



Seminar/Talk

Multi-resolvent local laws for differently deformed Wigner matrices and applications in mathematical physics

Oleksii Kolupaiev

ISTA

Host: Laszlo Erdős

Let W be an $N \times N$ Wigner matrix and D a self-adjoint deformation of the same size. It is known that for large N , the resolvent $G(z) = (W + D - z)^{-1}$ of the deformed Wigner matrix $W + D$ concentrates around its deterministic approximation already for z just slightly above the real line. This concentration phenomenon also extends to the products of multiple resolvents, such as $G(z_1)B G(z_2)$ for a deterministic matrix B . Such results are called the multi-resolvent local laws. In our work we extend this framework by proving the 2-resolvent local law for $G_1(z_1)B G_2(z_2)$, where G_1 and G_2 are resolvents of two differently deformed Wigner matrices $W + D_1$ and $W + D_2$. In the talk we will discuss two applications of this result. The first one addresses the sensitivity of a quantum evolution to perturbations via studying the so-called Loschmidt echo, while the second one studies the decorrelation of eigenvectors of $W + D_1$ and $W + D_2$. The talk is based on a joint work with G. Cipolloni, L. Erdős and J. Henke.

Tuesday, November 12, 2024 04:30pm - 05:30pm

Office Bldg West / Ground floor / Heinzl Seminar Room (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

Please find a schedule of the ISTA Shuttle on our webpage:

<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.