

MCNPX version 2.5.0 – 26 significant improvements

Physics Enhancements

- Mix & match of libraries and models
- CEM upgrade to 2K
- INCL 4 & ABLA physics models
- Secondary-particle production
- Neutron fission multiplicity
- S(a,b) secondary-energy smoothing
- Photonuclear physics model
- Photon Doppler broadening

Source Enhancements

- Positron sources
- Spontaneous fission sources
- Multiple source particles
- Default VEC for cylindrical sources
- Extension of the TR keyword

Tally Enhancements

- Lattice tally speedup
- Anticoincidence pulse-height tally
- Coincidence capture pulse-height tally
- Residual nuclei pulse-height tally

Variance Reduction Enhancements

- WWG superimposed mesh plots
- Variance reduction with pulse-height tallies

Other Enhancements

- Lattice index labeling
- Color contour and mesh tally plots
- READ card
- HISTP card extension
- EXTRAN/detector underflow control
- 8-byte integers
- Parallel processing with MPI



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MCNPX version 2.6.0 – 23 significant improvements

Physics Enhancements

- Muon capture physics
- Integration of the LAQGSM event generator
- Heavy-ion transport
- Integration of the Cinder code
- Photo-fission yield data

- Delayed particles from activation
- Upgrade of the CEM event generator
- Ion production from library neutron capture
- Gravity effects for neutrons
- Updated photon de-excitation data

Source Enhancements

- Transmutation with KCODE
- Acceleration of KCODE source convergence
- Spontaneous decay photon sources



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Tally Enhancements

- Termination based on precision
- Spherical mesh tally plots
- Differential tallies extended to library events

Variance Reduction Enhancements

- Spherical mesh WW (weight windows)
- Coupled space-energy-time WW
- Additional WW controls

Other Enhancements

- Long file names
- Proton step size control
- Output for induced-fission multiplicity
- Several graphics enhancements



MCNPX version 2.7.0 – 30 significant improvements

Beta versions 2.7.A, 2.7.B, 2.7.C, 2.7.D, 2.7.E

Physics Enhancements

CEM upgrade to 03.02
Adjustable stopping-power grid
LLNL photofission multiplicities+upgrade
Delayed gamma exact sampling
LLNL neutron fission multiplicities+upgrade
Muonic x-ray enhancements
Delayed neutron spectra
NRF data in ACE libraries
Improved photoatomic form factors
DG algorithm improvements
M & MX card enhancements
GEF photofission yields
LAQGSM upgrade to 03.03

Source Enhancements

Burnup enhancements
Pulsed sources
Beam source options

Source Enhancements – continued

Natural background sources

Tally Enhancements

Tally tagging
LET tally option
Quality factor tally option
Cyclic tally binning
ROC curve tally option
Residual tally upgrades
Triple & quadruple coincidences
Time-dependent pulse-height tallies

Other Enhancements

MCPLOT graphics enhancements
Activation options (ACT card)
MCPLOT tally manipulations
Nested READ cards
Feature-based memory reduction



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