

Cylindrical Martingale-Valued Measures, Stochastic Integration and SPDEs

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We develop a theory of Hilbert-space valued stochastic integration with respect to cylindrical martingale-valued measures. As part of our construction, we expand the concept of quadratic variation, to the case of cylindrical martingale-valued measures that are allowed to have discontinuous paths; this is carried out within the context of separable Banach spaces. Our theory of stochastic integration is applied to address the existence and uniqueness of solutions to stochastic partial differential equations in Hilbert spaces.

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