Extreme values and rare events point processes for the Manneville-Pomeau map

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The extremal index appears as a parameter in extreme value laws for stochastic processes, characterising the clustering of extreme events. We apply this idea in a dynamical systems context to analyse the possible extreme value laws for the stochastic processes generated by observations taken along dynamical orbits. We associate the existence of an Extremal Index less than 1 to the occurrence of periodic phenomena. For generic points, the exceedances, in the limit, are singular and occur at Poisson times. But around periodic points, the respective point processes of exceedances converge to a compound Poisson process. In this talk, we study the Manneville-Pomeau map. In particular, we mix the behaviour of an extremal index equal to 0 with that of an extremal index larger than 0, and explore the corresponding effect in the limiting rare events point process.