Universal phenomena for random constrained permutations

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How do local/global constraints affect the limiting shape of random permutations? This is a classical question that has received considerable attention in the last 15 years. In this talk we give an overview of some recent results on this topic, mainly focusing on random pattern-avoiding permutations. We first introduce a notion of scaling limit for permutations, called permutons. Then we present some recent results that highlight certain universal phenomena for permuton limits of various families of pattern-avoiding permutations. These results will lead us to the definition of three remarkable new limiting random permutons: the "biased Brownian separable permuton", the "Baxter permuton" and the "skew Brownian permuton". We finally discuss some recent results that show how permuton limits are useful to investigate the behaviour of certain statistics on random pattern-avoiding permutations, such as the length of the longest increasing subsequence.