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«Pathwise stochastic analysis a la Föllmer»

Abstract: In 1981 Föllmer observed that, as long as we are dealing with paths that have a quadratic variation, Ito's formula is a pathwise identity. This was a precursor of Lyons's 1994-1998 rough path theory in which paths are required to come with iterated integrals, and which leads to a pathwise robust version of stochastic (partial) differential equations. In recent years Föllmer's calculus has been revisited by a number of researchers and his results have been sharpened and extended to many new scenarios. In my talk I will present a Föllmer calculus for paths that are more irregular than semimartingales (e.g. fractional Brownian motion with small Hurst index), I will discuss extensions to path-dependent functionals, and pathwise local times. Based on joint works with Rama Cont and David Prömel.

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