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B–> D** l nu - puzzle 1/2 vs 3/2

Wednesday 10 September 2014 10:25 (20 minutes)

Understanding the composition of final states in B –> Xc l nu could help to get a feedback on the persisting disagreement between exclusive and inclusive determinations of Vcb. In particular the series of orbital excitations D**and radial excitations (D', D*') has received a lot of attention; a misinterpretation as a scalar state of the (D' –> D pi) spectrum tail could have induced an experimental overestimate of the broad states contribution to the total B –> Xc l nu width with respect to theoretical expectations, all of them made however in the infinite mass limit: it is the so-called 1/2 vs 3/2 puzzle. We will describe first attempts to measure on the lattice form factors of B –> D** l nu at realistic quark masses. Cleaner processes, like hadronic decays B –> D**pi and semileptonic decays Bs –> Ds** l nu in the strange sector have recently been examined by phenomenologists, putting new interesting ideas on those issues with, again, the need of lattice inputs.

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