



SAID BUSINESS SCHOOL, University of Oxford

SEMINAR SERIES / MICHAELMAS 2011

Convenors: Felix Reed-Tsochas, Institute for Science, Innovation and Society,
Saïd Business School
Eduardo López, Saïd Business School

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Seminar webpage:
www.cabdyn.ox.ac.uk/complexity_seminars.asp

Sandwiches and drinks will be provided

Please note: although the seminar programme detailed was correct at time of printing, seminar arrangements are subject to change - for the latest information, please check the seminar webpage.

Tuesday 18th October
(12.30pm - 2.00pm) James Martin Seminar Room

Lauri Kovanen
Department of Biomedical Engineering and Computational Science,
Aalto University School of Science

'Temporal motifs in time-dependent networks'

ABSTRACT

Large empirical social networks are usually obtained by aggregating temporal data; for example the mobile phone networks are created by aggregating mobile phone calls over some time period. The aggregation however discards all information contained in the timing of the events, something that has turned out to be highly non-trivial. We define temporal subgraphs so that they include information not only about the topology but also about the mutual order of the events, and then divide the temporal subgraphs into equivalence classes called temporal motifs. Our implementation allows identifying temporal motifs in a mobile phone data set with hundreds of millions of calls, and the results highlight well the role that burstiness and causality play in communication. The method also allows studying differences in temporal motifs between different users groups, defined for example by gender or age.

