



XXXIV COMCA

Congreso de Matemática Capricornio

Universidad de La Serena

Julio 22 - 24, 2026, La Serena, Chile

Euler Scheme for Stochastic Functional Differential Equations Driven by Fractional Brownian Motion

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Abstract

In this talk, we study a stochastic functional differential equation (SFDE) with memory driven by a fractional Brownian motion (fBm) with Hurst parameter $H > 1/2$. An Euler-type numerical scheme is proposed and analyzed under suitable regularity conditions on the drift and diffusion coefficients, we prove the convergence of the scheme and derive the corresponding rate in terms of the discretization step. The main result will be proved using two different methodologies. The first proof is developed using tools from fractional calculus, whereas the second proof is based on the rough paths framework.

Joint work with: Alexander Abreu, Héctor Araya, Johanna Garzón, Lisandro Fermín, Jorge León and Jorge Lozada.

*Partially supported by CMM - BASAL Fund FB210005 for Centers of Excellence from ANID-Chile and Fondecyt 1230807. e-mail: Soledad.torres@uv.cl