

CLS AND GERMAN ACTIVITIES

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23rd International Lattice Data Grid Workshop



Groups and Sites

German participation in the following groups

BMW Jülich, Wuppertal

CLS various collaborations (ALPHA, Mainz, RQCD)
and sites (Berlin, Mainz, Münster, Regensburg,
Wuppertal, Zeuthen)

ETMC Berlin, Hamburg, Münster, Zeuthen → Giannis

QCDSF Hamburg, Jülich, Leipzig, München

RBG Darmstadt, Bielefeld

Disclaimer:

Until two days ago, I was unaware of this presentation.

Resources in Germany

JuQueen at FZ-Jülich
BG/Q System, 5.9 Pflops

Juropa at FZ-Jülich
Bull (Intel based) system, 210 Tflops

SuperMuc LRZ Munich
IBM (Intel based) system, 2.8 Pflops

HLRN-III at HLRN Berlin, Hanover
CRAY XC30, 1.9 Pflops

Clusters based at universities

Coordinated Lattice Simulations

Not a collaboration → no common physics programme

Consortium to generate common set of ensembles

Berlin, Humboldt U
 CERN
 DESY
 Dublin, Trinity College
 Mainz
 Madrid, U Autonoma
 Milano, U Bicocca
 Münster
 Odense
 Regensburg
 Rome, La Sapienza
 Rome, Tor Vergata
 Valencia
 Wuppertal



Based on blanc map ©Fobos92

$N_f = 2 + 1$ flavors of non-perturbatively improved Wilson fermions

Open boundary condition in time

solve problem of topological freezing

simulations at 0.05 fm lattice spacings possible

Twisted mass reweighting

Simulate

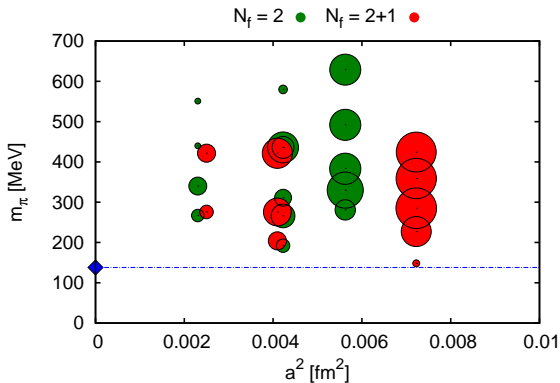
$$\det D \rightarrow \frac{\det^2(D + i\mu\gamma_5)}{\det(D + i\sqrt{2}\mu\gamma_5)}$$

Solves problem of exceptional configurations \rightarrow ergodicity

Reweighting factor included in measurement

Account of simulations: M. Bruno et al, **JHEP 1502** (2015) 043

CLS 2+1 configurations



Comparable statistics in $N_f = 2$ and $N_f = 2 + 1$ project.

$N_f = 2$ production 2007-2012

$N_f = 2 + 1$ one year production \rightarrow 100TB, 25'000 configs ... growing

CLS and the ILDG

Plan to make configurations publicly available via ILDG,
after reasonable delay for first publications

Could be in the not too distant future

Issues for ensemble description

Open boundary conditions → to be implemented

Twisted mass reweighting

Non-standard “action” in simulation

Reweighting factor must be computed for correct measurements.