

SOME PROBABILISTIC APPROACHES TO NONLINEAR SCHRÖDINGER EQUATIONS

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Following the seminal work of Bourgain (1996), and Burq, Tzvetkov (2008), a statistical approach to nonlinear dispersive equations has developed in various contexts in order to generate full measure sets of initial data that lead to strong solutions in certain regimes where instabilities are known to occur. We first present some general aspects of the probabilistic Cauchy theory, as well as a result obtained with Louise Gassot concerning a class of pathological initial data. We prove that the set of initial data that undergoes norm inflation contains a dense G-delta set. The second part of the presentation is devoted to the case of quasi-linear regimes, where the standard probabilistic Cauchy theory fails. We present recent developments based on a paracontrolled ansatz due to Bringmann (2019) and Deng, Nahmod, Yue (2019-2020), which we exploit to prove almost sure local well-posedness for a class of weakly dispersive equations. This last result is obtained in collaboration with Louise Gassot and Slim Ibrahim.