



Contribution ID: 45

Type: **Oral presentation**

Associated production of heavy flavour final state and a vector boson and search for $H \rightarrow b\bar{b}$

Tuesday, 29 April 2014 16:53 (23 minutes)

The mechanism of production of heavy-flavoured mesons, containing b or c quarks, in association with vector bosons, W or Z, in the Standard Model is only partially understood. The study of events with one or two well-identified and isolated leptons accompanied by b-jets or b-mesons is therefore crucial to refine the theoretical calculations in perturbative QCD, as well as validate associated Monte Carlo techniques. The deep understanding of these processes is furthermore required by Higgs physics studies and Beyond the Standard Model searches. Using the LHC proton-proton collision data collected in 2010 and 2011 at a centre of mass energy of 7 TeV by the CMS detector, $Zb(b)$ cross sections and angular correlations are presented, as well as $Wb\bar{b}$ production cross-section. Finally, the study of the associated production of a c-quark and a W boson with respect to the W charge and W plus light jets are also presented, allowing to probe and constrain the strange quark content of the proton.

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Session Classification: WG3+WG5 Joint Session

Track Classification: WG3+WG5 Joint Session