



## Mathematics and CS Seminar

# Local laws for polynomials of Wigner matrices

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**Host: Laszlo Erdős**

Under some numerically checkable conditions, we establish the optimal local law, i.e., we show that the empirical spectral distribution on scales just above the eigenvalue spacing follows the global density of states which is determined by free probability theory. First, we give a brief introduction to the linearization technique that allows to transform the polynomial model into a linear one, which has simpler correlation structure but higher dimension. After that we show that the local law holds up to the optimal scale for the generalized resolvent of the linearized model, which also yields the local law for polynomials. Finally, we show how the above results can be applied to prove the optimal bulk local law for two concrete families of polynomials: general quadratic forms in Wigner matrices and symmetrized products of independent matrices with i.i.d. entries. This is a joint work with Laszlo Erdős and Torben Krüger .

**Tuesday, October 2, 2018 04:00pm - 06:00pm**

IST Austria Campus Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: <https://ist.ac.at/en/campus/how-to-get-here/> The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.