**Introduction to High Frequency Financial Econometrics**

Alexei Kolokolov (Alliance Manchester Business School, UK)
*Visiting DEF from September 16 to 27*

The course provides an introduction to high frequency financial econometrics with emphasis on understanding the core theory and its applications. Topics include financial price modelling in continuous time (jump diffusions, semimartingales), volatility estimation and forecasting using high-frequency data and overview of recent developments, such as measurement errors (noise) and inference for the drift. The primary focus is on understanding and applying the main theorems with the ideas made understandable by application to observed data at realistic frequencies.

Nowadays financial econometrics has evolved into a highly sophisticated discipline, characterized by elevated mathematical rigor and complexity.

However, the objective of this course is not in explaining the mathematical details of derivations or reproducing the details of the proofs. It is rather in explaining the main ideas of the theory and relevant mathematical concepts intuitively to render financial econometrics more accessible for a broader audience.

The course is intended for both those students seeking a general background in high frequency financial econometrics for possible use in other areas and for the potential specialists who need some exposure to the frontiers of the sub-field.

The main objectives of the seminars are the following:

1. Main objective of the course is to gain the amount of knowledge of highfrequency econometrics sufficient for understanding current academic literature.

2. Understanding financial price modelling in continuous time (diffusions and jumps).

3. Understanding the difference between high-frequency econometrics and classical time series financial econometrics.

4. Understanding the principle of realized variance. Studding the current approaches to volatility predictions.

5. Understanding the challenges faced by an econometrician/practitioner, which appear in applications.