Overlap fermions on a twisted mass sea

O. Bär, K. Jansen, S. Schaefer, A. Shindler, L. Scorzato

ETMC meeting February 2007

Set-up

- overlap valence quarks on TM sea
- goal: compute B_K, B_{B_s} and other quantities where chiral symmetry matters
- approach not unitary $\Rightarrow$ continuum limit
- need to match the valence and the sea quarks: pion mass

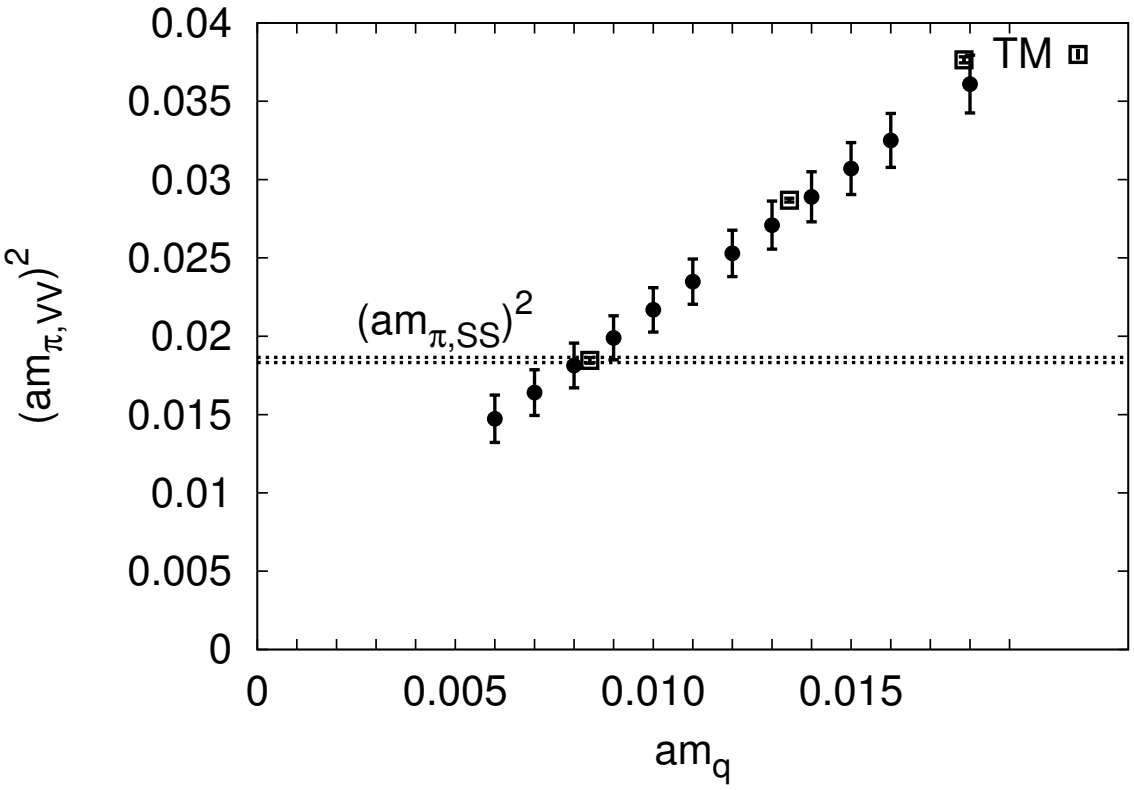
Parameters

- $\beta = 3.9$, $a \approx 0.09$fm
- $\mu = 0.004$
- range of quark masses to interpolate to matching point

- $16^3 \times 32$
- $\kappa = 0.1609$; not at full twist
- 60 configurations

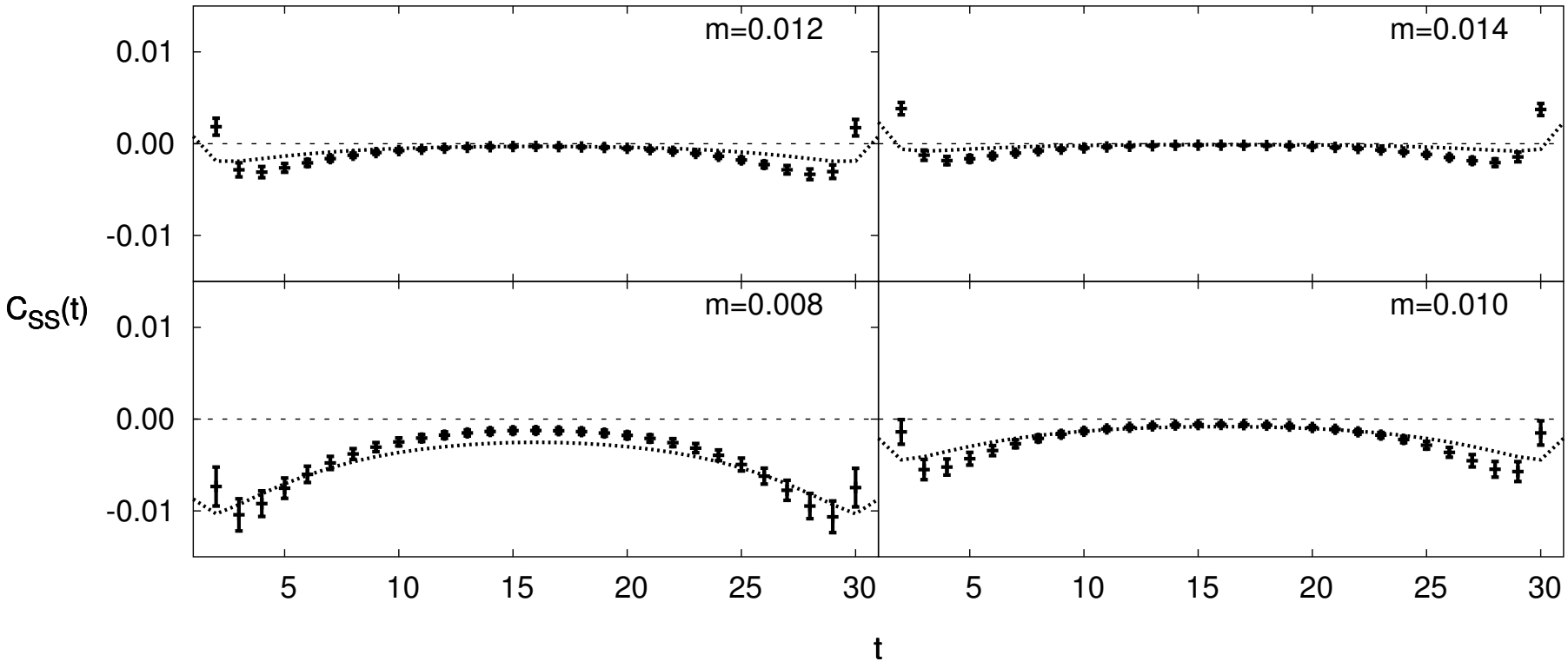
- $24^3 \times 48$
- $\kappa = 0.160856$; full twist
- 60 configurations

