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*Quantitative stochastic homogenization*

Over large scales, many disordered systems behave similarly to an equivalent "homogenized" system of simpler nature. A fundamental example of this phenomenon is that of reversible diffusion operators with random coefficients. The homogenization of these operators has been well-known since the late 70's. I will present recent results that go much beyond this qualitative statement, reaching optimal rates of convergence and a precise description of the next-order fluctuations. The approach is based on a rigorous renormalization argument and the idea of linearizing around the homogenized limit.