Measurement of the CKM Angle Gamma

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A key consistency test of the Standard Model is to verify the unitarity of the CKM quark-mixing matrix. For this purpose, the precise determination of the CKM angle γ, currently the least well known CKM parameter, is essential since it can be accessed by both tree-level and loop-level transitions. The comparison between the value of the CKM angle γ obtained from tree-level processes with the measurements of γ and other CKM parameters in loop-level processes might reveal possible effects beyond the Standard Model in global CKM fits.

This talk presents a decay-time-dependent analysis of tree-level B_s -> D_s K pi pi decays using LHCb data. In these decays, sensitivity to the CKM angle γ arises through CP violation in the interference of mixing and decay amplitudes. An amplitude (or Dalitz plot) analysis is crucial in order to determine the strong phase difference as function of the phase space, ultimately allowing to separate the weak and strong phase contributions.