\[ \int_0^\infty \frac{a e^{-\lambda s^2}}{s} ds = -2a \frac{\lambda^{1/2}}{\Gamma(1/2)} \]

\[ = -2a \frac{\lambda^{1/2}}{\Gamma(1/2)} \left( -\frac{1}{2} \right) = \frac{a \lambda^{1/2}}{\lambda^{3/2}} = \frac{a \sqrt{\lambda}}{\lambda} \]

\[ a = \lambda \Rightarrow \quad \lambda^{1/2} = \frac{\sqrt{\lambda}}{2} \Rightarrow \lambda = \frac{\pi}{2} \]

\[ P(s) = \frac{\pi s^2}{2} \]

Wigner surmise

Fits the nuclear data very well

(15c) Ergodicity

two types of averaging
- spectral averaging
  moving with your statistic over a single spectrum
- ensemble averaging
  move with your statistic over an ensemble of spectra

Ergodicity: ensemble averaging and spectral averaging give the same result.