

Speaker (20 minutes talk)

On the persistence probability for a class of integrable models

Mihail Poplavskiy¹,

¹ Queen Mary University of London

We start by considering a famous model of random Kac polynomials of a large degree and asymptotic behaviour of corresponding persistence probability – probability of a polynomial having no real zeros [3]. In the earlier paper of Dembo, Poonen, Shao and Zeitouni by introducing a cosh -correlated Gaussian stationary process the authors showed the persistence probability has a power-law decay with unknown power. Later this special Gaussian process appeared in many other areas of mathematical physics [1]. By considering one of the models [2] originating from Random matrix theory we are able to close the loop and show the value of the power being $3/16$.

References

- [1] POPLAVSKIY, MIHAIL SCHEHR, GREGORY, *Exact Persistence Exponent for the 2D-Diffusion Equation and Related Kac Polynomials*, Phys. Rev. Lett. 121, 150601 (2018).
- [2] GEBERT, MARTIN POPLAVSKIY, MIHAIL, *On pure complex spectrum for truncations of random orthogonal matrices and Kac polynomials*, <https://arxiv.org/abs/1905.03154> (2019).
- [3] POPLAVSKIY, MIHAIL SCHEHR, GREGORY, *On Kac polynomials with no real zeros*, in preparation (2021).

Submission for an invited short talk in the parallel session "Random matrices, integrable systems and orthogonal polynomials" (organized by Maria das Neves Rebocho - UBI, Portugal; Rostyslav Kozhan - Uppsala University, Sweden.)