ETMC Update for LDG Meeting

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Giannis Koutsou for the Extended Twisted Mass Collaboration
Computation-Based Science and Technology Research Centre (CaSToRC)
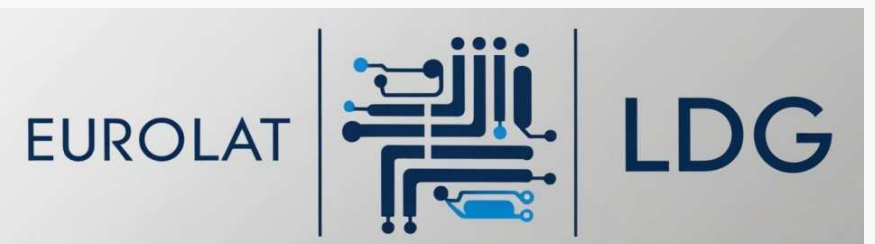The Cyprus Institute

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Source material:

- Based on presentations at:
    - Lattice 2022 Data Session by Bartosz Kostrzewa
    - Lattice 2024 Data Session (G.K.)

- Poster "Status of the ETMC ensemble generation effort" Lattice 2024

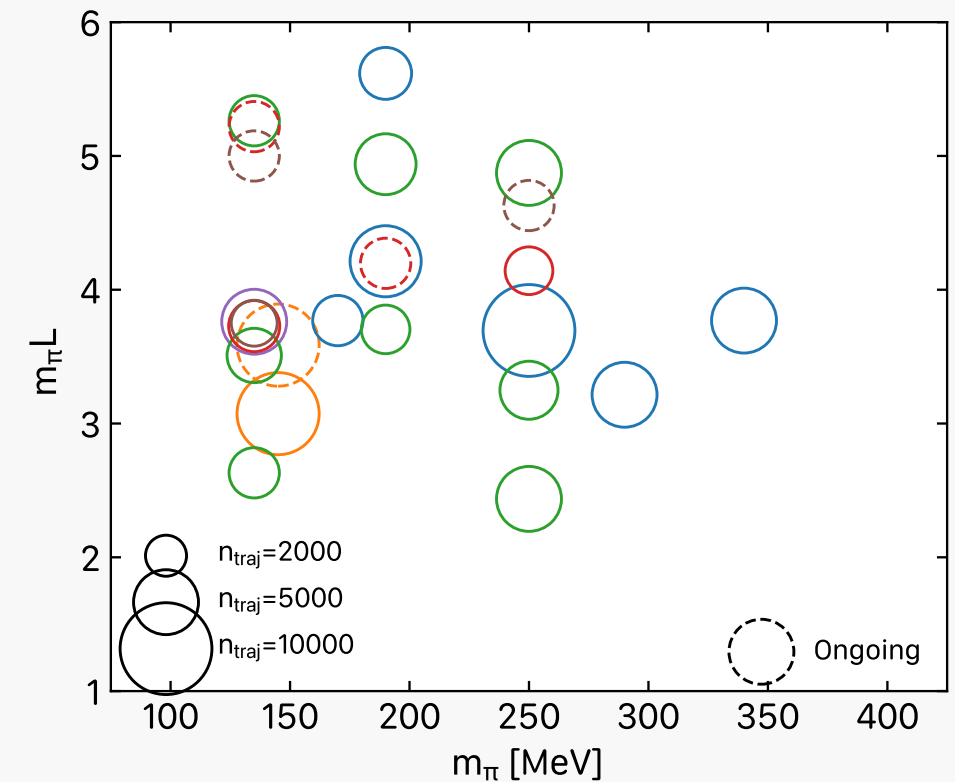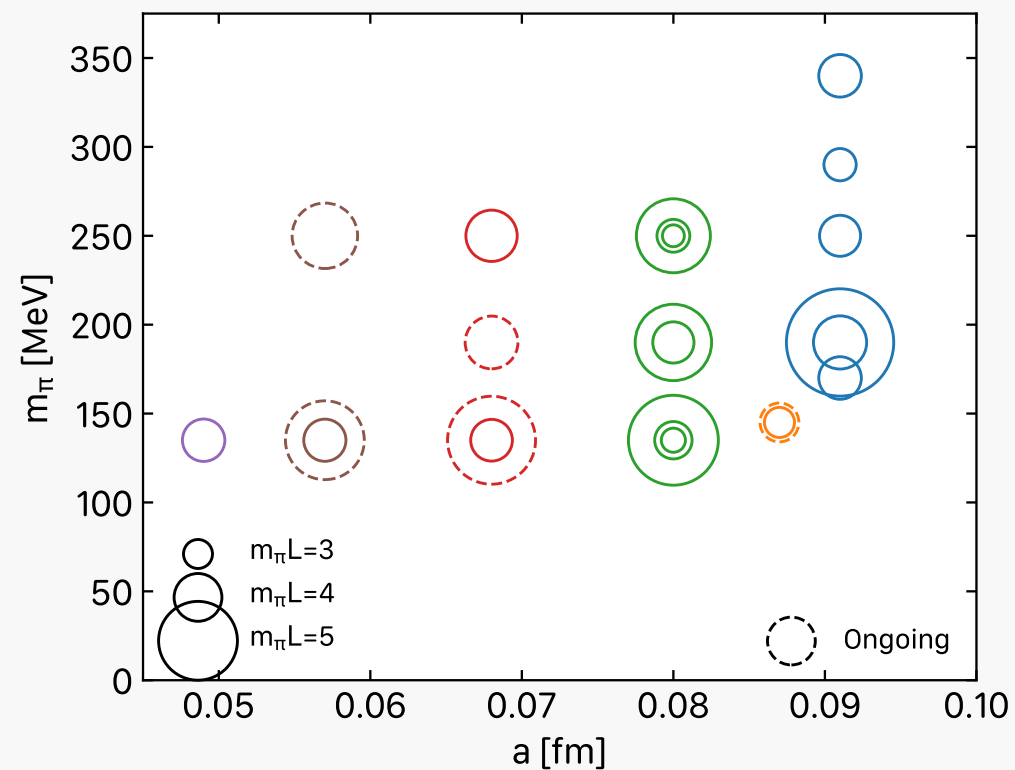EuroLat & LDG meeting
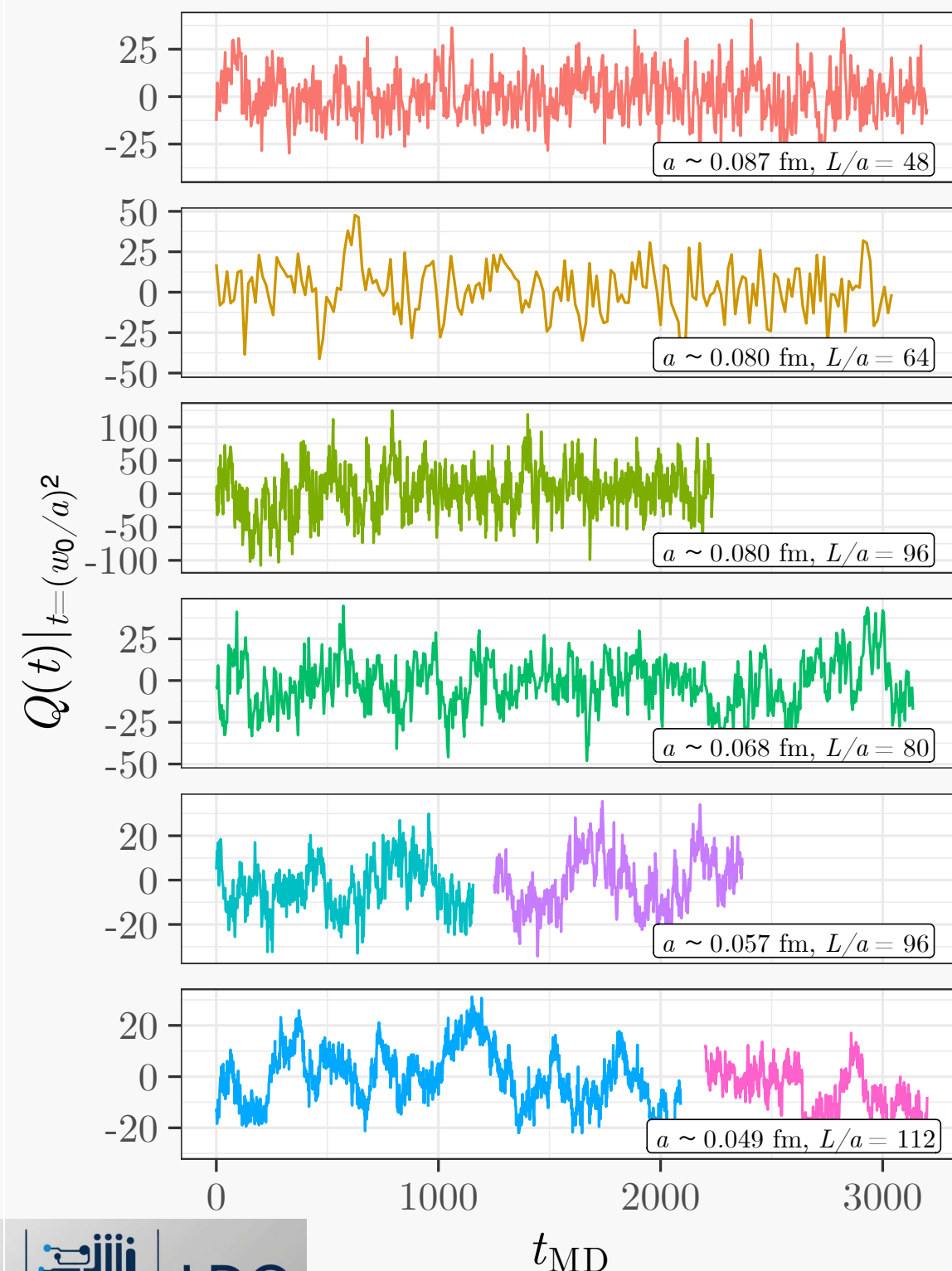Apr. 3rd & Apr. 4th, 2025,
Odense, DK

