16) Random matrix theory

Of course results for a 2x2 matrix cannot be universal. It turns out that correlations obtained from random matrices are universal in the limit of large matrices.

16a) Wigner–Dyson ensemble

- work with a given representation of the unitary symmetries, e.g. at fixed J^T
- there hermitian matrices are classified by the anti-unitary symmetries.

Wigner's fundamental theorem: a symmetry is either

Random matrix ensemble \( (H, P(H)) \)

\[ P(H) = e^{-N \text{Tr} H^+ H} \]

in general \( P(H) = e^{-N \text{Tr} V^T H^+ H} \)

universality: correlations are independent of the choice of \( V \).