Comparison of Neutronic Parameters for Developed GFR 2400 Cross-section Library in NESTLE Code

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Abstract. This paper is dedicated to the research and development activities related to the Gen IV reactor GFR 2400 at the Institute of Nuclear and Physical Engineering. Multiple studies were carried out in the past focusing on the processing of the temperature-dependent multigroup macroscopic cross-section library for the GFR 2400 reactor and this paper analyses the relative change, corresponding uncertainty and general applicability of the developed cross-section library for different physical states of the core. The relative changes from the reference model are graphically presented in the paper. The highest contribution comes from the coolant temperature effect for the fission reaction on ^{238}U nuclide. Based on the obtained results, the difference of the macroscopic cross-sections from the reference model is not linear and in some cases total relative change of all investigated reactions may decrease with the change of the physical parameter such as the temperature of the materials or change of the coolant density.