Paracontrolled distributions and the KPZ equation

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Paracontrolled distributions combine the Fourier techniques of Bony's paradifferential calculus with ideas from the theory of controlled rough paths. This leads to a lightweight calculus for distributions that allows to handle nonlinear operations involving very irregular objects such as white noise, and which allows to give a meaning to and solve singular stochastic partial differential equations like the KPZ equation. Due to their good continuity properties, paracontrolled distributions are also a powerful tool for studying the convergence of discrete systems to continuous limits. I will present the basic ideas and techniques of paracontrolled distributions and how to apply them to solve the KPZ equation. Time permitting, I will also present convergence results for a class of discrete systems which converge to the KPZ equation (possibly involving some spatial Stratonovich correctors). Based on joint work with Massimiliano Gubinelli and Peter Imkeller.