

General topic: Lattice QCD

Algorithms

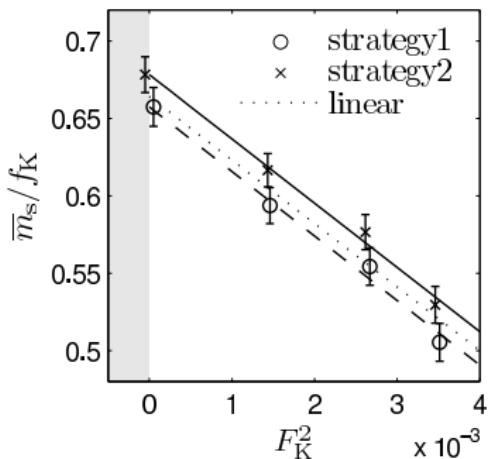
- Find better ways for exploring field space.
- Try to understand algorithmic behavior.
- Implementation.

Phenomenology

- Fundamental parameters (ALPHA collaboration)
- Charm quarks

Strange quark mass

ALPHA'12

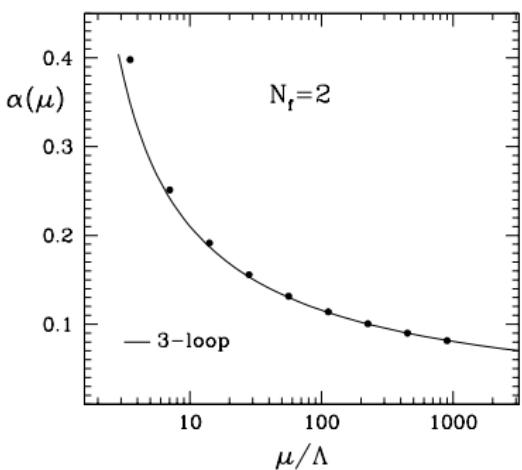


$$\bar{m}_s^{\overline{\text{MS}}}(2 \text{ GeV}) = 102(3)(1) \text{ MeV}$$

- $N_f = 2$, only up and down in the sea.
- Result of a combination of many simulations, performed over more than a decade.

Lambda parameter Λ_{QCD}

ALPHA'01



N_f	$\Lambda_{\overline{\text{MS}}}$	experiment	theory
0	238(19) MeV	$\left\{ m_K, K \rightarrow \mu\nu_\mu, \right.$	ALPHA'94
2	310(20) MeV	$\left. K \rightarrow \pi\mu\nu_\mu \right.$	ALPHA'12
5	212(12) MeV	world average	perturb. theory