

Uniqueness of the entropy solution of a stochastic conservation law with a Q -Brownian motion

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Joint work with Prof. Tadahisa Funaki and Prof. Danielle Hilhorst

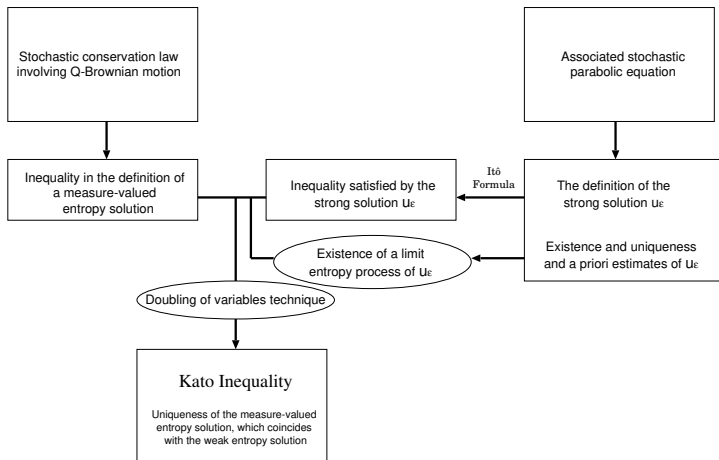
We prove the uniqueness of the weak entropy solution for the stochastic conservation law involving a Q -Brownian motion $W(x, t)$

$$\begin{cases} du + \operatorname{div}(\mathbf{v}f(u))dt = g(u)dW(x, t) & \text{in } \Omega \times \mathbb{T}^d \times [0, T] \\ u(\omega, x, 0) = u_0(x) & \text{for all } \omega \in \Omega, x \in \mathbb{T}^d, \end{cases}$$

where \mathbb{T}^d is a d dimensional torus, with suitable assumptions on \mathbf{v} , f and g and $u_0(x)$.

Inspired by the work of Bauzet-Vallet-Wittbold (2012), who study a stochastic conservation law with a multiplicative noise in time, this work generalizes to the case that the noise term $dW(x, t)$ is a function of space and time.

Schema of the study



Reference: T. Funaki, Y. Gao and D. Hilhorst, Uniqueness of the entropy solution of a stochastic conservation law with a Q -Brownian motion, preprint, HAL-02159743.