ON PATHWISE STOCHASTIC INTEGRATION WITH RESPECT TO SEMIMARTINGALES

Rafał M. Łochowski

Abstract: For any real-valued stochastic process X with *càdlàg* paths we define non-empty family of processes which have locally finite total variation, have jumps of the same order as the process X and uniformly approximate its paths on compacts. The application of the defined class is the definition of stochastic integral with semimartingale integrand and integrator as a limit of pathwise Lebesgue–Stieltjes integrals. This construction leads to the stochastic integral with some correction term (different from the Stratonovich integral). Using properties of a functional called truncated variation we compare the obtained result with classical results of Wong–Zakai and Bichteler on pathwise stochastic integration.

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