Charm 2012 - The 5th International Workshop on Charm Physics



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D to K and D to pi FF and |V_cs| from Lattice QCD

Wednesday, May 16, 2012 1:30 PM (20 minutes)

Chair: Jason Kumar (UH)

Abstract:

We present a new and very high statistics study of D and D_s semileptonic decay form factors on the lattice. We work with MILC N_f=2+1 lattices and use the Highly Improved Staggered Action (HISQ) for both the charm and the light valence quarks. We use both scalar and vector currents to determine the form factors $f_0(q^2)$ and $f_+(q^2)$ for a range of D and D_s form factors including those for D to pi and D to K semileptonic decays. By using a phased boundary condition we are able to tune accurately to $q^2=0$. We also compare the shape in q^2 to that from experiment, and extract the CKM matrix element |V_cs|. We show that the form factors are very insensitive to the spectator quark: D to K and D_s to eta_s form factors are essentially the same, and the same is true for D to pi and D_s to K. This has important implications when considering the corresponding B/B_s processes.

Presenter: KOPONEN, Jonna (University of Glasgow)

Session Classification: Mixing, CPV, Rare, Charm Amplitudes Session