



XLVII International Symposium on  
Multiparticle Dynamics (ISMD2017)

September 11-15, 2017, Tlaxcala City, Mexico

Contribution ID : 69

Type : **not specified**

## Measurements of event properties and multi-differential jet cross sections and impact of CMS measurements on Proton Structure and QCD parameters

*Monday, 11 September 2017 11:25 (0:25)*

### Content

We present results on measurements of (1) characteristics of events with jets, from jet-charge over investigations of shapes to jet mass distributions. The measurements are compared to theoretical prediction including those matched to parton shower and hadronization; (2) Multi-differential jet cross sections over a wide range in transverse momenta from inclusive jets to multi-jet final states. We present studies on the impact these measurements have on the determination of the strong coupling alphas as well as on parton density functions. We also show angular correlations in multi-jet events at highest center-of-mass energies and compare the measurements to theoretical predictions including higher order parton radiation and coherence effects; and (3) Parton Distribution Functions, strong coupling constant and treatment of heavy flavours in QCD analyses. Measurements of cross sections of jet and to-quark pair production are in particular sensitive to the gluon distribution in the proton and the strong coupling, while the electroweak boson production - inclusive or associated with charm or beauty quarks give insight into the flavour separation of the proton sea and give hints to the treatment of heavy quarks in PDF-related studies.

### Session

Perturbative and nonperturbative QCD

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**Session Classification :** Perturbative and nonperturbative features of QCD (I)