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## Lattice study of spectator effects in B-hadron decays with Domain-Wall Fermions

*Friday, August 12, 2022 3:30 PM (20 minutes)*

In this talk, we present Lattice QCD measurements for the matrix elements of  $\Delta B = 0$  four-quark operators that involve a light spectator quark in a  $b$ -hadron. These matrix elements contribute to the determination of  $V_{ub}$ , as well as the lifetime ratios of  $b$ -hadrons. Though the historical tension in the  $\tau(\Lambda_b)/\tau(B_d)$ -lifetime ratio has disappeared with newer measurements, much of the machinery we develop can be applied in the future to other puzzles such as the recent inversion of the measured charm-baryon lifetimes. We use  $N_f = 2 + 1$  Domain Wall Fermion (DWF) sea-quarks at two different lattice spacings, as well as DWF light valence quark propagators. The heavy quark is treated as a static propagator, and we use Wilson Flow to improve the signal. We also propose a nonperturbative position-space renormalisation scheme for these dimension 6 operators.

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