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COLLOQUIUM

High-energy heavy-ion collisions in the oxygen era

Dr Isobel Kolbe (University of the Witwatersrand)

DATE: Monday, 3 November 2025 | 16h00–17h00 SAST

VENUES:
- **Stellenbosch University:** Neelsie Cinema
- **North-West University**: Seminar Room K310, Physics Building G5
- **University of the Witwatersrand**: Room P215, 2nd Floor, Physics Building
- **Online**

--- A recording of the talk will be published on the NITheCS YouTube channel afterwards ---

ABSTRACT

A microsecond after the Big Bang, the Universe consisted entirely of matter in an extreme state - the temperature was 100 000 times the temperature of the sun, the density more than twenty times that of normal nuclear matter. We can recreate these conditions in enormous particle colliders in Switzerland and the USA, studying the hottest, most perfect fluid that has existed anywhere in the universe since the Big Bang. I will begin by introducing some of the key insights we can gain from current experiments about the most fundamental constituents of nature. But the heavy-ion community is entering an unprecedented era of discovery as new experiments are proposed that not only aim to answer open questions in high-energy nuclear physics, but also have broad impact in cosmology and nuclear structure. Of course, South African researchers are at the cutting edge of this research, so I will also highlight the global impact of local research.

BIOGRAPHY

Dr Kolbe received her PhD at UCT in 2019 in theoretical high-energy nuclear and particle physics. Her research concerns various aspects of the physics of the quark-gluon plasma (QGP). She then filled postdoctoral research associate positions at the Institute for Nuclear Theory at University of Washington (Seattle, USA) and the Galician Institute for High Energy Physics at the University of Santiago de Compostela (Spain). Dr Kolbe currently holds a position as a lecturer at the Wits School of Physics.

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