Controlled Markov Processes and Viscosity Solutions of Nonlinear Evolution

By Wendell H. Fleming

Birkhauser Verlag AG. Paperback. Book Condition: new. BRAND NEW, Controlled Markov Processes and Viscosity Solutions of Nonlinear Evolution, Wendell H. Fleming, These notes are based on a series of lectures delivered at the Scuola Normale Superiore in March 1986. They are intended to explore some connections between the theory of control of Markov stochastic processes and certain classes of nonlinear evolution equations. These connections arise by considering the dynamic programming equation associated with a stochastic control problem. Particular attention is given to controlled Markov diffusion processes on finite dimensional Euclidean space. In that case, the dynamic programming equation is a nonlinear partial differential equation of second order elliptic or parabolic type. For deterministic control the dynamic programming equation reduces to first order.From the viewpoint of nonlinear evolution equations, the interest is in whether one can find some stochastic control problem for which the given evolution equation is the dynamic programming equation. Classical solutions to first order or degenerate second order elliptic/parabolic equations with given boundary Cauchy data do not usually exist. One must instead consider generalized solutions. Viscosity solutions methods have substantially extended the theory.

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