Abstract:

The aim of this work is to get acquainted with the topic of quantum chaos and statistical methods used to quantify it. In the first part of this work I will show the definition of both classical and quantum chaos. I will introduce NNS method, which studies quantum chaos as correlations between levels in the spectrum. In the second part of my work I will describe basic methods used to work with data in a form of probability density. In the third part this work I will focus on methods that are specific for quantum chaos. To simulate a quantum chaotic system I will use the basics of random matrix theory. I will introduce unfolding and I will study the distribution of NNS for simulated spectra. To quantify quantum chaos I will use Brody distribution. In the last part of this work I will apply above mentioned methods on spectra of real particles.