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Two-time-scales hyperbolic-parabolic equations driven by Poisson random measures: existence, uniqueness and averaging principles. (English) [Zbl 1387.60102](#)

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Summary: In this article, we are concerned with averaging principle for stochastic hyperbolic-parabolic equations driven by Poisson random measures with slow and fast time-scales. We first establish the existence and uniqueness of weak solutions of the stochastic hyperbolic-parabolic equations. Then, under suitable conditions, we prove that there is a limit process in which the fast varying process is averaged out and the limit process which takes the form of the stochastic wave equation is an average with respect to the stationary measure of the fast varying process. Finally, we derive the rate of strong convergence for the slow component towards the solution of the averaged equation.

MSC:

60H15 Stochastic partial differential equations (aspects of stochastic analysis)
35R60 PDEs with randomness, stochastic partial differential equations
35M33 Initial-boundary value problems for mixed-type systems of PDEs

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Keywords:

averaging principles; stochastic hyperbolic-parabolic equations; Poisson random measures; two-time-scales

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