Convex Risk Measures via $g$-Expectations

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Abstract

In this talk, first, we introduce the notion of $g$-expectation proposed by Shige Peng via backward stochastic differential equations and some basic properties of $g$-expectations. Second, we introduce Jensen’s inequality for $g$-expectations and its applications. Third, we introduce the notion of risk measure $\rho^g$ induced by a $g$-expectation $\mathcal{E}_g$, we will prove that $\rho^g$ is a convex (resp. coherent) risk measure if and only if the generator $g$ is independent of variable $y$ and $g$ is convex (resp. sublinear) with respect to variable $z$.

Key words. Backward stochastic differential equation, $g$-Expectation, Jensen’s inequality for $g$-expectation; Risk measure