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Determination of hadronic resonance contributions to the B0 -> K*0μμ decay

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The angular observables of the B0 -> K*0μμ decay are showing intriguing discrepancies with Standard Model (SM) predictions [1]. The discrepancies indicate a shift of the vector coupling (C9) with a significance of about 3.4 standard deviations. This could be explained by the existence of new heavy vector particles not described by the SM. However, the discrepancies may also be explained by interference between hadronic resonance amplitudes (long distance) (e.g. B0 -> J/ΨK*0) and the SM flavour changing neutral current (short distance) amplitudes.
To solve this ambiguity, we intend to perform an unbinned fit to the decay angles and the dimuon mass of the B0 -> K*0μμ decay across the full dimuon spectrum. In the empirical model used for this fit hadronic resonances are modelled as relativistic Breit-Wigner amplitudes and the magnitudes and phases of all hadronic resonance amplitudes are defined relative to the short distance amplitudes [2]. This approach allows the simultaneous determination of the Wilson Coefficients C9 and C10 as well as the level of hadronic interference directly from data.
In the talk I will explain the model, relevant experimental effects (such as acceptance, resolution, and backgrounds), as well as the fitting procedure. Furthermore, I will discuss the expected sensitivity to the key signal parameters.
[1] LHCb collaboration, JHEP 1602 (2016) 104
[2] T. Blake et al., Eur.Phys.J. C78 (2018) no.6 453

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