Contribution ID: **226** Type: **Talk**

A status update on the ALPHA collaboration's project to determine the Lambda-parameter in 3-flavour QCD

Tuesday, 14 July 2015 14:00 (20 minutes)

The ALPHA collaboration has set itself the goal to determine alpha_s(m_Z) with a total error substantially below the percent level. A further step towards this goal can be taken by combining results from the recent simulations of 2+1 flavour QCD by the CLS initiative with a number of tools developed over the years: renormalized couplings in finite volume schemes, recursive finite size techniques, two-loop renormalized perturbation theory and the (improved) gradient flow on the lattice. I will sketch the strategy, which involves both the standard SF coupling in the high energy regime and a gradient flow coupling at low energies. This implies the need for matching both schemes at an intermediate switching scale. Our results for the scale evolution at high energies allow for a well-controlled continuum limit and thus yield the Nf=3 Lambda-parameter in units of this switching scale. Simulations at lower energy scales are underway. I will present first results for the scale evolution of a gradient flow coupling with SF boundary conditions.

Primary authors: RAMOS, Alberto (CERN); DALLA BRIDA, Mattia (NIC@DESY-Zeuthen); FRITZSCH, Patrick (Instituto de Física Teoríca UAM/CSIC); SOMMER, Rainer (NIC@DESY-Zeuthen); SINT, Stefan (Trinity College Dublin); KORZEC, Tomasz (Humboldt-University Berlin)

Presenter: SINT, Stefan (Trinity College Dublin)

Session Classification: Standard Model Parameters and Renormalization

Track Classification: Standard Model Parameters and Renormalization