Martin Hairer
The University of Warwick, UK
http://www.hairer.org

Martin Hairer received his PhD in theoretical physics in 2001 from the University of Geneva. He then moved to the University of Warwick where he became Associate Professor in 2004. In 2009, he was appointed at the Courant Institute in New York and then moved back to the University of Warwick as a full professor in 2010. His main areas of research are stochastic dynamics, stochastic analysis, and stochastic partial differential equations. In recent years, his emphasis was mainly on developing the theory of regularity structures which provides a robust framework in which to interpret large classes of stochastic PDEs whose mathematical meaning had so far been unclear. His work has been distinguished with a 2008 Whitehead prize, a 2013 Fermat prize and a 2014 Fields medal.

Evolution on Random Loops

Abstract
A "rubber band" constrained to remain on a manifold evolves by trying to shorten its length, eventually settling on some minimal closed geodesic, or collapsing entirely. It is natural to try to consider a noisy version of such a model where each segment of the band gets pulled in random directions. Trying to build such a model turns out to be surprisingly difficult and generates a number of nice geometric insights, as well as some beautiful algebraic and analytical objects. We will survey some of the main results obtained on the way to this construction.