

**Matheus Grasselli (McMaster Univ., Canada)**

**Title: Dynamical Systems and Financial Instability - new modelling insights and empirical validation**

**Abstract:**

The 2007-08 financial crisis was a wake-up call to mathematicians working in the area of quantitative finance. Because the financial instruments that relied on sophisticated mathematics collateralized debt obligations (CDOs) and other structured products were at the very centre of the crisis, many started to look for general models that likewise would put finance at the core of economic activity. It came as somewhat of a surprise that mainstream macroeconomic models, for example the Dynamic Stochastic General Equilibrium (DSGE) models routinely adopted by central banks around the world, had no fundamental role for banks, or financial markets for that matter, other than that of passive intermediaries. The exceptions were the models used by heterodox economists such as Steve Keen following earlier work by, among others, Hyman Minsky and Wynne Godley in the context of stock-flow consistency. In these lectures I will analyze the systems of equations obtained in this way using the tools of modern dynamical systems theory, including bifurcations, global estimates, and topological properties.

Program:

- Introduction to Stock-Flow Consistent Models
- Data sources: Flow of Funds and NIPA
- Review of the Goodwin model and its extensions: CES production function, savings and equities, inflation
- Review of the Keen model and its extensions: variable capacity utilization, inventory dynamics, equity prices
- Parameter estimation: testing the Goodwin and Keen models for OECD countries