Its variance

$$\text{Var} \, \Delta_3(L) = \frac{\left( \Delta_3(L) - \bar{\Delta}_3(L) \right)^2}{\left( 2 + 3 + 4 \right)}$$ (II-36)

is a (2+3+4)-point measure.

Let us now briefly describe the results obtained from different theoretical models. We shall mainly consider the GOE and also, for the sake of comparison and because it constitutes the limiting case of maximum randomness, the Poisson ensemble (an ensemble of sequences of points, not of eigenvalues of matrices).

**Poisson Spectrum**

- Correlation coefficient between adjacent spacings (I-37)

$$C = 0$$

- Functions $E,F$ and spacing distributions (II-26,27,28)

$$E(k; L) = F(k; L) = p(k; L) = \left( \frac{L^k}{k!} \right) e^{-L}$$ (II-37)

- $k$-level correlation functions (II-22)

$$R_k(x_1, \ldots, x_k) = 1 , \quad k > 1$$

- $k$-level cluster functions (II-23)

$$\gamma_k(x) = 1 , \quad \gamma_k(x_1, \ldots, x_k) = 0 \quad k > 2$$

and their integrals (II-31)

$$y_1(L) = L , \quad y_k(L) = 0 \quad k > 2$$

- Cumulants $K_y(L)$

$$K_y(L) = L$$

In particular (II-34)

$$\Sigma^2(L) = L$$

- Shape parameters (II-32)

$$\gamma_k(L) = L^{-k/2} \quad k > 1$$

which means that for large $L$ $\gamma_k \to 0$, i.e., $n(L)$ tends to be normally distributed.

- Average value of $\Delta_3(L)$ (II-35) [DM-63]

$$\bar{\Delta}_3(L) = \frac{L}{45}$$ (II-38)