Multiindex Monte Carlo for semilinear stochastic partial differential equations

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This talk presents an exponential-integrator mulitiindex Monte Carlo method (MIMC) for weak approximations of mild solutions of semilinear stochastic partial differential equations (SPDE). We show that multiindex coupled solutions of the SPDE are stable and satisfy multiplicative error estimates, and describe how these properties can be utilized to obtain a tractable MIMC method. Numerical examples demonstrate that MIMC outperforms alternative methods, such as multilevel Monte Carlo, in settings with low-regularity driving noise.