Sensitivity Analysis of Temperature Profile in Nuclear Fuel Pellets Using a Simple Analytical Model

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Abstract. We propose and test a simple analytical model of radial temperature profile for the VVER-440 fuel assembly sub-channel. The model includes 18 physical parameters, which affect the heat transport. Considering small changes in the input parameters of the model we evaluate their impact on temperature profile. The outcomes of this work include temperature profile in the representative thermo-hydraulic sub-channel and analysis of its sensitivity to changes in the input parameters. The analytical approach improves our understanding of thermo-physical and material-related phenomena inside the fuel rod under operational conditions.