UNIVERSIDAD DE GRANADA

Departamento de
Estadística e
Investigación Operativa

Conferencias: Una perspectiva general sobre algunos modelos estocásticos de crecimiento

10/01/2025

Seminario 1: Growths equations and their stochastic generalizations: modeling and inference.

Fecha:14 de enero de 2025, 9:00 horas. Lugar: Seminario 1 del IMAG.

In this seminar the introduction of stochasticity in growth equations is developed. In particular, the introduction of noise within the growth equations is discussed, distinguishing between multiplicative and additive noises. The resulting stochastic diffusion processes and their parametric inference procedures are discussed. Results for a general growth curve including a wide family of growth phenomena are shown. Maximum likelihood method is discussed, and its solution is obtained by means of metaheuristic techniques. Several simulation studies and an application to real data are performed. The discussion of the topics will be approached from an informal and not analytic point of view, to provide students with the basic idea of these topics, favoring the intuitive aspect over methodological rigor.

Seminario 2: Stochastic SIR model including growths: modeling and inference.

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Fecha:15 de enero de 2025, 9:00 horas. Lugar: Seminario 1 del IMAG.

In this talk the focus is on epidemiological models. In particular, the background of Susceptible-Infected- Removed model is discussed, emphasizing the role of the contribution of each subpopulation. The role of stochasticity in such models is also addressed. However, the main contribution is made to the inference for SIR models. For a SIR stochastic model, able to include the natural growth of the Susceptible population, the inference is addressed by means of a quasi-maximum likelihood method. Numerical procedures for determining the local maxima of the likelihood function are discussed. Emphasis is placed on the problems associated with the use of such techniques and some insights are provided.

Breve semblanza de Giuseppina Albano

Giuseppina Albano es profesora titular de Estadística en la Universidad de Salerno, Italia. Es miembro de la Sociedad Italiana de Estadística (SIS) y del Grupo Italiano de Cálculo Científico (GNCS). Sus intereses científicos se centran en los procesos de difusión estocásticos, la inferencia y las aplicaciones de los procesos de difusión en diversos campos, como la economía y la biología.

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