

## Towards the understanding of quarkonium production through global-fit analyses of LHC data

*пятница, 13 ноября 2020 г. 15:00 (30)*

Hadron formation is one of the most interesting open problems within the context of QCD. Understanding how the quarks bind with each other implies combining complex analytical perturbative calculations with not-yet-understood non-perturbative aspects. Quarkonia are the simplest quark-antiquark bound states and provide an ideal window to probe hadron formation. The high quality quarkonium production (cross sections and polarizations) measurements reported by the LHC experiments, when studied with state-of-the-art data-driven analysis methods, allow us to perform a significant step forward in our understanding of the mechanisms at the basis of quarkonium formation. In this talk we will present results from a series of global-fit analyses of cross section and polarization measurements performed by the ATLAS and CMS experiments using large samples of pp collisions at 7, 8 and 13 TeV, including comparisons between model-independent phenomenological scenarios and the more complex NRQCD approach.

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**Session Classification** : Session 11: Heavy quarks

**Track Classification** : Physics of heavy quarks