



# Conferencia del Seminario de Métodos Estadísticos

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## Particle Swarm Optimization: fundamentals and extensions to multiple objectives

This talk introduces Particle Swarm Optimization (PSO), a stochastic population-based metaheuristic inspired by the collective behavior of bird flocks and fish schools. It presents the basic principles of PSO, including particle movement, velocity update rules and the roles of cognitive and social components in the search process. Variants such as inertia weight, constriction factor and different communication topologies are briefly discussed, together with their influence on convergence and exploration. The talk also highlights some application areas of PSO and extends the discussion to multiobjective optimization (MOPSO), introducing the main ideas behind MOPSO and the challenges of approximating the Pareto front.

**Fecha:** miércoles, 25 de marzo de 2026

**Hora:** 12:00 horas

**Lugar:** Seminario Rubio de Francia (Edificio de Matemáticas, Planta 1ª).

**Online:** <https://meet.google.com/rvf-vivn-uyt>