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Charmed semileptonics with twisted-mass valence quarks

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Our charm program uses a mixed action with twisted-mass valence quarks over non-perturbatively improved Wilson sea quarks, in order to study various quantities in a relativistic and manifestly local framework of full QCD. The sea sector consists of $N_f = 2 + 1$ ensembles generated by the CLS initiative. Thanks to open boundary conditions, this offers access to fine ensembles without topological freezing. In this talk I will more particularly present our current progress on $D \rightarrow K \nu l$ and $D \rightarrow \pi \nu l$ semileptonics. Those are mainly useful for the computation of the CKM matrix elements $|V_{cs}|$ and $|V_{cd}|$.

As we will see, all discretisation effects seem to be reasonably under control with this choice of action, in particular those related to hypercubic lattice artefacts. Eventually, we obtain preliminary results of the form factors as a very smooth curve on the whole range of momentum transfer, and in particular the signal at zero q^2 appears to have the potential to be competitive with earlier published results.

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