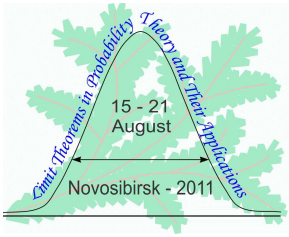

The path-wise analogs SPDE and their applications in filtering theory and stochastic control problem

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Theory of symmetric integrals offers tool which can be employed successfully in the study of stochastic differential equations (SDE). Among these tools are: 1) discovery of a new method of solving SDE and stochastic partial differential equations (SPDE), 2) application the new technique to filtering problem of diffusion processes, 3) a new path-wise control problem for SDE. The essential mechanizm is then to use these tools to transform SDE (SPDE) into ODE (PDE) to which (more or less) classical methods of ODE (PDE) can be applied and then to reverse the transformation to obtain a statement for the original equation.

References

[1] Nasyrov F. S. Local times, symmetric integrals and stochastic analysis. M.: FIZMATLIT, 2011 (in Russian)