

Abstract Vortrag von Soňa Kilianová im Mathematischen Kolloquium am 03.12.2019:

Using Riccati type of transformation for solving
Hamilton-Jacobi-Bellman equations in portfolio
optimization

Abstract:

We introduce and study a transformation method of Hamilton-Jacobi-Bellman (HJB) equations arising in computational finance. We explain where this kind of HJB equations comes from and introduce Riccati-like transformations which can be used for transforming the fully nonlinear HJB PDE to a quasi-linear PDE. We study properties of the transform function and another auxiliary but very useful function. We illustrate behaviour of solutions on practical examples. Next, we shall discuss flexibility of this approach in worst-case portfolio optimization and provide an outlook for how this type of transformation can be used in the case of higher-dimensional HJB equations.