

A new look at stochastic Fubini theorems

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Abstract :

We prove a new stochastic Fubini theorem in a setting where we stochastically integrate a mixture of parametrised integrands, with the mixture taken with respect to a stochastic kernel instead of a fixed measure on the parameter space. To that end, we introduce a new notion of measure-valued stochastic integration with respect to a multidimensional semimartingale. As an application, we show how one can handle a class of quite general stochastic Volterra semimartingales. The original question for this work came from a problem in mathematical finance, and if time permits, we also briefly comment on that. The talk is based on joint work with Tahir Choulli (University of Alberta, Edmonton).