



CENTRE DE RECERCA MATEMÀTICA

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## Non-binary maximum entropy network ensembles applied to the study of urban mobility

### Abstract:

Complex networks grow subject to structural constraints which affect their measurable properties. Assessing the effect that such constraints impose on their observables is thus a crucial aspect to be taken into account in their analysis and null models are needed for this end.

In this talk, I will explore a technique for generating null model surrogates of networks with given constraints where multiple or non-dichotomic connections among nodes are allowed. We develop a statistical mechanics framework based on entropy maximization considering hard constrained ensembles as well as soft constrained ones.

We will also discuss the effective generation of network instances belonging to each model. To exemplify the use of such null models for the analysis of real data in network form, we conclude by presenting a practical application based on our theoretical work to reliably extrapolate mobility records from a reduced sample.

**Date:** December 1, 2016

**Place:** Room C1/028

**Time:** 12:00

