



**POLITECNICO
DI TORINO**



Dipartimento di
Scienze Matematiche
G. L. Lagrange

ECCELLENZA 2018 • 2022

Thursday the **29 November 2018** at 11:30

Politecnico di Torino, Aula 21A

Camille POIGNARD

Postdoctoral Researcher at University of São Paulo

Some Results on the Effects of Structural Perturbations on the Dynamics of Networks

Prof. Giacomo Como introduces the seminar

Abstract

In this talk, Dr Poignard will present some results obtained on the effects of structural perturbations on the global dynamics of networks, in terms of their synchronisation and their chaotic behaviour. These topics are of interest in the context of power grids, where people want to prevent from having blackouts, as well as for neural networks, where synchronisation is responsible for many diseases, such as Parkinson.

In the central part of the talk, he will present some classification results obtained (joint work with Tiago Pereira from the University of Sao Paulo and Jan Philipp Pade from the Humboldt University of Berlin) on the effects of adding links on the synchronizability of diffusively coupled networks. Namely, these results, which based on spectral properties for Laplacian matrices, permit to know partially which links should be added to increase the synchronizability and which links, if added, decrease it. At the end of the talk, he will briefly explain how adding links in other types of networks (namely in gene regulatory networks) can lead to a chaotic behaviour characterised by a positive entropy.

Biography

Camille Poignard is a Postdoctoral researcher at the University of Sao Paulo. His research area are the Applied Nonlinear Dynamical Systems, and he focuses more precisely on the dynamics of complex networks, whether these are modelled by coupled map networks (in discrete time), by ODEs, or again by delay differential equations. Camille focuses on the emergence and the tracking of synchronisation phenomena, chaotic behaviours and periodic oscillations in real-world networks.

Save the date for the next event: *December 04, 2018*

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