# On the Kolmogorov operator Weak regularity theory and applications

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The Kolmogorov operator is a strongly degenerate second order parabolic operator with many different applications, such as the financial market modeling (in particular, the pricing problem of Asian Options in the Black and Scholes setting).
The regularity theory for classic solutions to the Kolmogorov equation has been completely developed in the past years. Nowadays, we are interested in the regularity theory for weak solutions to the Kolmogorov equation with rough coefficients, and we present here some of the most recent results in this direction with some application to the Geman-Yor process.