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NITheCS Colloquium
Monday, 27 June 2022, 16h00 – 17h00 SAST

Dr Mawande Lushozi (University of Cape Town)

‘Physics of the Fragmentation Region: Nuclear Compression, Baryon Stopping, and Coloured Glass’

ABSTRACT

The fragmentation region of heavy ion collisions affords us the chance to study baryon-rich nuclear matter in the presence of strong colour fields. I will discuss recent work in which we build a model of the physics of the fragmentation region to get a glimpse of the nature of hot QCD matter at high baryon density.

Our starting point is the work recently carried out by Kajantie, McLerran, and Paatelainen, in which they study the gluon radiation from a classical point particle, struck by a sheet of coloured glass. I will discuss the straight-forward programme of extending their result to understand energy densities in the case of nucleus-nucleus collisions.

There are two contributions to the energy density in the fragmentation region: first, the compression of the struck target nucleus; second, gluon radiation. In this talk, I will focus on the compression and general evolution of the target nuclear matter under the assumption that the constituent quarks follow classical trajectories.

BIOGRAPHY

Dr Mawande Lushozi is a lecturer in the Department of Physics at the University of Cape Town (UCT).

He obtained his PhD from UCT in 2017. Thereafter, he accepted a joint postdoctoral position, spending one year at UCT and three years at the Institute for Nuclear Theory in Seattle, Washington.

Dr Lushozi's research is in high energy nuclear theory with particular interest in applications of the colour glass condensate (CGC) to the fragmentation region of heavy ion collisions.

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