

# 11th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



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Typ: Poster

## Stabilizing complex Langevin for real-time gauge theory

*Dienstag, 28. März 2023 18:15 (2 Stunden)*

Direct computations of QCD real-time observables like transport coefficients are very difficult due to the infamous sign problem. The complex Langevin (CL) method is a promising approach to overcome it by using a real-time formulation of QCD on a complex time contour. Studying  $SU(N_c)$  gauge theories with CL, we find that current stabilization techniques are insufficient to obtain correct results. Therefore, we introduce a novel anisotropic kernel that enables CL simulations on discretized time contours. Applying it to  $SU(2)$  pure gauge theory in 3+1 dimensions, we obtain unprecedentedly stable results that may allow us to calculate real-time observables from first principles in the near future.

### Experiment/Theory

Theory/Phenomenology

### Affiliation

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**Track Klassifizierung:** Early time dynamics and nuclear PDFs