Publicacions més rellevants de la línia de recerca:

Anàlisi Estocàstica

Referència: Hu Y., H., Nualart, D., Jian Song, J.Fractional martingales and characterization of the fraccional Brownian motion. *Annals of Probability.* **37(6)** (2009), pp. 2404–2430.

Abstract: In this paper we introduce the notion of fractional martingale as the fractional derivative of order a of a continuous local martingale, where $a \in (-1/2, 1/2)$, and we show that it has a nonzero finite variation of order $2/(1+2a)$, under some integrability assumptions on the quadratic variation of the local martingale. As an application we establish an extension of Lévy's characterization theorem for the fractional Brownian motion.

Referència: Nualart, D., Ortiz, S. Central limit theorems for multiple stochastic integrals and Malliavin calculus. *Stochastic Processes and Their Applications.* **118** (2008), pp 614–628.

Abstract: We give a new characterization for the convergence in distribution to a standard normal law of a sequence of multiple stochastic integrals of a fixed order with variance one, in terms of the Malliavin derivatives of the sequence. We also give a new proof of the main theorem in [D. Nualart, G. Peccati, Central limit theorems for sequences of multiple stochastic integrals, Ann. Probab. 33 (2005) 177-193] using techniques of Malliavin calculus. Finally, we extend our result to the multidimensional case and prove a weak convergence result for a sequence of square integrable random vectors, giving an application.

Referència: Nualart, D., Ortiz, S. An Itô-Stratonovich formula for Gaussian processes: A Riemann sums approach. *Stochastic Processes and their Applications.* **118** (2008), pp. 1803–1819.

Abstract: The aim of this paper is to establish a change of variable formula for general Gaussian processes whose covariance function satisfies some technical conditions. The stochastic integral is defined in the Stratonovich sense using an approximation by middle point Riemann sums. The change of variable formula is proved by means of a Taylor expansion up to the sixth order, and applying the techniques of Malliavin calculus to show the convergence to zero of the residual terms. The conditions on the covariance function are weak enough to include processes with

infinite quadratic variation, and we show that they are satisfied by the bifractional Brownian motion with parameters (H, K) such that $1/6 < HK < 1$, and, in particular, by the fractional Brownian motion with Hurst parameter $H \in (1/6, 1)$.