

V. Makogin

Strong limit theorems for ergodic self-similar fields

*Taras Shevchenko National University of Kyiv, Ukraine
E-mail: makoginv@ukr.net*

We consider the fields which are self-similar regarding every coordinate with individual index. Such fields are used to call anisotropic and in the Brownian case they usually are called as Brownian sheets. We investigate the asymptotic growth of the sample paths of these fields.

We consider the Lamperti scaling transformation for the self-similar field and investigate the connection between the scaling transformation for such field and the shift transformation for the corresponding stationary field. It was also shown that the fractional Brownian sheet has the ergodic scaling transformation.

The strong limit theorems for the anisotropic growth of the sample paths of the self-similar field at 0 and at 1 for the upper and lower functions have been proved. We present some examples of iterated log-type limits for the Gaussian self-similar random fields.

- [1] V. Makogin, Yu. Mishura, Example of a Gaussian self-similar field with stationary rectangular increments that is not a fractional Brownian sheet. Preprint, (2014) *arXiv:1403.1215*
- [2] K. Takashima, Sample Path Properties of Ergodic Self-similar processes, *Osaka J. Math.*, **26**, (1989), p. 159-189.