

Characterization of $1/f$ noise in ion dynamics and stochastic segregation model

$1/f$ scaling in the spectral density has been observed in a wide variety of systems including current fluctuations in graphene devices, in time-series of biological signals, fluctuations in music and signals in human cognition, weather data [1, 2]. The origin of this scaling is different for each system and different theoretical approaches are typically used for characterizing such scaling. Recently, a universal model of $1/f$ spectrum as power-law intermittent dynamics has been suggested [2]. In this project two different systems: ion in the ion channel and stochastic segregation model, both showing $1/f$ noise, are suggested to be analysed for verification of the universal intermittent model. A set of tools for analysis of time-series will be applied to characterize the properties of the systems.

Please contact me to discuss the details of the project.

[1] A.B. Balandin, Nature Technology, Vol. 8, p 549 (2013)

[2] M. Neimann, H. Kantz, and E. Barkai, Phys. Rev. Lett., Vol. 110, p. 140603-1 (2013)