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HYBRID EVENT

NITheCS and the Department of Physics at Stellenbosch University jointly present a

COLLOQUIUM:

Moving Towards Quantum Technologies: The Case of Quantum Batteries

Prof Dario Rosa (Institute for Basic Science; University of Science & Technology, South Korea)

Attend in person* or online

***Venue:** Merensky 1011 (Physics Department), Stellenbosch University

Friday, 24 February 2023 | 15h00 – 16h00 SAST

ABSTRACT

Quantum batteries are quantum mechanical systems used as energy storage devices. As with many other proposed quantum devices, ranging from quantum computers to quantum communication systems, they are believed to offer significant advantages over their classical counterparts.

In this talk I will first provide an overview of a few tasks where quantum resources can be successfully applied. I will then focus on the recent progresses, both at the theoretical and experimental level, in proving and understanding the sources of charging speedup that quantum batteries can have over classical batteries.

These progresses are at the core of the newly introduced notion of quantum charging advantage.

BIOGRAPHY

I am a mathematical physicist currently working as Team Leader at the Institute for Basic Science (IBS) and Associate Professor at the University of Science and Technology (UST), in Daejeon, South Korea.

After receiving my PhD in 2014 from the University of Milano-Bicocca, I moved to Korea as a Research Fellow in Seoul National University (SNU), Korea Institute for Advanced Study (KIAS) and Korea Advanced Institute of Science and Technology (KAIST).

Originally conducting research in string theory and quantum gravity, my research interests today focus on quantum many-body systems, quantum chaos and quantum technologies. Currently, the main theme of my research is to understand how quantum chaos (or its absence) affects the physics of quantum many-body systems, and to apply this knowledge to develop new quantum technologies.

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