

*Existence, uniqueness of the solution and convergence of finite volume approximations for hyperbolic scalar conservation laws with multiplicative noise*

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We are interested here in multi-dimensional nonlinear scalar conservation laws forced by a multiplicative noise with a general time and space dependent flux-function. We address simultaneously theoretical and numerical issues. More precisely we establish existence, uniqueness and some properties of the stochastic entropy solution together with the convergence of a finite volume scheme. The results proposed in this work suppose more general fluxes than the ones considered in the literature and the main novelty here is the use of the numerical approximation to get both the existence and the uniqueness of the solution. We also provide a  $L^\infty$  stability result as well as a time continuity property on the stochastic entropy solution to complete this study.