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Topological observables and θ dependence in high temperature QCD from lattice simulations

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We discuss topology in Quantum Chromodynamics at high temperatures T
$gtrsim$ 180 MeV obtained from lattice simulations. Our setup consists of $N_f = 2 + 1 + 1$ Wilson twisted mass fermions with physical quark masses and results are extrapolated to the continuum limit. We compare the results for the topological susceptibility obtained with the field-theoretic definition with those obtained from an observable constructed with the disconnected part of the chiral susceptibility, and we confirm their agreement on our range of temperatures. We also study the topological charge distribution, the next order cumulant b_2 and, for the first time, the Free Energy as a function of the θ angle.
We find a rapid crossover to the Dilute Instanton Gas behaviour above $T \simeq 300$ MeV for all the observables we have considered.

Authors: KOTOV, Andrey; TRUNIN, Anton; LOMBARDO, Maria Paola (INFN)

Presenter: KOTOV, Andrey

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