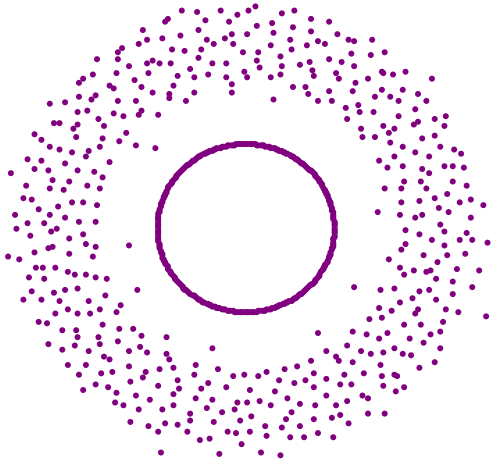
Emergence of quadrature domains for the GEF on the hole event



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XV Brunel-Bielefeld Workshop
Random Matrix Theory and Applications
Bielefeld, Dec 5 – 7, 2019

The (relative) potential

- Z – a finite point configuration from some (constrained) Weyl polynomial or Ginibre ensemble.
- Empirical measure:

$$\mu_Z = \frac{1}{|Z|} \sum_{z \in Z} \delta_z,$$

- The (relative) potential

$$R_Z(z) = U^{\mu_Z}(z) - \tfrac{1}{2}|z|^2 = \sum_{\lambda \in Z} \log|z - \lambda| - \tfrac{1}{2}|z|^2$$

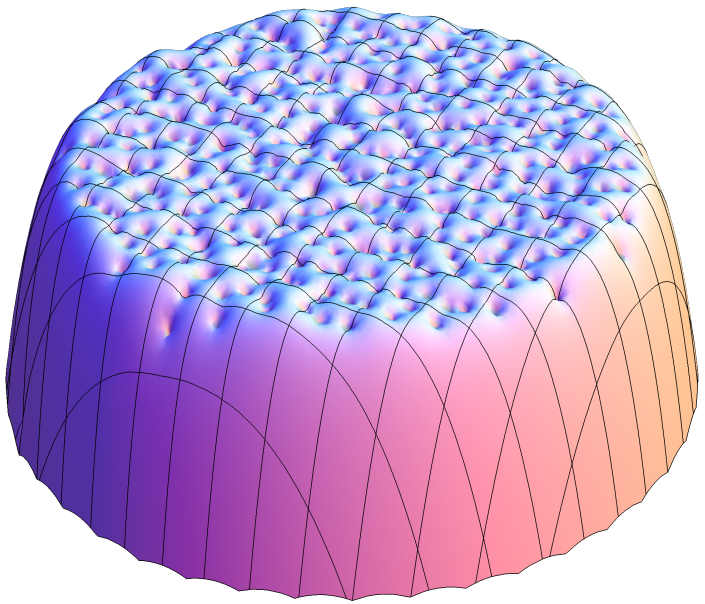

Figure. The potential of the zero process for a Weyl Polynomial, with 400 zeros.

