

The Design of a Scientific Data Management System Based on DOMAS at CSNS-II

At the second stage of China Spallation Neutron Source (CSNS-II), 17 new neutron instruments will be constructed, which will produce 2 PB of raw experimental data annually. However, the existing data management system (DMS) based on ICAT has several limitations like poor scalability of metadata database, imperfect data status management and inflexible API. To ensure the accuracy, usability, scalability and efficiency of CSNS-II experimental data, a new scientific data management system is therefore designed based on DOMAS framework developed by Computing Center of IHEP. The data acquisition, transmission, storage and service systems are re-designed and tailored specifically for CSNS-II. Upon its completion, new DMS will overcome the existing challenges and offer functions such as online display, search functionality and rapid download capabilities for metadata, raw data and analyzed data; flexible and user-friendly authorization; and data lifecycle management. Ultimately, new DMS will improve the efficiency of experimental data analysis, pushing CSNS-II to reach international advanced standard and further retrieving sci-tech self-reliance and self-strengthening at high level of China. The development and deployment of new DMS begin at the end of 2023.

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