

1109-60-60

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Hölder-Young inequality for norms of generalized Gaussian Wick products. Preliminary report.

The t -Wick products, for $0 \leq t \leq 2$, are connected to various types of stochastic integrals. Thus the 0-Wick product, also called the classic Wick product, is used in defining the Itô integral. The 1-Wick product, which is the point-wise product, is used in defining the Stratonovich integral. If the correct Wick product is used for each stochastic integral, then there is no need for an Itô formula, since the classic Leibniz-Newton Fundamental Theorem of Calculus works. Thus we can see that by using the appropriate Wick product, for each stochastic integral, a great unity between each Stochastic Gaussian Calculus and Classic Calculus is achieved. In Classic Calculus (Analysis), the Hölder inequality guarantees that the product of two functions, one from an L^p -space and another from an L^q -space, is a function in an L^r -space. To solidify the unity between any Gaussian Stochastic Calculus and Classic Calculus, we need to find sharp inequalities that guarantee that a t -Wick product of two random variables, one from an L^p -space and another from an L^q -space, is a random variable in an L^r -space. We present such inequalities in this talk. (Received January 19, 2015)