SPEAKER / PRESENTATION INFORMATION

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Title	***Status of JEFF-3.1.1 and ERANOS-2.1 Code System Validation for Fuel Cycle Calculation of Fast Reactors***		
Abstract	The aim of the paper is to present the European JEFF-3.1.1 Library, the ERANOS-2.1 code system, and their capabilities to predict the fuel cycle behaviour of FBR applications by the analysis of various experiments in fast neutron spectra: reaction rates, criticality, PIE of irradiated separated-isotope samples, and reactivity worth measurements of minor actinides. The JEFF-3.1.1 Nuclear Data Library is the latest version of the Joint Evaluated Fission and Fusion Library. The complete suite of data was released in 2008 and contains general-purpose nuclear data evaluations compiled at the NEA Data Bank in cooperation with several laboratories in NEA Data Bank member countries. JEFF-3.1.1 also contains radioactive decay data, activation data, and fission yields data. It combines the efforts of the JEFF and EFF working groups who have contributed to this combined fission and fusion file. The library contains neutron reaction data, incident proton data, and thermal neutron scattering law data in the ENDF-6 format. The new release of the European Reactor Analysis Optimized Code System, ERANOS-2.1, has been developed and validated to establish a suitable basis for reliable neutronic calculations of current and advanced FBR cores of the GEN-IV International Forum. The latest version of the ERANOS code and data system, ERANOS-2.1, contains all of the functions required for reference and design calculations of the fuel cycle behaviours of Liquid Metal Fast Reactors (LMFRs), with extended capabilities for treating advanced reactor fuel subassemblies and cores of Gas Cooled Fast Reactors (GCFRs). The analysis of several types of experiments with JEFF-3.1.1, associated with ERANOS-2.1 or/and continuous-energy Monte Carlo TRIPOLI4, shows the reliability of these calculation tools for criticality calculations and fuel inventory prediction. The first series of experiments used is critical core experiments, such as CIRANO, made in zero-power reactors like MASURCA or ZPPR. The second series is dedicated to fuel cycle behaviours: PIE experiments of fuel pins (TRAPU experiment) and separated-isotope samples irradiation (PROFIL experiments), both in LMFBR reactor PHENIX. The third series of experiments involves reactivity worth measurements of actinides in various spectra within the OSMOSE oscillation experiment in the MINERVE reactor. From this qualification work, some required improvements on nuclear data are highlighted along with the need for new specific integral experiments.		