

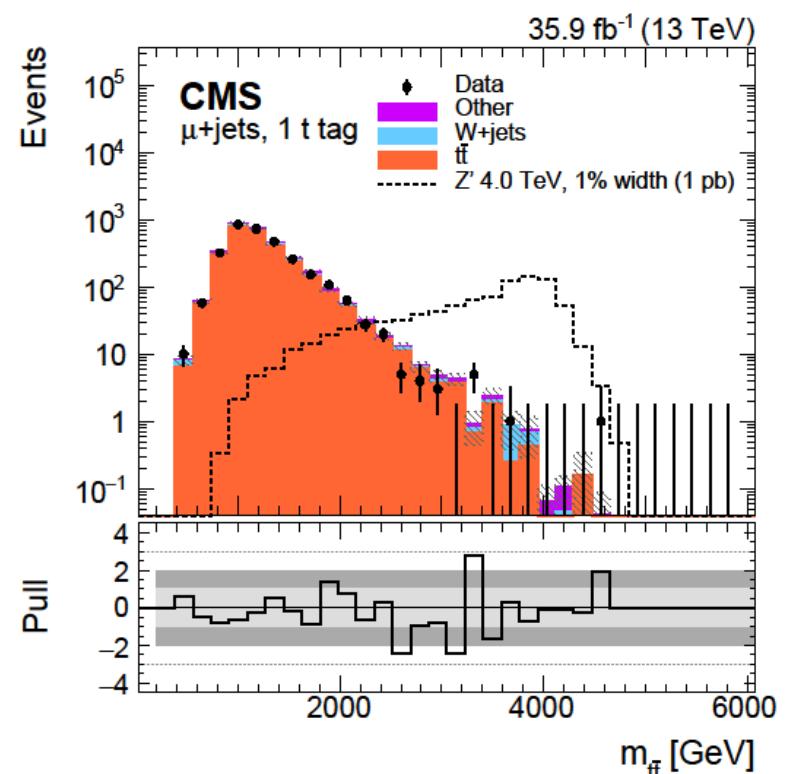


# Boosting the sensitivity to new physical phenomena at the LHC.

Tuesday, 26 February 2019, DESY Auditorium, 16:45 h

Roman Kogler (Univ. Hamburg)

The Higgs boson discovery at the LHC marked a milestone in particle physics. Finally, the standard model of particle physics is complete and internally consistent. However, questions like the validity of the theory up to high scales, the large quantum corrections to the mass of the Higgs boson, the nature of dark matter and the role of gravity are still unanswered and leave room for speculations. Various extensions of the standard model addressing these questions predict heavy resonances at the TeV scale, which couple predominantly to the Higgs and electroweak gauge bosons, and to top and bottom quarks. The LHC experiments are ideally suited to search for these new resonances in order to validate or constrain the corresponding theories. At resonance masses well above 1 TeV, these searches face specific challenges. The decay products have large Lorentz boosts, resulting in very collimated final state topologies, and the use of jet substructure methods is crucial for the identification of these decays. I will present latest results and some highlights from searches for new phenomena with highly-boosted final states. These searches place important constraints on models of new physics and pave the way for measurements in kinematic regimes inaccessible so far. I will give an outlook of future measurements with jet substructure, which will ultimately increase the physics potential of the LHC.



- Coffee, tea and cookies will be served at 16:30h
- After the colloquium there is a chance for private discussions with the speaker over drinks and pretzels