EUROLAT | LDG

Ensembles overview

– N_f=2+1+1 twisted mass + clover

– Iwasaki gauge action

– Strange- and charm-quark masses tuned to M_{Ds}/f_{Ds}=7.9(1) and m_c/m_s=11.8(2)

Dataset sizes and metadata

Storage info

– 24 ensembles so far

– From 2,500 − 10,000 trajectories

– Largest ensemble ~840 TBytes

– Full set ~3 PBytes so far

Metadata and storage format

– Stored directly to ILDG format

– observables (e.g. *online measurements*) and logs preserved but not within same file

– Metadata example (in lime record):

```
plaquette = 0.596219983240
trajectory nr = 8
beta = 1.960000000000, kappa = 0.137411800000, mu =
0.000440003333, c2_rec = −0.331000
time = 1678941354
hmcversion = 5.2.0
mubar = 0.077707000054
epsilonbar = 0.074647000112
date = Thu Mar 16 06:35:54 2023
```

Main HMC code

– tmLQCD + QUDA, https://github.com/etmc/tmLQCD

Inter-collaboration information storage and sharing

– Rely on "dataprojects" at Jülich for long-term storage and sharing within collab
– Some ensembles also backed up on local systems
– Internal Wiki with ensemble status and limited observable info

Sharing

– Plan remains to make available older N_f=2 ensembles (not presented here)
– N_f=2+1+1 ensembles too; TBD since most still being used for internal projects

Acknowledgements