

# SPECIAL SESSION: PROBABILITY

## VI WORKSHOP ON PROBABILISTIC AND STATISTICAL METHODS

This session will be held on Wednesday, February 7, at the Auditório 3, Biblioteca Comunitária - UFSCar

14:30 - 15:00

### The fitness of the strongest individual in the subcritical GMS model

Carolina Bueno Grejo - ICMC/USP

We deduce explicitly the strongest individual fitness distribution on a variation for GMS model, proposed by Guiol, Machado and Schinazi. We point out to the fact that this distribution relies on the Gauss hypergeometric function and when  $p = 1/2$  on the hypergeometric function type I distribution. This is a joint work with Fábio Machado and Alejandro Roldán-Correa.

15:00 - 15:30

### Global survival of tree-like branching random walks

Cristian Coletti - CMCC/UFABC

The reproduction speed of a continuous-time branching random walk is proportional to a positive parameter  $\lambda$ . There is a threshold for  $\lambda$ , which is called  $\lambda_w$ , that separates almost sure global extinction from global survival. Only for some classes of branching random walks it is known that the global critical parameter  $\lambda_w$  is the inverse of a certain function of the reproduction rates, which we denote by  $K_w$ . We provide here new sufficient conditions which guarantee that the global critical parameter of tree-like branching random walks equals  $1/K_w$ . This result is part of a joint work with Bertacchi, D. and Zucca, F. (ALEA, v. 14, p. 381-402, 2017).

15:30 - 16:00

### Decay of Correlations for renewal, touching Morse and Fibonacci

Miguel Abadi - IME/USP

For a renewal process simulations a Morse code, we compute explicitly and exactly its decay of correlations. The technique is via solution of recursive linear sequence of second order. A general method is presented. The relation with the Perron Frobenius Operator appears at the end of the talk.

16:00 - 16:30

### The connection between evolution algebras, random walks and graphs

Mary Luz Rodiño Montoya - Universidad de Antioquia

Evolution algebras are a new type of non-associative algebras inspired from biological phenomena. A special class of such algebras, called Markov evolution algebras, is strongly related to the theory of discrete time Markov chains. The winning of this relation is that many results coming from Probability Theory may be stated in the context of Abstract Algebra. In this work we explore the connection between evolution algebras, random walks and graphs. More precisely, we study the relationship between the evolution algebra induced by a random walk on a graph and the one determined by the same graph. This is a joint work with Paula Cadavid and Pablo Rodríguez.