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# Status of ETMC Ensembles

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## **Source material:**

- Based on presentation at the [Lattice 2022 Data Session by Bartosz Kostrzewa](#)
- Poster “[Status of the ETMC ensemble generation effort](#)” Lattice 2024



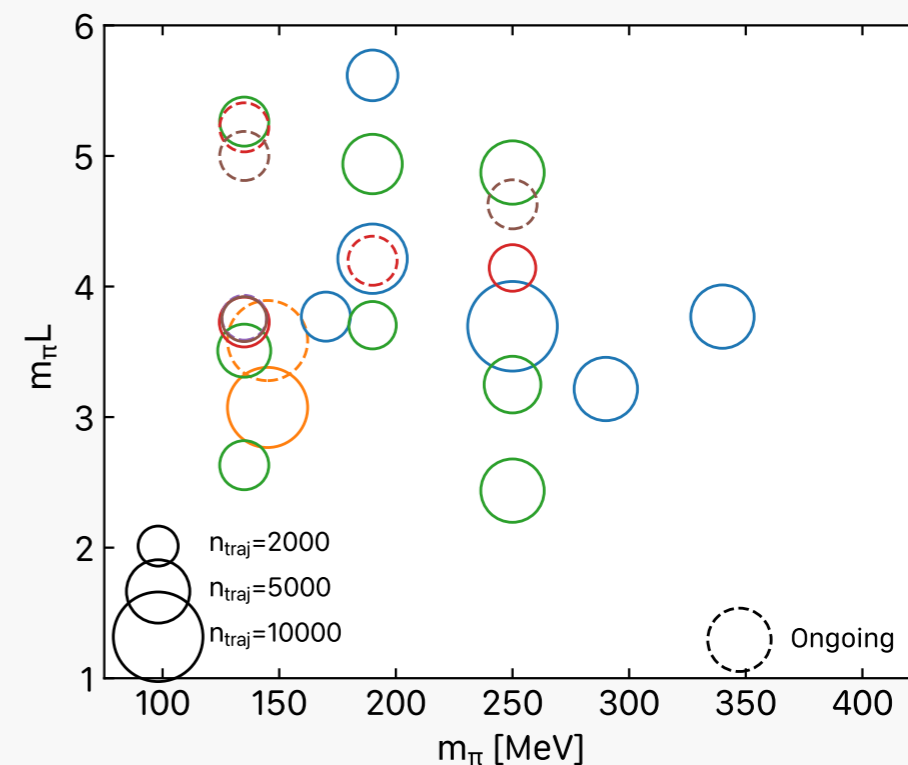
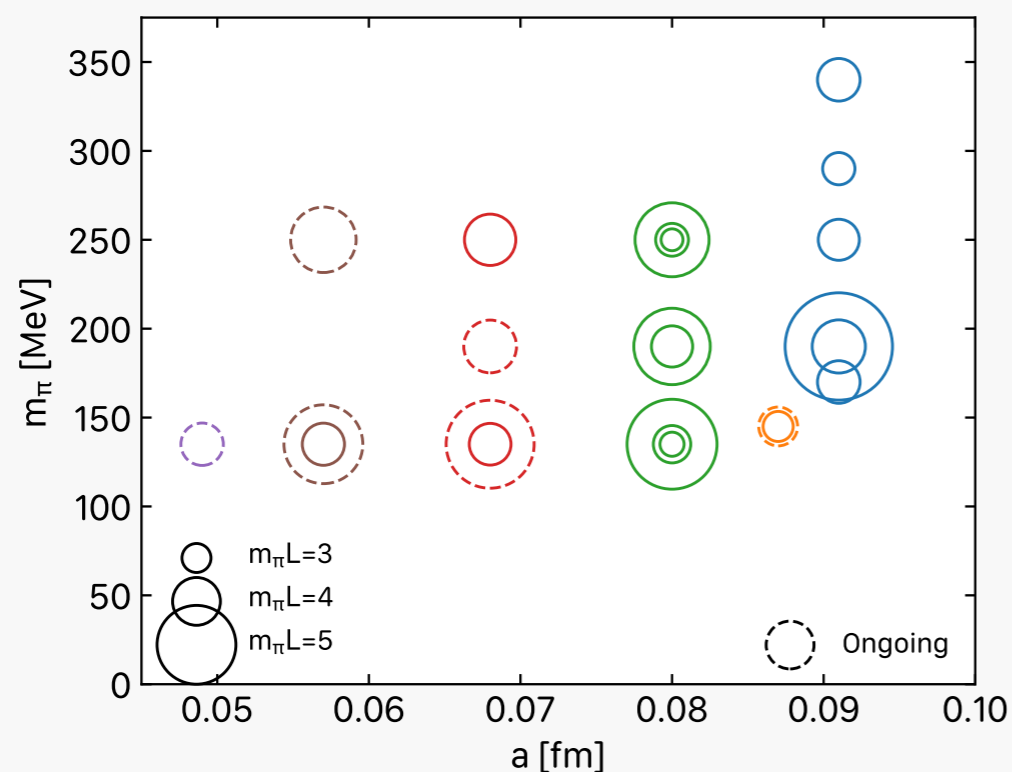
Lattice 2024 – University of Liverpool

