

## Symmetry Breaking for Black-Scholes Equations

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**Abstract:** Black-Scholes equation is used to model stock option pricing. In this paper, optimal systems with one to four parameters of Lie point symmetries for Black-Scholes equation and its extension are obtained. Their symmetry breaking interaction associated with the optimal systems is also studied. As a result, symmetry reductions and corresponding solutions for the resulting equations are obtained.

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**Key words:** Black-Scholes equation, symmetry, optimal system, symmetry breaking, solution

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