

LIMIT STOCHASTIC DIFFERENTIAL EQUATIONS (SDES) FOR PRODUCTS OF RANDOM MATRICES.

CHRISTIAN SADEL

We consider the Markov process given by products of i.i.d. random matrices that are perturbations of a fixed non-random matrix and the randomness is coupled with some small coupling constant. Such random products occur in terms of transfer matrices for random quasi-one dimensional Schrödinger operators with i.i.d. matrix potential. Letting the number of factors going to infinity and the random disorder going to zero in a critical scaling we obtain a limit process for a certain Schur complement of the random products. This limit is described by an SDE. This allows us to obtain a limit SDE for the Markov processes given by the action of the random products on Grassmann and flag manifolds. Applied to random quasi-one dimensional Schrödinger operators we can describe the limiting eigenvalue process in a critical scaling by the zero process of a determinant of a matrix-valued function described by an SDE.

Joint work with B. Virag.