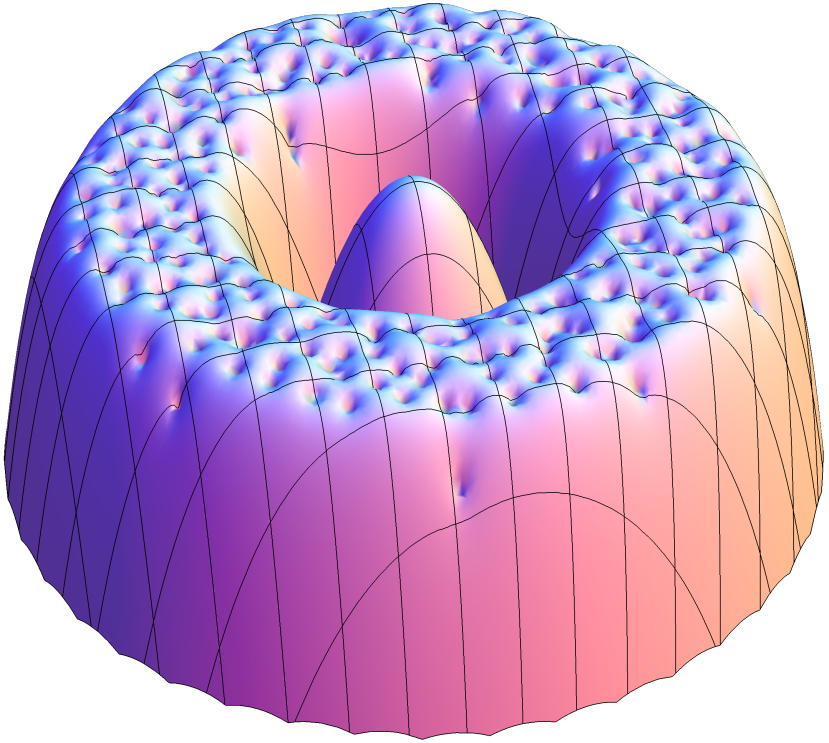

Figure. The potential of a typical configuration on the hole event.

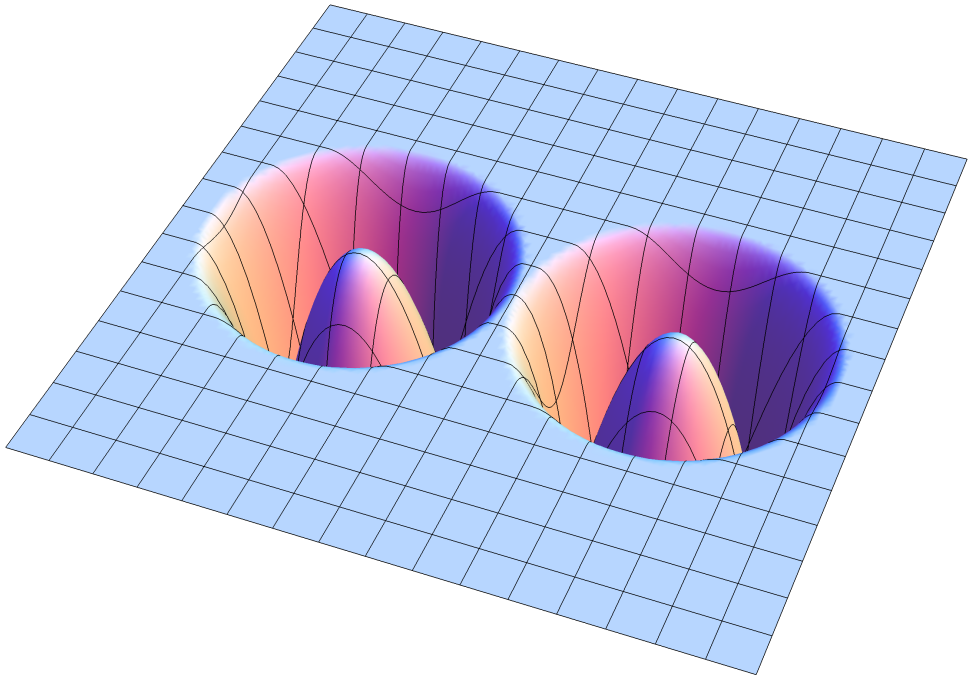

Figure. The potential associated to two well-separated disks.

