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Nuclear level density from the Oslo method

Monday 24 March 2025 14:00 (45 minutes)

The Oslo method has been applied to a double-digit number of experiments at the Oslo Cyclotron Laboratory (OCL) and other facilities. The method allows for extraction of nuclear level densities (NLD) and -ray strength functions (SF) from excitation tagged spectra. Due to the large number of experiments performed, the nuclear physics group at the University of Oslo has a database of NLD data for more than a hundred different nuclei ranging almost the entire nuclear chart, from Si to Pu. In addition, the group has engaged in theoretical studies of statistical properties through large-scale shell model calculations.

The Oslo method itself yields the relative shape of the NLD and relies on other external data to obtain physical values. The reliance on external data means that the quality of the result also depends on the quality of the external data. I will discuss the different types of data often used, the potential systematic errors introduced and how they are handled. I will also give an overview of the NLD data from Oslo method experiments available/published and current ongoing projects.

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