

NITheCS COLLOQUIUM:  
**SOFR Term Structure Dynamics - Discontinuous  
Short Rates and Stochastic Volatility Forward Rates**  
*(joint work with Alan Brace and Karol Gellert)*

Prof Erik Schlögl (University of Technology, Sydney, Australia)

Friday, 14 July 2023 | 16h00 – 17h00 SAST

**Venue:** in person\* and online

\* Neelsie Cinema, Stellenbosch University

--- Cheese and wine will be served at the venue ---

## ABSTRACT

As more and more jurisdictions transition from LIBOR--type interest rate benchmarks to new riskfree rate (RFR) benchmarks based on overnight rates, such as SOFR in the US, it is important to adapt interest rate term structure models to reflect this. In particular, overnight rates are largely driven by monetary policy and thus display dynamics that are (at least to first order) piecewise constant between central bank rate decisions, while forward rates continue to evolve in a more diffusive fashion. We construct a tractable multifactor, stochastic volatility term structure model which incorporates these features. Calibrating to prices for options on SOFR futures, we achieve a good fit to the market across available maturities and strikes in a single, consistent model. The model also provides novel insights into SOFR term rate behaviour (and implied volatilities) within the SOFR term rate accrual periods, as well as into empirical mean reversion dynamics.

## BIOGRAPHY

Erik Schlögl is a Professor in the School of Mathematical and Physical Sciences at the University of Technology, Sydney (UTS), Australia, focusing on Financial Mathematics and Quantitative Finance. Erik received his PhD in Economics from the University of Bonn, Germany, for work on term structure models and the pricing of fixed income derivatives. He has gained broad-based experience in computational financial engineering. He has consulted for financial institutions and software developers in Europe, Australia and the US, and served as an expert witness in cases before the Federal Court of Australia. His research interests cover a broad area of quantitative finance, in particular model calibration, interest rate term structure modelling, credit risk and the integration of multiple sources of risk. He is an honorary professor at the University of Cape Town and holds an honorary appointment at the University of Johannesburg.



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