ON THE FRACTIONAL ANISOTROPIC WIENER FIELD

Anna Kamont

Abstract: In this paper we study the local properties of the fractional anisotropic Wiener field \( \{ B^{(\alpha)}(t) : t \in \mathbb{R}^d \} \), where \( \alpha = (\alpha_1, \ldots, \alpha_d) \), \( 0 < \alpha_i < 2 \). It is proved that, with probability 1, the realizations of the field \( B^{(\alpha)} \) over any cube \( Q \subset \mathbb{R}^d \) belong to the anisotropic Hölder class with parameter \( \alpha/2 \) in the Orlicz norm corresponding to the Young function \( M_2 = \exp(t^2) - 1 \). Other supporting spaces are treated as well. Moreover, the box dimension of the graph of the realization of \( B^{(\alpha)} \) has been calculated; it is proved that, with probability 1, the box dimension of the graph of the realization of \( B^{(\alpha)} \) over any cube \( Q \subset \mathbb{R}^d \) is equal to \( d + 1 - \kappa/2 \), where \( \kappa = \min(\alpha_1, \ldots, \alpha_d) \).

2000 AMS Mathematics Subject Classification: Primary: -; Secondary: -;

Key words and phrases: -

THE FULL TEXT IS AVAILABLE HERE