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Nuclear Data Service System of the China Nuclear Data Center（NDS-C）

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The China Nuclear Data Center attaches great importance to the processing and visualization of nuclear data, as well as providing online data services. After more than two decades of effort, it has developed its own online nuclear data service system, named as NDS-C. This system utilizes API technology to offer a unified data processing interface that can serve a variety of applications across different environments, thereby enhancing development efficiency and reducing the complexity of system maintenance. It achieves an all-in-one project file that includes graphic elements, data elements, and information elements, among others. The system is capable of processing evaluation data in the ENDF format, experimental data in the EXFOR format, free-form data, and graphical data. The EXFOR and ENDF data are efficiently converted into hierarchical structures, which simplifies the correlation between data and facilitates in-depth data processing and mining. The service supports the development of browsers, desktop systems, and mobile applications, catering to the diverse needs of various users for nuclear data. NDS-C has a broad user base in China, with applications ranging from nuclear facilities and engineering to nuclear instruments, nuclear fuel materials, scientific research, data evaluation, and nuclear reaction experiments. These users have a wide array of requirements. For those engaged in nuclear reaction experiments and nuclear engineering, functions for processing and analyzing data on natural nuclides have been integrated. For general scientific research users, a convenient mobile application featuring fission yield data and decay data has been provided. For users in the fields of nuclear reactors and nuclear chemistry, a more specialized desktop software incorporating these data has been developed. For nuclear data evaluators, a batch plotting system for the entire library evaluation has been established, along with features such as emitted particle energy spectrum shape analysis, covariance data analysis, curve summation, ratio analysis, and graphical digitization tools. Additionally, training datasets based on EXFOR experimental data of nuclear reaction cross-sections have been offered for machine learning purposes.

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