

$$S_t \circ c(h)(a_s)_{ti} c(s) + \mathfrak{S}_e m^i n(a_r)$$

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## A Local-Time Correspondence for Stochastic Partial Differential Equations

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It is frequently the case that a white-noise-driven parabolic and/or hyperbolic stochastic partial differential equation (SPDE) can have function-valued solutions only in spatial dimension one. Here we show that in many cases, where the “spatial operator” is the  $L^2$ -generator of a Lévy process  $X$ , a linear SPDE has a function-valued solution if and only if the symmetrization of  $X$  possesses local times. This result gives a probabilistic reason for the lack of existence of function-valued solutions in dimensions  $d \geq 2$ . This is joint work with D. Khoshnevisan and E. Nualart.