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A new method to determine the topological susceptibility at high-temperature

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At $T > T_c$, the topological susceptibility quickly drops down, although the precise speed of this fall is still subject to theoretical debates. It then becomes practically impossible for lattice QCD to handle volumes large enough to allow non-trivial topology and a precise sampling of the sectors involved in the $\theta = 0$ vacuum. We present a new method applicable to the computation of the decrease of the susceptibility on a wide range of situations, including in particular finite-temperature ensembles with $\chi_t \ll 1/V$. This method distinguishes itself from most other methods by not relying on the $\theta = 0$ vacuum, nor any semi-classical approximation around $\theta = 0$, but only on topology-fixed configurations. We will provide some encouraging preliminary results on quenched ensembles, and discuss the generalisation to any simulation.

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