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Research and Development on Simulator of Fast Reactor in China

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With the closed fuel cycle strategy, China develops the fast reactor and advanced reprocessing technology, which supports the sustainable development of China nuclear energy. Technical solutions for the simulator of China Experimental Fast Reactor (CEFR), modeling and simulation are mainly introduced. CEFR adopted a pool-type FR technology with three-loops, which has 216 subsystems. The full scope real-time simulator was finished by Nuclear Power Simulation Research Center(NPSRC) at Harbin Engineering University (HEU) in collaboration with China Institute of Atomic Energy (CIAE) and validated by CEFR. According to the principle, characteristics of system, structure and operation of CEFR, the relevant research to determine the scope and degree, establish models and design systems for the simulation of CEFR has been accomplished. The model and software have been developed for 71 CEFR subsystems. The reactor physics, primary coolant system, secondary coolant system, third coolant system, auxiliary system and passive decay heat removal system and etc. are included in the simulator, which has been applied to instruct the debugging and experimental operation of CEFR and improve the control methods.

Country/Int. Organization

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