



**WHITE NOISE ANALYSIS COMBINED WITH  
HYPERCOMPLEX SYSTEMS FOR SOLVING STOCHASTIC  
MODIFIED KdV EQUATIONS WITH NON-GAUSSIAN  
PARAMETERS**

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**Abstract**

In this paper, the variable coefficients modified KdV (mKdV) equation and the stochastic mKdV equation with non-Gaussian parameters are investigated. By means of the direct connection between the theory of hypercomplex systems and white noise analysis, we setup a full framework to study the stochastic partial differential equations with non-Gaussian parameters. Using this framework and the modified tanh-coth method, we present multiple families of exact and stochastic travelling wave solutions for the variable coefficients mKdV equation and the stochastic mKdV equation with non-Gaussian parameters, respectively. These solutions include functional solutions of exponential, hyperbolic and trigonometric types.

**Keywords and phrases:** modified KdV equation, non-Gaussian, Wick product, Hermite transform, white noise.