

Top quark pair properties using the ATLAS detector at the LHC

Wednesday, 2 September 2015 15:25 (25 minutes)

The latest measurements of the properties of the top quark using the ATLAS experiment are presented. The top quark mass is one of the fundamental parameters of the Standard Model. A measurement based on a multi-dimensional template fit that can constrain the uncertainties on the energy measurements of jets is presented and combined with a measurement using dilepton events. In addition, novel measurements aiming to measure the mass in a well-defined scheme are presented. The top quark pair charge asymmetry is an asymmetry predicted to occur beyond leading-order QCD in the Standard Model, and may be significantly enhanced by the presence of new physics. The $t\bar{t}$ production charge asymmetry is measured inclusively and differentially using the 7 and 8 TeV ATLAS datasets. Making use of the large number of top quark pairs collected, we also present measurements of the spin correlation between top and anti-top quarks and discuss their sensitivities to new physics. The large number of top quark pair events is also used to measure the jet pull between the jets from the hadronic decay of the W boson, which is an observable that is sensitive to the QCD colour flow between the jets. A search for flavour changing neutral current processes in top quark decays is also presented.

Primary author: FERRARI, Arnaud (Uppsala University (SE))

Co-author: PADILLA ARANDA, Cristobal (IFAE-Barcelona (ES))

Presenter: LEVY, Mark (University of Birmingham (GB))

Session Classification: Heavy Quarks

Track Classification: Heavy Quarks