Jul. 28<sup>th</sup> – Aug. 3<sup>rd</sup>, 2024,

Liverpool, UK

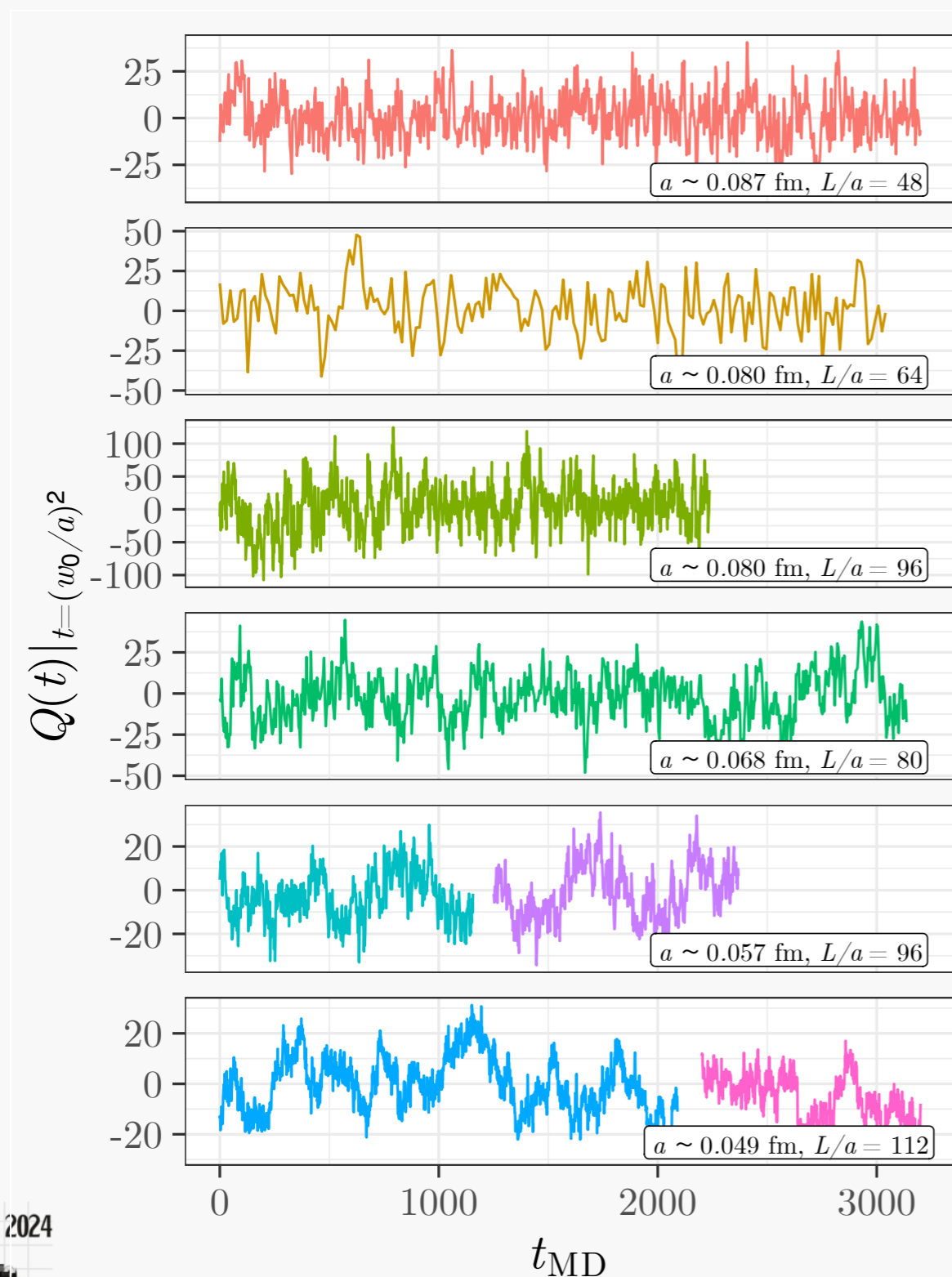


# Ensembles overview



- $N_f=2+1+1$  twisted mass + clover
- Iwasaki gauge action
- Strange- and charm-quark masses tuned to  $M_{D_s}/f_{D_s}=7.9(1)$  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  $\sim 840$  TBytes
- Full set  $\sim 3$  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 “datapoints” 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, but at the moment these are still being used for internal projects

# Acknowledgements



Με τη συγχρηματοδότηση  
της Ευρωπαϊκής Ένωσης



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