

Extracting spectral densities from Lattice QCD correlators

The problem

$$C_{\text{LQCD}}(\tau) = \int dE e^{-E\tau} \rho(E)$$

ill-posed

straightforward

Why?

Non-perturbative calculation of observables

- ▷ Inclusive and exclusive rates
- ▷ τ and heavy mesons decays
- ▷ Radiative leptonic decays
- ▷ Spectroscopy, DIS ecc.

How?

Robust innovative techniques

- ▷ HLT (PRD 99, 094508)
- ▷ Machine Learning (arXiv:2307.00808)

Applications

The R -ratio (PRL 130, 241901)

