

Seminario de Probabilidades de Chile

Orador: Sylvie Méléard (École Polytechnique, Francia)

Título: Long time asymptotics for critical birth and death diffusion processes.

Resumen: We study the long time behavior for the distribution of a critical birth and death diffusion process, motivated by population dynamics in changing environment (cf. a recent paper by Calvez, Henry, Méléard, Tran). The birth rates are bounded but death rates are unbounded. Our analysis is based on the spectral properties of the associated Feynman Kac semigroup. We require a standard spectral gap property for this semigroup with a dominant eigenfunction vanishing at infinity. Some examples of diffusions, diffusions with jump, pure jump dynamics are given for which it is true. We consider situations where the underlying diffusion process doesn't come down rapidly from infinity but the compactness properties follow from the divergence of the death rate at infinity.

We prove the convergence in law of the branching diffusion process suitably normalized and conditioned to non-extinction. We also prove the existence of the Q -process. The main tool is the convergence of suitably normalized moments of the process, which follows from recursive relations for these moments.

This is a joint work with Pierre Collet and Jaime San Martín.

El enlace para conectarse al seminario es:

Unirse a la reunión Zoom

<https://reuna.zoom.us/j/84521834914?pwd=OTZ6Y0NWM3pYTGtTbEt3c0luTG96UT09>

ID de reunión: 845 2183 4914

Código de acceso: 997973

**Modalidad híbrida en la sala Maryam Mirzakhani, Torre Norte Piso 6, , Beauchef 851.
Miércoles 19 de Marzo 2025 a las 16:15 horas.**