Proposal Code : PDF – FusionTM -0001	
Title	Integration/coupling of nuclear transport code with ACTY/ACTYS-1-GO
Abstract	In a nuclear fusion reactor, hot and dense plasma of deuterium-tritium is confined using magnetic fields in a toroidal chamber. High energy (14.1 MeV) neutrons are generated through D-T fusion reaction creating nuclear radiation environment and interacts with the fusion reactor materials. These neutrons while interaction with material creates damage, transmutation of isotope changing original composition of materials and produce radioactive waste. ITER-India, Institute for Plasma Research, have developed a state of art computer code suite for nuclear activation analysis called ACTYS. ACTYS is single point analysis code for nuclear activation with one material and one neutron spectrum, while ACTYS-1-GO is for multipoint analysis for a geometry with many materials and spatially varying neutron field. Following activities will be attempted in the work: 1. Understanding output from nuclear transport code and input requirements of ACTYS code and doing benchmarks of ACTYS with previous examples. 2.Post processing of output from MCNP for ACTYS coupling for ITER Benchmark geometry for Shut Down Dose Rate (SDDR) estimates. Simulating ACTYS/ACTYS-1-GO for the ITER Benchmark geometry for SDDR and comparison with previous results of FISPACT/D1SUNED.
Research Focus Areas	Nuclear particle transport and activation analysis code are essential part for the validation and estimation of the radioactive waste from fission/fusion reactors along with the requirement for the preparation of commissioning and decommissioning plan. The present proposal aims to integrate ACTYS/ACTYS-1-GO capabilities with neutron transport code. This will enable to estimate the required parameter in faster and efficient way and minimizing human errors while doing post processing

	of outputs of nuclear transport codes.
Qualifications	PhD in Physics
Desired Experience	Knowledge in Neutronics would be desirable.
Other remarks	ACTYS code is developed at ITER-India, IPR and have already been accepted by ITER organization for estimation of material activation and dose estimation.