

From Shub-Smale polynomials to the Spherical Ensemble: Logarithmic energy in random matrices

Federico Carrasco

Universidad de la República

In this talk, we study the expected logarithmic energy of solutions to the polynomial eigenvalue problem for random matrices. We extend known results for two important cases: the Shub-Smale polynomials and the spherical ensemble, which serve as extremal examples of these cases. Our results show that the logarithmic energy of eigenvalues lies between these two cases, with the Shub-Smale polynomial attaining the minimal energy. We will present the main result, discuss their implications, and explore potential directions for future research (joint work with Diego Armentano and Marcelo Fiori)

In Special Session 41 on Algebraic Geometry: the Numerical, the Random and the Tropical at the Mathematical Congress of the Americas 2025.