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## W1 Experiments to study temperature effects at the JSI TRIGA reactor

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The Jožef Stefan Institute TRIGA Mark II reactor has been used for many experiments to test nuclear instrumentation, to validate particle transport codes as well as to study various multiphysics phenomena. Among them are also experiments to study various temperature related effects. In the presentation we will present recent experiments in this field.

Firstly, the JSI TRIGA reactor will be presented. Then we will present experiments related to temperature reactivity feedback effects, that is measurements of isothermal temperature reactivity coefficient, fuel temperature reactivity coefficients as well as pulse experiments, in which the temperature feedback is mostly due to spectrum shift to higher energies. In order to model the latter phenomena, knowledge of thermal scattering on H and Zr in ZrH is of high importance. We will also present the effect of temperature on neutron spectra in irradiation channels of the JSI TRIGA reactor

Second series of experiments is related to measurements of nuclear heating at the JSI TRIGA reactor that was performed with gamma calorimeters. We will present measurements and calculations of nuclear heating in various fission and fusion relevant materials in the JSI TRIGA reactor.

Third series of experiments is related to temperature profile measurements in the reactor core to validate Multiphysics codes coupling neutronics and thermal hydraulics. We will describe past experimental campaigns and calculations as well as the on-going Euratom funded project EVEREST, which aims at quantifying the impact of using advanced multi-physics models for the modelling of Long Term Operation (LTO) relevant parameters (vessel fluence) in PWR and VVER reactors.

Lastly we will present the on going project on installation of high temperature irradiation device.

The presentation will conclude by presenting the importance of research reactors in fostering nuclear R&D and plans for the new research reactor project named VERONICA.

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