Seminário de sistemas dinâmicos e estocásticos

IMECC - UNICAMP

Título: Stein method and asymptotic independence.

Ciprian Tudor
University of Lille

Resumo:

If $\mathbb{Y}$ is a random vector in $\mathbb{R}^d$. we denote by $P_{\mathbb{Y}}$ its probability distribution. Consider a random variable X and a d-dimensional random vector $\mathbb{Y}$. We develop a multidimensional variant of the Stein-Malliavin calculus which allows to measure the Wasserstein distance between the law $P_{(X,\mathbb{Y})}$ and the probability distribution $P_Z \otimes P_{\mathbb{Y}}$, where Z is a Gaussian random variable. That is, we give estimates, in terms of the Malliavin operators, for the distance between the law of the random vector $(X, \mathbb{Y})$ and the law of the vector $(Z, \mathbb{Y})$, where Z is Gaussian and independent of $\mathbb{Y}$. Then we focus on the particular case of random vectors in Wiener chaos and we give an asymptotic version of this result. In this situation, this variant of the Stein-Malliavin calculus has strong and unexpected consequences.