Emergence of quadrature domains for the GEF on the hole event

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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
  $$R_Z(z) = U^{\mu_Z}(z) - \frac{1}{2}|z|^2 = \sum_{\lambda \in Z} \log |z - \lambda| - \frac{1}{2}|z|^2$$
The truncated GEF (Weyl Polynomial)

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

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.
The Neumann oval scale

*Figure.* View of $-u$, showing the thin obstacle.
Thank you for listening!