

Generation of Neutron Beam with the Cylindrical Discharge type Fusion Device

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In order to obtain thermal or fast neutron beam, we have been investigating neutron reflection by neutronics simulations and experiments with the cylindrical discharge type fusion device. In neutronics simulation, we use the MCNP, three-dimensional particle transport code, and evaluate the neutron flux and the energy spectra for several combinations in materials and the sizes of reflector, moderator and absorber to maximize longitudinal flux.

In the experiments, we are currently trying to make a new device with reversed potential profile, i.e. the cathode is grounded potential and the anodes are high positive potential. We will report the objective and status of the device.

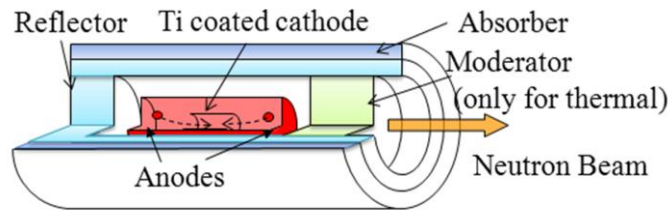


Figure1. Schematic view of cylindrical discharge fusion device

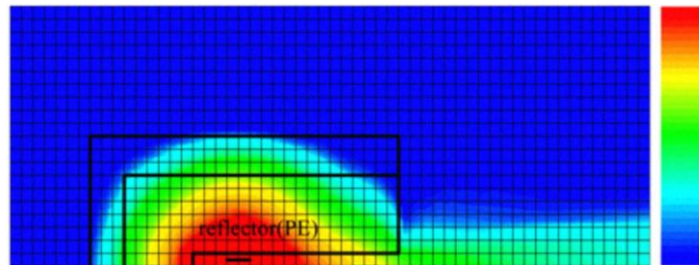


Figure2. Effect of the reflector material change on the neutron flux distributions