

A NEW APPROACH TO THE CHARACTERISTIC POLYNOMIAL OF A RANDOM UNITARY MATRIX

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ABSTRACT. The characteristic polynomial of a random (Haar-distributed) unitary matrix is considered as an interesting toy model for the probabilistic study of the Riemann Zeta function. We will recall the history of the topic starting with the Montgomery-Dyson correspondance, the Keating-Snaith moments conjecture and some recent developments on other functionals. We will then give a conceptual comparison of some of the techniques used in the field and a zoo of results one can achieve, with a particular focus on a recent technique that allows to rederive all the results in a unified way using symmetric function theory and local Central Limit Theorems.

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