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Semileptonic decays of heavy mesons to light hadronic resonances

Semileptonic decays of heavy mesons into resonances are the next logical step to test the Standard Model and search for New Physics. We will present the lattice QCD framework and the first steps in calculating form factors in the $B \to \pi \pi \ell \bar{\nu}$ process to support this endeavor. Our calculation, at this point at a single pion mass ("320 MeV) and lattice spacing ("0.114fm), uses the finite-volume formalism to determine the four different form factors, $V(q^2, s)$, $A_0(q^2, s)$, $A_1(q^2, s)$ and $A_{12}(q^2, s)$ in the high momentum transfer q^2 and low $\pi\pi$ invariant mass s. After a review of the results, we will discuss the outlook and prospects.

Author: LESKOVEC, Luka (Jozef Stefan Institute)

Co-authors: POCHINSKY, Andrew; NEGELE, John (Massachusetts Institute of Technology); PETSCHLIES, Marcus (HISKP, Bonn University); PAUL, Srijit; Prof. MEINEL, Stefan (University of Arizona)