NITheCS
National Institute for
Theoretical and Computational Sciences

--- WEBINAR ---

Stochastic modelling of stock prices in an illiquid market

Ms Erina Nanyonga (Makerere University, Uganda)

Friday, 4 July 2025 | 14h00 – 15h00 SAST

Attend online or in the Physics Seminar Room, Stellenbosch University

ABSTRACT

The Uganda Securities Exchange (USE) is a public market where one can buy and sell shares from publicly listed firms. USE is illiquid in the sense that the prices remain constant most of the time thus complicating future price predictions. In this paper, we circumvent this challenge by combining the Markov Model (MM) and stochastic differential equations (SDEs); the exponential Ornstein Uhlenbeck model (XOU) and geometric Brownian motion (gBm). In the combined models, the MM was used to capture the constant prices in the stock prices while the SDEs were used to capture the stochastic price dynamics. Results indicate that combining MM with gBm gives more accurate results than combining it with XOU, especially for a short time period.

BIOGRAPHY

Erina Nanyonga is currently pursuing a PhD in Financial Mathematics at Makerere University in Uganda. Her research focuses on the mathematical modeling and analysis of illiquid financial markets, with particular interest in pricing, hedging, and risk management under market imperfections. She is committed to advancing both the theoretical foundations and practical understanding of illiquidity and its implications for financial decision-making. Her work aims to contribute to the broader field of Financial Mathematics, with relevance to academic research and financial practice – particularly in emerging market contexts.

REGISTER
TO ATTEND
https://bit.ly/4nto7pD

SUBSCRIBE
TO THE
NITheCS MAILING LIST:

science, technology & innovation
Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT