

## Lecture 1.

### **Modeling of nonstationary time series using nonparametric methods.**

Analysis of nonstationary random data is part of the problem of so-called Big Data. The problem of modeling nonstationary time series that arise in many areas of human activity has now great practical importance. There are a large number of examples of data series that require modeling taking into account non-stationary properties of observed values. Such are the exchange series of transaction prices for financial instruments, cardiograms and encephalograms in medicine, seismograms, temperature curves and meters of radioactivity counters, sequences of symbols in texts and genome chains.

We propose the method of non-stationary time-series trajectory generation in accordance with Fokker-Plank equation for the empirical distribution function density. Parameters of trend and diffusion are estimated on the samples of time-series.