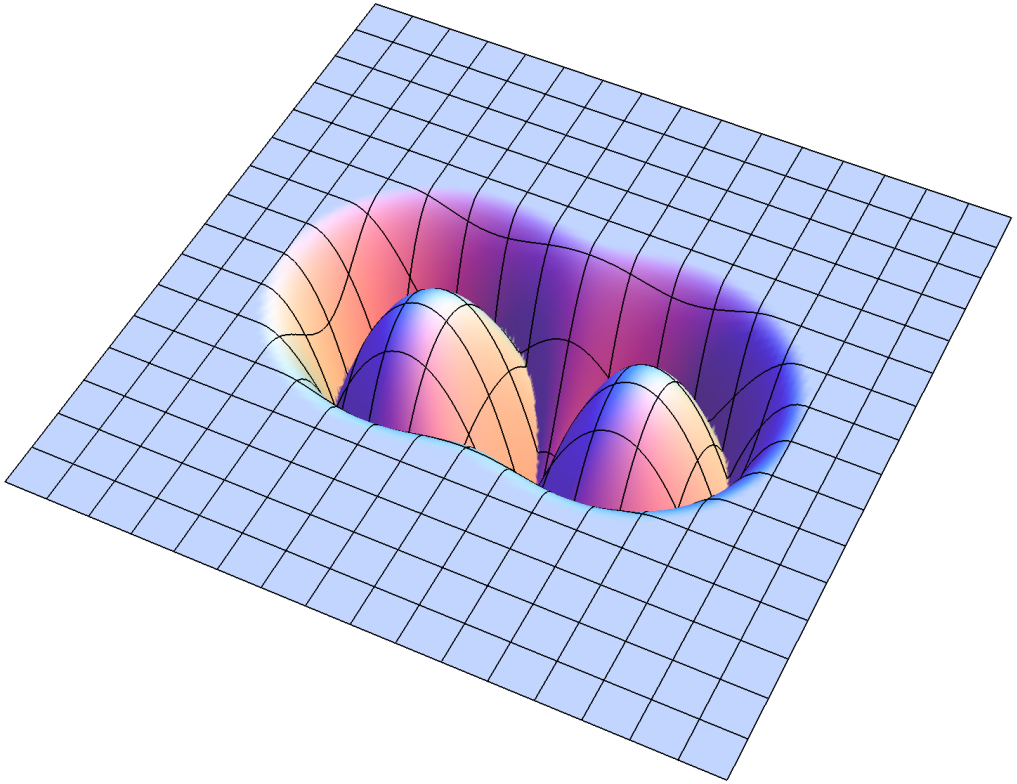

Figure. The potential associated to two touching disks. The forbidden region is a two-point quadrature domain.

