

Chilean Probability Seminar

Speaker: Luis Fredes (Université de Bordeaux)

Title: Almost triangular Markov chains on \mathbb{N}

Abstract:

A transition matrix U on \mathbb{N} is said to be almost upper triangular if $U(i,j) \geq 0 \Rightarrow j \geq i-1$, so that the increments of the corresponding Markov chains are at least -1 ; a transition matrix L on \mathbb{N} is said to be almost lower triangular if $L(i,j) \geq 0 \Rightarrow j \leq i+1$, and then, the increments of the corresponding Markov chains are at most $+1$. In this talk I will characterise the recurrence, positive recurrence and invariant distribution for the class of almost triangular transition matrices. These results encompass the case of birth and death processes (BDP), which are famous Markov chains being simultaneously almost upper and almost lower triangular. Their properties were studied in 50's by Karlin & McGregor whose approach relies on some profound connections between the theory of BDP, the spectral properties of their transition matrices, the moment problem, and the theory of orthogonal polynomials. Our approach is mainly combinatorial and uses elementary algebraic methods. Joint work with J.F. Marckert

**Esta sesión se desarrollará de manera híbrida en la Sala Multimedia del CMM.
Beauchef 851, Edificio Norte.**

Wednesday, September 21, 2022, 16:15 hrs (Chilean time).

