

## Conserved charges fluctuations from Lattice QCD

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The exploration of the phase diagram of strongly interacting matter is one of the central goals of nuclear physics. Experimentally investigations are ongoing at the RHIC at BNL and the LHC at Cern. These use heavy-ion collision to create the extreme conditions required to explore the different phases of QCD. Recently measurements of conserved charge fluctuations became available from these experiments. These can be immediately connected to results from theoretical ab-initio calculations from Lattice Quantum Chromodynamics (QCD). I will present how we use the hybrid architecture of Titan and multiple levels of parallelism as well as data reuse to obtain high-precision results within out Lattice QCD calculations.