

NITheCS COLLOQUIUM: Gamma-ray bursts: The most powerful explosions in the universe

Prof Soebur Razzaque (University of Johannesburg)

DATE: Monday, 13 May 2024 | 16h00 – 17h00 SAST

VENUES:

- Neelsie Cinema @ Stellenbosch University
- Online

ABSTRACT

Gamma-Ray Bursts (GRBs) have kept astronomers fascinated since their accidental discovery in the early 1970s by military satellites. These bursts in mega electron-volt gamma rays briefly outshine the persistent gamma-ray emission from the entire universe. Now we know that one variety of these bursts, called long-duration GRBs, are death throws of extremely massive stars while another variety, called short-duration GRBs, are final episodes after mergers of two neutron stars in a binary system, emitting gravitational waves along with gamma rays. Located at cosmological distances, these are the most powerful electromagnetic explosions in the universe and can serve as laboratories for fundamental physics. In this talk I will present an overview of GRBs and recent discoveries related to them.

BIOGRAPHY

Soebur Razzaque is a Distinguished Professor of Physics at the University of Johannesburg where he also holds the Directorship of the Centre for Astro-Particle Physics (CAPP). Additionally, he has been appointed a Research Professor at the George Washington University in the USA. His research focuses on astrophysics of extreme sources in the universe such as the gamma-ray bursts and active-galactic nuclei, in particular to understand mechanisms for emission of high-energy cosmic rays, gamma rays and neutrinos. He also researches on the fundamental properties of these particles. Prof Razzaque is a Co-PI of the NITheCS Research Programme: 'New insights into astrophysics and cosmology with theoretical models confronting observational data'.

More information:

[University of Johannesburg Centre for Astro-Particle Physics \(CAPP\)](https://bit.ly/3TNB3sq)
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