

Discrete stochastic calculus and its applications: an expository note*

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Abstract. We recast our recent studies on discrete stochastic processes relevant to a discrete analogue of the Itô formula. This analogous formula for discrete environment is introduced by one of the authors, and has a possibility of many applications in the discrete world. We consider the optimal portfolio problem and the pricing of exchange options. The results indicate certain direct connection between the discrete and the continuous processes through the Itô formula.

Key words: discrete analogue of the Itô formula, optimal portfolio problem, discrete Hamilton-Jacobi-Bellman equation, pricing of exchange options