Form factors for $B_s \to K\ell\nu$ decays from lattice Heavy Quark Effective Theory

Mateusz Koreń

NIC, DESY Zeuthen

On behalf of ALPHA Collaboration,
based on arXiv:1601.04277, accepted in PLB.

Beauty 2016, Marseille, 02-05-2016

Summary & outlook

- After fully non-perurbative renormalization, in LO in HQET we obtain the continuum form factor
  $f_+(q^2 = 21.22(5) \text{ GeV}^2) = 1.63(8)(6)$.
- There is an additional $\sim 15\%$ uncertainty/ambiguity coming from LO treatment in HQET which will be reduced to $1-2\%$ when we include the $O(1/m_b)$ terms, yielding a result of direct phenomenological interest.
- Within errors, our numbers confirm previous lattice estimates of the form factors, despite entirely different source of systematic errors, and the V_{ub} puzzle seems to remain.

Outlook:

- Finish $O(1/m_b)$ matching and analysis.
- Extrapolate to physical π mass $\Rightarrow$ also $B \rightarrow \pi$.
- Map out the q^2 dependence.