Comparison of TRANSURANUS and FEMAXI Codes

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Abstract. Development in the safety of current Light Water Reactors is mainly focused on reducing the consequences of severe accidents. Accident Tolerant, or alternatively Advanced Technology, Fuel are the most promising option how to mitigate consequences of design basis accidents like loss of coolant accident and reactivity initiated accidents. Deployment of ATF fuel to commercial operation requires intensive validation and adaptation of fuel performance code to provide supporting safety documentation. Based on previous analyses, where the FEMAXI-6 code was tested on selected fuel performance irradiation tests, weakness of the input parameters and models used were revealed. To adapt and validate the code, TRANSURANUS code was implemented to the computational scheme and IFA-429 experiment was selected. The IFA-429 was devoted to investigation of the fission gas release from PWR types rods during rapid and short power increases. Rod designated as CD was selected due to its highest average grain diameter of 17 μm. Fission gas evolution was calculated by both codes and compared to the experimental values. TRANSURANUS as well as FEMAXI calculations fitted to the measured values and acceptably estimated rod internal pressure evolution during the test. Available methods and correlation were compared and putted to the context of achieved results.