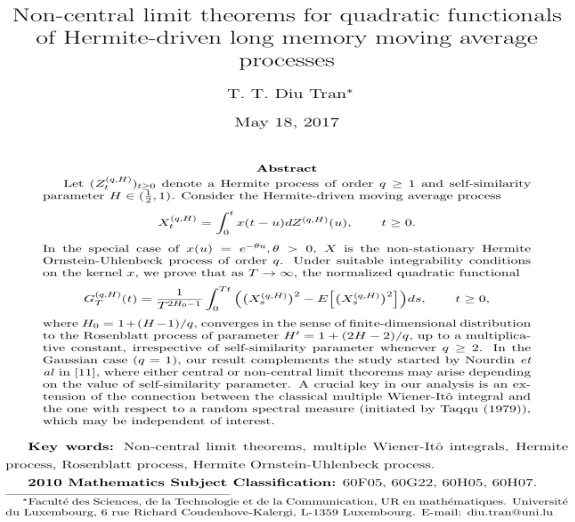
Multiple Wiener-Ito Integrals: With Applications To Limit Theorems



Non-central limit theorems for quadratic functionals of Hermite-driven long memory moving average processes

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Abstract

Let $(Z_t^{(q,H)})_{t\geq 0}$ denote a Hermite process of order $q \geq 1$ and self-similarity parameter $H \in (\frac{1}{2}, 1)$. Consider the Hermite-driven moving average process

$$X_t^{(q,H)} = \int_0^t x(t-u) dZ^{(q,H)}(u), \qquad t \geq 0.$$

In the special case of $x(u) = e^{-\theta u}, \theta > 0$, X is the non-stationary Hermite Ornstein-Uhlenbeck process of order q. Under suitable integrability conditions on the kernel x, we prove that as $T \to \infty$, the normalized quadratic functional

$$G_T^{(q,H)}(t) = \frac{1}{T^{2H_0-1}} \int_0^{Tt} \left((X_s^{(q,H)})^2 - E\left[(X_s^{(q,H)})^2 \right] \right) ds, \qquad t \geq 0,$$

where $H_0 = 1 + (H-1)/q$, converges in the sense of finite-dimensional distribution to the Rosenblatt process of parameter $H' = 1 + (2H-2)/q$, up to a multiplicative constant, irrespective of self-similarity parameter whenever $q \geq 2$. In the Gaussian case ($q = 1$), our result complements the study started by Nourdin *et al* in [11], where either central or non-central limit theorems may arise depending on the value of self-similarity parameter. A crucial key in our analysis is an extension of the connection between the classical multiple Wiener-Itô integral and the one with respect to a random spectral measure (initiated by Taqqu (1979)), which may be independent of interest.

Key words: Non-central limit theorems, multiple Wiener-Itô integrals, Hermite process, Rosenblatt process, Hermite Ornstein-Uhlenbeck process.

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Chaos Expansions, Multiple Wiener-Ito Integrals, and Their Applications - CRC a chapter on chaos random variables appearing in many limiting theorems.In book: Multiple Wiener-Ito Integrals with Application to Limit Theorems, Edition: Lecture Notes in Mathematics, Chapter: 4, Publisher: Springer.The study of chaos expansions and multiple Wiener-Ito integrals has techniques, and applications of multiple Wiener-Ito and related integrals. The second part includes papers on chaos random variables appearing in many limiting theorems.recent central limit theorems of Nourdin and Peccati [26] in the Wiener chaos context. it introduces the concept of multiple Ito integral and Wiener chaos decomposition. The Often one uses the integral notation. ?. Mn.Former Library book. Shows some signs of wear, and may have some markings on the inside. % Money Back Guarantee. Shipped to over one million happy.Central limit theorems for multiple stochastic integrals and Malliavin calculus Consider a sequence of random variables F k belonging to the n th Wiener chaos , n ? 2 There have been different extensions and applications of these results.Limit Theorems for Empirical Processes under Dependence, M.A. Arcones and B. Yu. Mixing for Multiple Wiener-Ito Integral Processes, D.W. Chambers.techniques by an application involving linear and quadratic functionals of Keywords: central limit theorems; double stochastic integrals; independently . The random variable In(f) is the multiple Wiener-Ito integral of order n, of / with respect.Our object is to study limit theorems in relation to functionals built on a dynamical jfe-fold multiple Ito Integral ([2], [3]) in () is understood in the usual way [9] G. Maruyama: Applications of the multiplication of the Ito-Wiener expansions.Multiple Wiener-Ito Integrals: With Applications to Limit Theorems. ??. P. Major. Springer, ?11?14? - ?.Buy Chaos Expansions, Multiple Wiener-Ito Integrals, and Their Applications papers on chaos random variables appearing in many limiting theorems. Part 3 is .Multiple Wiener-Ito integrals and their application in the study of non-linear We are interested in non-trivial limit theorems for sums of dependent random.Chaos Expansions, Multiple Wiener-Ito Integrals, and Their Applications by Victor papers on chaos random variables appearing in many limiting theorems.