



**UNIVERSITÄT
BIELEFELD**

Fakultät für Physik

Sayantan Sharma

The Institute of Mathematical Sciences
Chennai/India

Understanding the Topological Fluctuations Near the Chiral Crossover in QCD

It is now known from recent state-of-the-art lattice studies that the non-singlet part of the (approximately good) chiral symmetry is restored in 2+1 flavor QCD through a crossover transition, at a temperature $156.5(1.5)$ MeV, known to a very high precision. This opens up the avenue for several further questions: firstly, what happens to the anomalous singlet part of the chiral symmetry at this region and secondly, what are the topological excitations that are dominant at such temperatures. Recent progress from our studies towards answering both these questions will be discussed. While addressing the second question, we provide some evidences of the existence of a semi-classical ensemble of instanton-dyons, which carry fractional topological charge and how it influences the eigenvalue spectrum and the local Polyakov loop fluctuations.

**Thursday, 03 November 2022,
14:15 in D6-135
www.physik.uni-bielefeld.de**