

Asymptotic behaviour of time averages for non-ergodic Gaussian processes

We study the behaviour of time-averages for stationary (non-ageing), but ergodicity-breaking Gaussian processes using their representation in Fourier space. We provide explicit formulas for various time-averaged quantities, such as mean square displacement, density, and analyse the behaviour of time-averaged characteristic function, which gives insight into rich memory structure of the studied processes. Moreover, we show applications of the ergodic criteria in Fourier space, determining the ergodicity of the generalised Langevin equation's solutions.

- J. Ś., "Asymptotic behaviour of time averages for non-ergodic Gaussian processes", *Ann. Phys.* **383**, 285–311 (2017)
- R. Salem, "Algebraic numbers and Fourier analysis, Heath (1963)
- G. Maruyama, "Infinitely divisible processes", *Theory Probab. Appl.* **15**:1, 3–23 (1970)
- M. Magdziarz, "A note on Maruyama's mixing theorem", *Stochastic Process. Appl.* **119**, 3416–3434 (2009)

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