Eigenvector-related correlation functions and their connection with generalized chiral random matrix ensembles with a source

We will introduce eigenvector-related correlation functions, discuss briefly their significance in dynamical Ginibre ensemble [1,2] and present asymptotic results in the large matrix size limit. Motivated by recent work [3] on joint eigenvector-eigenvalue correlation function valid for finite matrix size N in the complex and real Ginibre Ensembles, we study integrable structure of a certain generalized chiral Gaussian Unitary Ensemble with a source [4]. This model can be also interpreted as a deformation of the complex Ginibre Ensemble with an external source with additional determinant term. In the case of a special source, we calculate asymptotics in the joint “bulk-edge” regime of all aforementioned objects and show their Bessel-type behaviour.
