The moduli of non-differentiability for Gaussian random fields with stationary increments

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Abstract: We establish the exact moduli of non-differentiability of Gaussian random fields with stationary increments. As an application of the result, we prove that the uniform Hölder condition for the maximum local times of Gaussian random fields with stationary increments obtained in Xiao (1997) is optimal. These results are applicable to fractional Riesz-Bessel processes and stationary Gaussian random fields in the Matérn and Cauchy classes.