

Universality for conditional measures of the sine point process

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The sine process is a random point process that is obtained as a limit from the eigenvalues of many random matrices as the size tends to infinity. This phenomenon is called universality in random matrix theory, and it also holds for many orthogonal polynomial ensembles.

In this talk I want to emphasize another connection of the sine point process with orthogonal polynomials. It comes from a surprising property called number rigidity in the sense of Ghosh and Peres. This means that for almost all configurations, the number of points in an interval $[-R, R]$ is determined exactly by the points outside the interval. The conditional measure is the joint distribution of the points in $[-R, R]$ given the points outside. Bufetov showed that these are orthogonal polynomial ensembles with a weight that comes from the points outside $[-R, R]$.

I will report on recent work with Erwin Mina-Diaz (arXiv:1703.02349) where we prove a universality result for these orthogonal polynomial ensembles that in particular implies that the correlation kernel of the orthogonal polynomial ensemble tends to the sine kernel as R tends to infinity. This answers a question posed by Alexander Bufetov.