

## **b-quark mass and B decay constant from Nf=2 lattice QCD simulations.**

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Precision tests of the Standard Model as well as several New Physics scenarios in the beauty flavour physics are possible, due to the large amount of experimental data already available now and to come in the future. While the theoretical uncertainty is limiting the significance of such tests, lattice QCD offers a powerful approach to compute the necessary non-perturbative hadronic contributions.

We report on the status of the ALPHA Collaboration project of lattice Heavy Quark Effective Theory applied to these problems.

In a first step the b quark mass and the B decay constant are computed with the effect of Nf=2 dynamical quarks

taken into account. The heavy quark is described by HQET (including all effects of order  $1/m_b$ ) in order to keep the cut-off effects under control. Coefficients of the effective theory have been determined non-perturbatively. Hadronic matrix elements are obtained by solving a Generalised Eigenvalue Problem on a matrix of 2-point correlators. We have considered several lattice spacings and sea quark masses to deal with cut-off effects and chiral extrapolation.

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