

**On existence, uniqueness, and Euler-Maruyama approximation of solutions of  
jump-diffusion SDEs with discontinuous drift**

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We discuss scalar jump-diffusion stochastic differential equations (SDEs) of the following form

$$\begin{cases} dX(t) = \mu(X(t))dt + \sigma(X(t))dW(t) + \rho(X(t-))dN(t), & t \in [0, T], \\ X(0) = \xi, \end{cases} \quad (1)$$

where the drift coefficient  $\mu$  might be discontinuous. Such SDEs appear in applications such as optimal control problems in energy markets. We show results concerning existence and uniqueness of strong solutions. Moreover, we refer the results on the strong  $1/2$  convergence order of the Euler-Maruyama scheme in the case of discontinuous drift coefficient.