

Reaktordata

Nedan finns en kort beskrivning av de data som finns i matlabfilen som skall användas till reaktorprojektet. Värdena är för den mer avancerade modellen, men använd data för de snabba neutronerna om ni enbart vill räkna på en grupp neutroner (vilket grunduppgiften var).

Here are some data from a realistic 3-D core (Ringhals-4 PWR).

Although the data you will find in attachment are point-data, they represent a 2-D system now, and could therefore be used for 2-D calculations of a homogeneous reactor. This reactor contains both a fuel region and a reflector region, homogenized all together.

Here is an explanation of the data (MATLAB data file of type mat, version 7).

The material data are given in 2-group, with the index 1 being the fast group, and the index 2 being the thermal group.

D1,2: diffusion coefficients [cm]
ABS1,2: absorption macroscopic cross-section [1/cm]
REM: removal macroscopic cross-section [1/cm] (from fast to thermal group)
NUFIS1,2: nu*macroscopic fission cross-section [1/cm] (with nu being the average number of neutrons emitted per fission event)
KAPPAFIS1,2: kappa*macroscopic fission cross-section [J/cm] (with kappa being the average energy release per fission event)
FLX1,2: core-averaged scalar neutron flux [1/cm²s] (to be used for normalization purposes only)
v1,2: average neutron velocity [cm/s].

The point-kinetic data are:

B_{eff}: one-group effective fraction of delayed neutrons [1]
l (small lambda): one-group decay constant of neutron precursors [1/s]
L (capital lambda): mean neutron generation time [s]
K_{eff}: effective multiplication factor [1] (given only for information purposes, since it has to be recalculated).

The approximate outer core radius (reflector inclusive) is about 166.3 cm.