

The 148th HENPIC seminar by Dr. Prithwish Tribedy (Brookhaven National Lab.), September 16, 2021, Thursday, 10:30 am (UTC+8)

Talk title: Blind analysis of isobar data and search for the Chiral Magnetic Effect by the STAR Collaboration

Abstract: Relativistic heavy ion collisions (HICs) at the modern accelerators like the Relativistic Heavy Ion Collider and the Large Hadron Collider provide unique testing ground for the Quantum Chromodynamics (QCD) at high energies. The early stages of such collisions generate highest densities allowed by QCD and eventually leads to the formation of a liquid-like quark-gluon matter that filled the microsecond-old universe. Interestingly, the early stages of HICs also generate the strongest known electromagnetic fields (1018 Gauss) in the universe. The quantum fluctuations in the early stages of such collisions amidst such strong fields can lead to violation of local P and CP symmetries of strong interaction. As a consequence of such extreme conditions one expects to observe novel phenomena such as the Chiral Magnetic Effect (CME). Previous measurements of the CME remain inconclusive because of large background contributions. In order to better control the influence of signal and backgrounds, the STAR collaboration has recently performed a blind analysis on a large data sample of approximately 3.8 billion isobar Ru+Ru and Zr+Zr collisions at $\sqrt{s_{NN}}=200$ GeV at the Relativistic Heavy Ion Collider. In this seminar I will discuss the findings and conclusions from the isobar blind analysis.

[1] M. Abdallah et al. (STAR Collaboration), (2021), arXiv:2109.00131 [nucl-ex]

About the speaker: Prithwish Tribedy is an Associate Physicist at the Department of Physics at the Brookhaven National Laboratory. His research interests lie in the field of relativistic heavy ion collisions with a specific focus on the study of the QCD matter at the high-gluon density, initial state physics and the Chiral Magnetic Effect. He is currently an active member of the STAR experiment at the Relativistic Heavy Ion Collider. He received his Ph.D. degree from the Homi Bhabha National Institute, India in 2015, he then worked as a postdoc at the Brookhaven National Laboratory before becoming a scientist in 2019.