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$B \rightarrow \pi$ semileptonic decay form factors with NRQCD/HISQ quarks

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We report on our ongoing calculation of the $B \rightarrow \pi$ semileptonic decay form factors using NRQCD/HISQ valence quarks with MILC's $N_f = 2 + 1$ asqtad ensembles. The use of HISQ light quarks allows simulation at large pion momenta, corresponding to $q^2 \approx 0$, with controlled $(ap)^2$ errors. We perform a simultaneous chiral, continuum, and kinematic extrapolation using the Hard Pion ChPT modified z expansion developed in Phys. Rev. D 90, 054506 (2014). This approach permits lattice simulation in a kinematic region previously considered inaccessible to lattice QCD and promises significant reduction in form factor uncertainties at low q^2 .

Author: Dr BOUCHARD, Chris (William & Mary)

Co-authors: Dr MONAHAN, Chris (Rutgers); Prof. LEPAGE, G. Peter (Cornell); Prof. SHIGEMITSU, Junko (Ohio State)

Presenter: Dr BOUCHARD, Chris (William & Mary)

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