Pseudo-Scalar Mass



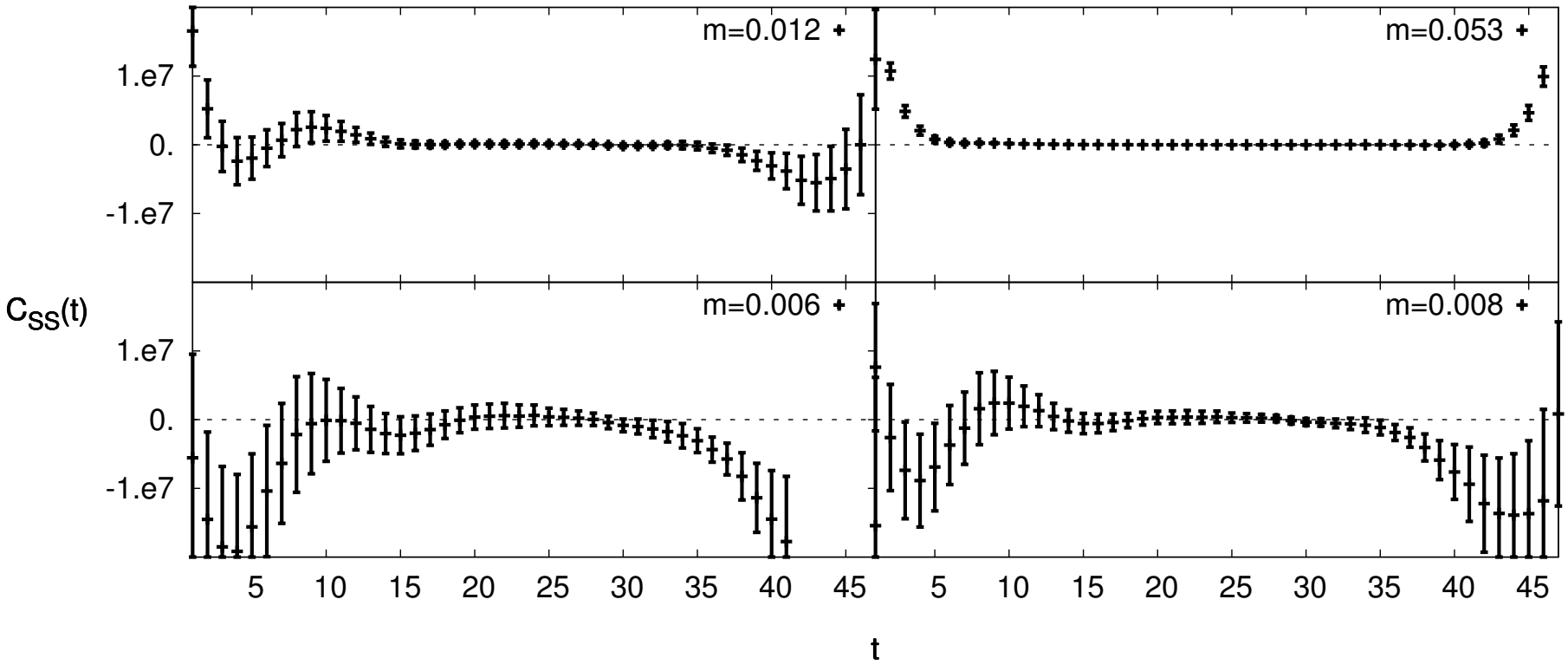
Interpolate to point where the two masses agree

Scalar Correlator $16^3 \times 32$ with LMA



Should be positive in unitary approach

Scalar Correlator $24^3 \times 48$



Summary and Outlook

- overlap propagators on TM sea
- two volumes: $16^3 \times 32$ and $24^3 \times 48$
- physical observables
- second lattice spacing
- second quark mass