Contribution ID: **288** Type: **not specified**

D meson semileptonic decay form factors at $q^2 = 0$

Thursday, 26 July 2018 08:30 (20 minutes)

We calculate $D \to Kl\nu, \pi l\nu$ vector form factors $f_+^{K/\pi}$ at zero-momentum transfer, using MILC's $N_f = 2 + 1 + 1$ HISQ ensembles at four lattice spacings, $a \approx 0.042, 0.06, 0.09, 0.12$ fm, and various HISQ quark masses down to the (degenerate) physical light quark mass. We use the kinematic constraint $f_+ = f_0$ at $q^2 = 0$ to determine the vector form factor from our study of the scalar current which yields f_0. We use hard pion/kaon SU(3) heavy-meson-staggered χPT and Symanzik effective theory to fit the data and extrapolate the form factors to the physical point. We improve the precision achieved in existing lattice calculations of the vector form factors at $q^2 = 0$. We also determine the CKM matrix elements $|V_{cs}|$, $|V_{cd}|$ using recent experimental results and test second row unitarity.

Primary author: Dr LI, Ruizi (Indiana University)

Co-authors: Prof. EL-KHADRA, Aida (University of Illinois at Urbana-Champaign); Dr KRONFELD, Andreas (Fermilab); DETAR, Carleton (University of Utah); Prof. BERNARD, Claude (Washington University); Prof. TOUSSAINT, Doug (University of Arizona); Dr GAMIZ, Elvira (University of Granada); Dr VAN DE WATER, Ruth (Fermilab); GOTTLIEB, Steven (Indiana Univ.)

Presenter: Dr LI, Ruizi (Indiana University)

Session Classification: Weak Decays and Matrix Elements

Track Classification: Weak Decays and Matrix Elements