PIPGES · WEBINARS

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The video call link will be available at:

https://tiny.one/peron-t

Interinstitutional Graduate Program in Statistics (PIPGES) of Federal University of São Carlos with University of São Paulo promotes seminars groups (temporarily webinars, due to pandemic issues) of researches involving Probability, Statistics, Machine Learning etc. Our interest, among other things, is to stimulate the sharing of knowledge, as well as the connection between members of the program and researchers in other institutions.

Organizer

Michel H. Montoril, Department of Statistics,
Federal University of São Carlos.

NETWORK PROCESSES ON CLIQUE-NETWORKS WITH HIGH AVERAGE DEGREE: THE LIMITED EFFECT OF HIGHER-ORDER STRUCTURE

In this talk we will investigate the effect of local structures on network processes. In particular, we consider a random graph model that incorporates local clique structures and thus deviates from the locally tree-like behavior of most standard random graph models. For the process of bond percolation, we derive analytical approximations for large percolation probabilities and the critical percolation value. Interestingly, these derivations show that when the average degree of a vertex is large, the influence of the deviations from the locally tree-like structure is small. In our simulations, this insensitivity to local clique structures often already kicks in for networks with average degrees as low as 6. Furthermore, we show that the different behavior of bond percolation on clustered networks compared to tree-like networks that was found in previous works can be almost completely attributed to differences in degree sequences rather than to differences in clustering structures. We finally show that these results also extend to completely different types of dynamics by deriving similar conclusions and simulations for coupled oscillators on the same types of clustered and non-clustered networks.

SPEAKER

Thomas Peron · ICMC-USP

BIO

Graduação em física computacional (2010) pelo IFSC/USP, e mestrado (2013) e doutorado (2017) em física aplicada também pelo IFSC/USP, com um ano de estágio no Potsdam Institute for Climate Impact Research, na Alemanha, durante o doutorado. Pós-doutorado no ICMC/USP e no Instituto de Biocomputação e Física de Sistemas Complexos da Universidade de Zaragoza, Espanha. Desde Junho de 2022, professor doutor no ICMC/USP. Sua pesquisa se insere na área de sistemas complexos, concentrando-se mais especificamente no estudo de dinâmicas não-lineares em grafos, aplicações de teoria de matrizes aleatórias a problemas de redes complexas, e análise e visualização de dados.

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