state as an amplifying device: the fine structure states can be seen through the Coulomb force mixing of the analogue with the background sea of $T_\alpha$ states. The experiments are performed with proton energies of the order of a few MeV and the energy resolution attained is of the order of $10^{-4}$ [BLM-76].

We shall not give a complete account of comparisons between GOE predictions and nuclear data (see [BFF-81,HPB-82,BHP-83,BHP-84]) but rather present a few typical examples. The combined set of nuclear resonance-energy data of different nuclei - in short, the nuclear data ensemble (NDE) - is treated as a sampling of eigenvalues of GOE matrices. The data analyzed consist of 1762 resonance energies corresponding to 36 sequences of 32 different nuclei. In Fig.II.7 are shown the spacing distribution $p(x)$ and the average value of $\Delta_3$ as a function of $L$ in the range $L < 25$. In Fig.II.8 are shown the variance $\Sigma^2$, asymmetry $\gamma_1$ and excess $\gamma_2$ of the distribution

![Figure II.7](image1.png)  
![Figure II.8](image2.png)

Fig.II.7 (a) Nearest-neighbour spacing histogram for NDE (experiment); (b) $\Delta_3$ as a function of $L$; dashed lines for GOE, to take into account finite sample size effects, correspond to one standard deviation from the average (taken from [HPB-82,BHP-83]).

![Figure II.8](image3.png)

Fig.II.8 - (a) $\Sigma^2$, (b) $\gamma_1$, (c) $\gamma_2$ as functions of $L$ (taken from [BHP-84]).

of the number statistic $n(L)$ in the range $L < 5$. The procedure for calculations is to evaluate for each of the 36 sequences the spectral-averaged measure, say $\langle \Delta_3(L) \rangle_S$ for $\Delta_3(L)$, and then take their average, weighted according to the size of each sequence.