Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A fast and flexible reactor physics model for simulating neutron spectra and depletion in fast reactors GEOFF RECKTENWALD, Cornell University, MARK DEINERT, UT Austin — Determining the time dependent concentration of isotopes within a nuclear reactor core is central to the analysis of nuclear fuel cycles. We present a fast, flexible tool for determining the time dependent neutron spectrum within fast reactors. The code (VBUDS: visualization, burnup, depletion and spectra) uses a two region, multigroup collision probability model to simulate the energy dependent neutron flux and tracks the buildup and burnout of 24 actinides, as well as fission products. While originally developed for LWR simulations, the model is shown to produce fast reactor spectra that show high degree of fidelity to available fast reactor benchmarks.

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Date submitted: 08 Dec 2009   Electronic form version 1.4