

Institution: Department of Mathematics

Name: HANDA Kenji

Theme: **Mathematical analysis related to probability theory**

I am working on mathematical analysis related to probability theory. More specifically, some of present researches are described as follows.

1) Stationary distributions of diffusion processes in population genetics:

In population genetics theory, the method of diffusion approximation is well-known. One of the most important quantities regarding it is a stationary distribution, which describes equilibrium state of the process.

I am trying to find an explicit form of the stationary distribution for certain diffusion models considered to be important in such theory.

2) Mathematical structure of random discrete measures:

Theory of point processes is very useful in the analysis of various phenomenon with randomness of infinite degree. We apply it to reveal mathematical structure of random discrete measures and distributions. It is of interest to study the validity of quasi-invariance property and integration by parts formula for the law of random discrete measure by exploiting some effective tools from theory of point processes.

Forthcoming works will be based on such an idea.