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Some Results for Skorohod and Stratonovich Integrals with respect to Poisson process and Azema martingales

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ABSTRACT

The purpose of this poster is to present two recent papers, the second is still in progress, where we study some properties of Stratonovich and Skorohod integrals in the context of normal martingales with the chaotic representation property (CRP).

In the first paper ([1]), we give conditions for an L^2-process to be Stratonovich integrable with respect to a normal martingales with the CRP. The tools are an anticipating dominated convergence theorem and the Kabanov formula for this type of martingales developped in [2].

In the second paper, still in progress, we focus our attention on the Skorohod integral with respect to the Poisson process. The purpose is to study its properties as integrator, generalizing the results in [3], and to compute its quadratic variation, following the ideas presented for example in [4, chapter 3].

All these results are based strongly on the Fock space structure of the space of L^2-functionals of normal martingales with the CRP, and on the relation under appropriate conditions,

$$\delta(Fu) = F\delta(u) - \int_0^1 D_t^* F u_t d[M,M]_t.$$

(see [5] for example).

As illustration, the main result of the first paper is the following decomposition of the Stratonovich integral with respect to the normal martingales M:

Theorem

Under the appropriate conditions (see [1]) u is M-Stratonovich integrable and it holds

$$I_M^S(u) = \delta(u) + Tr(u) + \delta((\nabla u)\alpha) + \delta((\nabla u)I_1(\beta))$$

where $\Phi_t = \alpha(t) + I_1(\beta_t)(\cdot)$ is the predictable process associated to the structure equation of M.

References

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