Branching structures and random matrices

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Fyodorov, Hiary and Keating have conjectured that the maximum of the characteristic polynomial of random unitary matrices behaves like extremes of log-correlated Gaussian fields. This allowed them to conjecture the typical size of local maxima of the Riemann zeta function along the critical axis. I will first explain the origins of this conjecture, and then outline the proof for the leading order of the maximum, for unitary matrices and the zeta function. This talk is based on a joint works with Arguin, Belius, Radziwill and Soundararajan.

References

[1] L. P. Arguin, D. Belius, P. Bourgade , *Maximum of the characteristic polynomial of random unitary matrices*, Communications in Mathematical Physics

[2] L. P. Arguin, D. Belius, P. Bourgade, M. Radziwill, K. Soundararajan , *Maximum of the Riemann zeta function on a short interval of the critical line*, to appear in Communications on Pure and Applied Mathematics