

## Limits of optimal stopping and exit times

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### Abstract

Limit of the optimal stopping time for an Ito diffusion with coefficients depending on parameters tend to the limit value. It is proved that the optimal stopping time for pre-limit diffusion process converges in probability to the optimal stopping time for the limit diffusion process.

For a random walk with a drift to the left an optimal stopping problem and the explicit form of the optimal stopping time are studied. An explicit form of the optimal stopping time in the case of polynomial reward function is checked using the technique of Appel orthogonal polynomials. Here some well-known results of Novikov and Shiryaev are generalized.

Stochastic processes satisfying the stochastic differential equations with non-Lipschitz diffusions are considered and the limit of the exit times is studied. It is proved that the pre-limit exit time for the pre-limit process converges in probability to the exit time for the limit process. The rate of convergence is established.

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