THE WEAK ORDER FOR STRATONOVICH STOCHASTIC DIFFERENTIAL EQUATION USING THE TRIVIAL METHOD

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This paper investigates the use of weak convergence in Stratonovich stochastic differential equations (SDEs), shifting the focus from the robust convergence techniques previously employed. We introduce a novel application of the trivial coupling method within the weak convergence framework, specifically addressing non-invertible equations. Our approach simplifies the handling of random scenarios and computational tasks, with potential applications spanning physics, biology, and engineering. We provide a detailed account of the method, including its theoretical background and practical implementation using MATLAB. Our results confirm the validity of our approach, demonstrating its effectiveness even with degenerate diffusion coefficients. This advancement in weak convergence strategies offers new insights and practical solutions for complex systems and opens avenues for further research.

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