ events in semi-electronic decay mode ($t \rightarrow Wb \rightarrow e \nu b + \bar{t} \rightarrow Wb \rightarrow q \bar{q} b$), we always look for an isolated electron to suppress the QCD multi-jet backgrounds. Looking for a b-jet (a jet coming from the decay of a B meson) by the means of the different b-tagging algorithms, is another key tool to get rid of the light jet contaminations (like W+jet events).

All these object selections have some efficiencies which should be calculated in the $t\bar{t}$ cross section measurement. The sophisticated job is to find these efficiencies in a data-driven way. In this talk, the data-driven methods developed for measuring both electron identification efficiency and b-tagging efficiency will be addressed.