<table>
<thead>
<tr>
<th></th>
<th>1/4 Circle</th>
<th>Sinai</th>
<th>Stadium (one symmetry)</th>
<th>Stadium (mixed symmetries)</th>
<th>GOE</th>
<th>Poisson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of levels</td>
<td>675</td>
<td>740</td>
<td>810</td>
<td></td>
<td>3200</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-0.04 ±0.04</td>
<td>-0.30± 0.04</td>
<td>-0.31± 0.04</td>
<td>-0.18±0.02</td>
<td>-0.27</td>
<td>0</td>
</tr>
</tbody>
</table>

Table IV.1

Values of the correlation factor C between adjacent spacings (Eq.I-37) for different systems investigated. GOE- and Poisson-values are given for comparison.

To improve the statistical significance of the results, we consider four different cases by changing the value of the parameter R and perform a joint analysis of the results as explained in [BGS-83,BGS-84a]. The results are presented on Fig.IV.3 and Table IV.1. In contrast to the case of the circular membrane, for which the results are close to the Poisson spectrum, we see now that the results are fully consistent with GOE-predictions for \( p(x) \) (not only for small values of \( x \)), for \( \Delta_3 \) and for C.

Let us investigate another system whose classical analogue is chaotic, namely one particle in a two-dimensional box whose boundary is the stadium. The solutions of eq.(IV-2) can be classified according to four different symmetry classes:

- **even-even**
  \[ \Psi(x,y) = \Psi(-x,y) = \Psi(x,-y) \]  

- **odd-even**
  \[ \Psi(x,y) = \Psi(-x,y) = -\Psi(x,-y) \]  

- **odd-odd**
  \[ \Psi(x,y) = -\Psi(-x,y) = -\Psi(x,-y) \]  

- **even-odd**
  \[ \Psi(x,y) = -\Psi(-x,y) = \Psi(x,-y) \]  

Fig.IV.3 - Results of energy level fluctuations for desymmetrized Sinai's billiards as specified on the upper right corner of the figure. 740 levels have been included in the analysis, corresponding to the 51-th to 268-th level for R=0.1, 21-th to 241-th level for R=0.2, 16-th to 194-th level for R=0.3, 11-th to 132-th level for R=0.4. See caption of Fig.IV.2 for further explanation (taken from [BGS-83,BGS-84a]).