RFSP Training Course (Course Agenda)

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Course Agenda

- Introduction
  - Methods of Physics Analysis and Physics Computer Codes
  - Three-tier Scheme for CANDU Reactor-Physics Calculations
  - Role of RFSP
  - General Capabilities of RFSP
- The RFSP Direct-Access File
  - *PRINT MASS
  - *STORE
  - *USE DAF/*MAKE DAF vs *READ TAPE/*RITE TAPE

Course Agenda

- RFSP Model
  - Neutron Diffusion Equation
  - Geometry
  - Lattice Properties
  - Reactivity Devices and Device Properties
  - Smearing of the Devices
  - Irradiation Distribution: 3 Models

Course Agenda

- Time-Average Model
  - Irradiation Regions
  - Average vs. Spatially-Distributed Xenon Concentration
  - Perturbations
  - Flux Flattening
  - Time-Average Equivalence

Course Agenda - Workshop Number 1

- **Direct-Acess File**
- **Define Material Properties**
- **Generate Lattice Properties**
- **Definition of a Complete CANDU6 Model**
- **Time-Average Model**
- **Time-Average Equivalence**
- **Simulation of a fresh Core (0 n/kb no depleted fuel)**

Course Agenda

- *CERBERUS
  - Spatial Kinetics
  - IQS Method
  - General Scheme of Solution
  - Examples
- *POWDERPUFS
  - Theory, Westcott Convention
  - Generation of Fuel Tables
  - Interaction with Other Modules

Course Agenda

- *SIMULATE
  - Snapshots
  - Average vs. Spatially-Distributed Xenon Concentration
  - Grid-Based Local-Parameter Methodology
  - History-Based Local-Parameter Methodology
- *INTREP
  - Detector Dynamics
  - Lead Cables

Course Agenda - Workshop Number 2

- Transfer from a Snapshot to a History-Based Simulation
- Calculation of the Phinoms for spatial Control
- Bulk and spatial Control
- Cerberus (The Static Case)
- Cerberus (The Adjoint Solution)
- Cerberus (Dynamic Analysis)

Course Agenda

- **Flux and Power Mapping**
  - **Theory**
  - **Applications to Core Tracking**
  - **Auxiliary Calculation Modules**
  - **Failed Detectors**
  - **Examples**

Course Agenda - Workshop Number 3

- Definition of the detectors in *INTREP
- Generation of the modes
- Generation of the Fundamental Mode
- Flux Mapping Using the Data from the Off-Line System
- Powermap

Course Agenda

- *CERBRRS
  - ↑General Scheme of Solution
  - ↑Examples
- *INSTANTAN
  - ↑Theory

Course Agenda - Workshop Number 4

- Cerbrrs (Static Case)
- Cerbrrs (The Adjoint Solution)
- Cerbrrs (Dynamic Analysis)
- Trip Time
- Simulation of a refuelling
- Flux Mapping of a Refuelling Simulation
- Generation of a Refuelling Map with *INSTANTAN

Course Agenda

- Code Development
  - ↑Lattice Calculations
  - ↑2-Group Properties
  - ↑History-Based Simulations
- 2-Group Modules
- Software Support

Course Agenda - Workshop Number 5

- **Review of the Previous Workshops**
- **Answer Questions**