

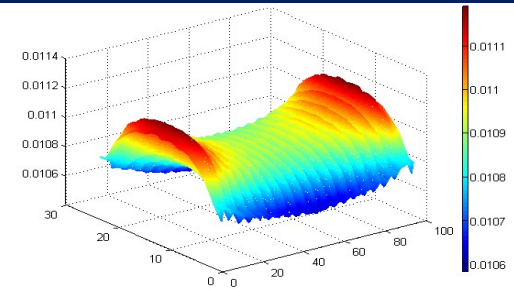
# Reactor physics codes developed

## ARCH :: Analysis of Reactor Transients in Cartesian and Hexagonal Geometries

- Used for *HTRs, AHWR, IPWR, VVER, IMSR* :: Well validated
- \*Rectangular & Hexagonal lattices, K-eff, Source
- \*Xenon spatial Oscillations & Transients
- \*Fuel Burnup, Core Followup, Eigen modes
- \*Refuelling & Fuel Reshuffling

## ADWITA Activation, Decay, Waste Incineration and Transmutation Analysis

- \*Use of multiple methods for (TTA)
- \*Inventory generation based on power history
- \*Decay Follow up of the generated inventory
- \*Mass, Activity, Decay heat rate during all time steps



APSARA-U SFA thermal flux distribution

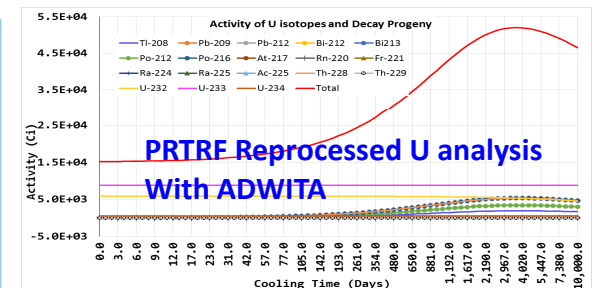
### Reactor Physics codes

## M3C Code (Monte Carlo Criticality Calculation Code)

- \*General geometry
- \*Compatible to ACE formatted library
- \*Unionized energy grid
- \*Thermal treatment (free gas & exact  $S(\alpha, \beta)$  modeling)

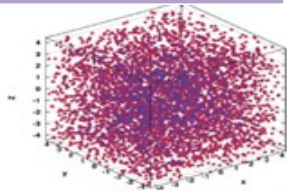
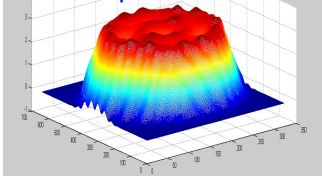
## Other new generation codes

- ATES3** :: Transport solver
- CARS** :: Auto fuel management
- PATMOC** :: Multi-group MC code
- HEXPIN** :: Pin-by-pin analysis for hexagonal cores;
- STEMR** :: MOC based transport using ray tracing
- DIAMOND** :: Code for square pitch LWRs based on MOC

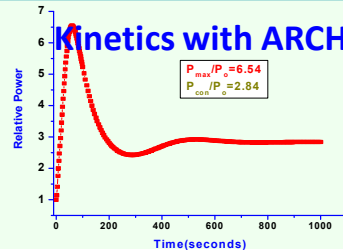


PRTRE Reprocessed U analysis With ADWITA

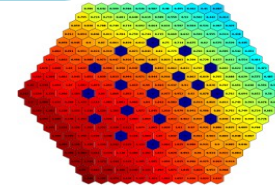
Thermal flux distribution at core mid-plane in IPWR



Monte Carlo modelling Randomly dispersed particles



Kinetics with ARCH



HEXPIN :: Pin-by-pin analysis :: VVER-KK

Higher Eigen modes in AHWR

