

Mezerdi, Brahim

Necessary conditions for optimality for a diffusion with a non-smooth drift. (English)

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Stochastics 24, No. 4, 305-326 (1988).

A maximum principle for a stochastic control problem $dx_t = f(t, x_t, u_t)dt + \sigma(t, x_t)dB_t$, $x(0) = x$, $J(u) = E_x[g(x_T)]$, with non-smooth drift is established by approximating this problem by differentiable problems. In this way Kushner's maximum principle is generalized and the adjoint process is characterized.

Reviewer: [M.Kohlmann](#)

MSC:

[93E20](#) Optimal stochastic control

[49K45](#) Optimality conditions for problems involving randomness

[60J60](#) Diffusion processes

[60H10](#) Stochastic ordinary differential equations (aspects of stochastic analysis)

[93C10](#) Nonlinear systems in control theory

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Keywords:

maximum principle; stochastic control problem; non-smooth drift; adjoint process

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