

NUCL 511 Nuclear Reactor Theory and Kinetics

Homework #1

Due January 23

1. Using the data given below, determine the I-135 and Xe-135 concentrations and generate their plots for the power history given on slide 20 of the lecture note 1.

One-group flux at full power ($\#/\text{cm}^2\text{s}$)	1.0×10^{14}
Macroscopic fission cross section (Σ_f) (cm^{-1})	0.686
Fission yield of I-135	0.064
Half-life of I-135 (hr)	6.7
Fission yield of Xe-135	0.003
Half-life of Xe-135 (hr)	9.2
Microscopic absorption cross section of Xe-135 (barn)	2.7×10^6