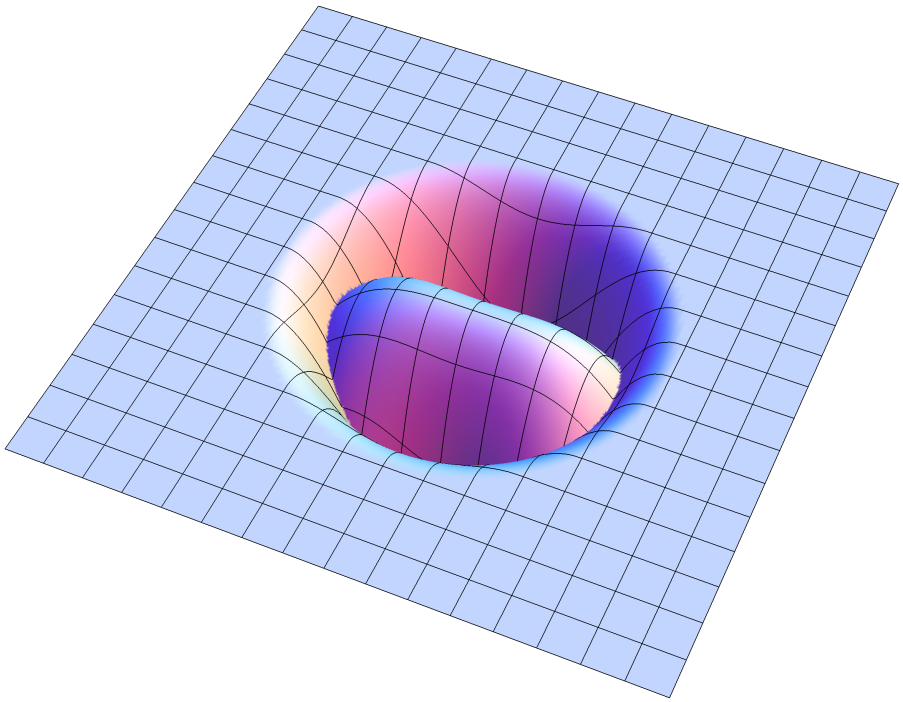

Figure. The two inner disks have been merged, are close enough that the domain is almost circular.

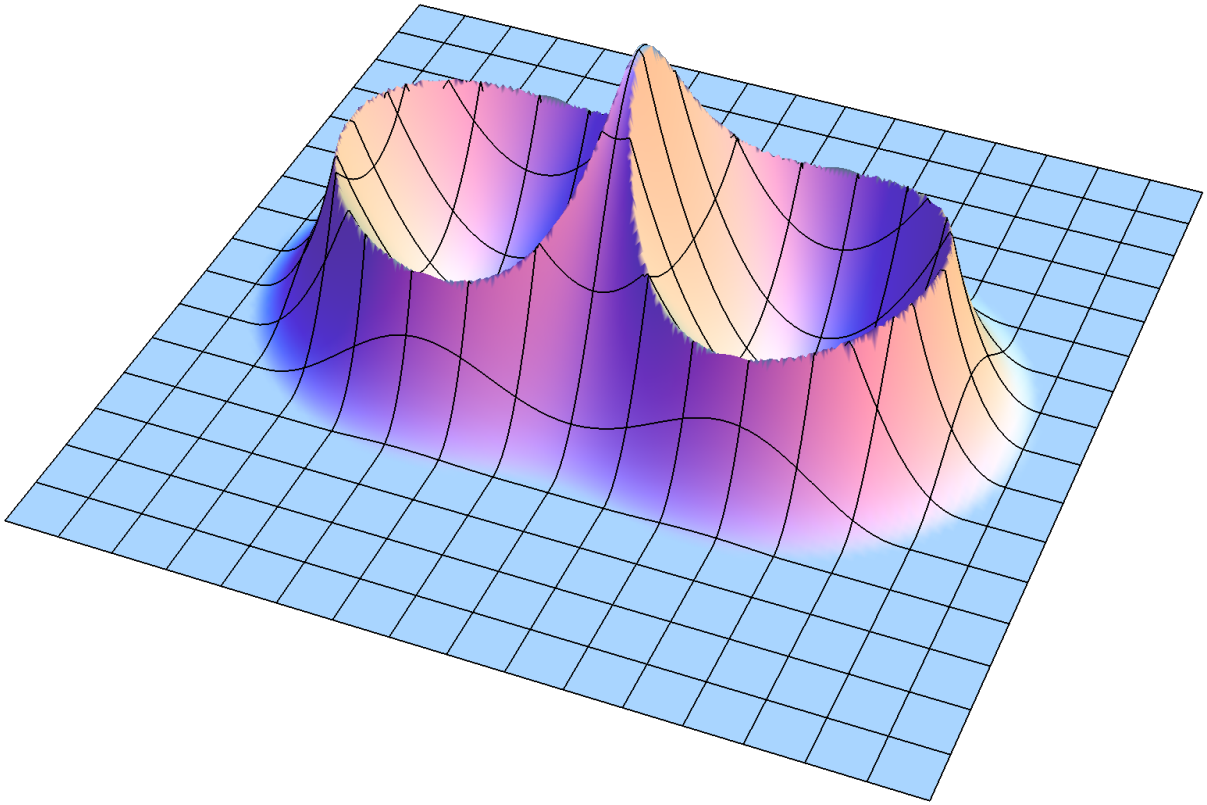

Figure. View of $-u$, showing the thin obstacle.

Thank you for listening!