Studsvik

CASMO5

Advanced Lattice Physics Code for LWRs

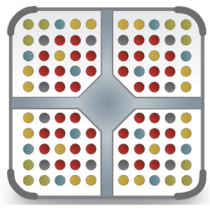
CASMO5 is Studsvik's state-of-the-art lattice physics code for modeling all types of LWR nuclear fuel. By including the latest nuclear data and substantially expanded modeling capability, CASMO5 reaches far beyond previously available lattice physics codes.

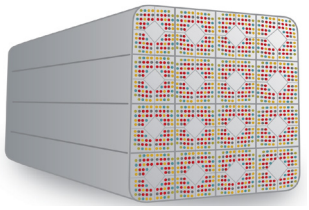
Fuel Lattice Design to Full Core Model

CASMO5 continues Studsvik's long tradition of producing user-friendly, flexible, highly accurate, licensing-grade software solutions for the nuclear industry.

CASMO5 has the flexibility to model:

- All commercially available LWR fuel designs
- High mixed-oxide (MOX) concentrations
- High burnable poison concentrations
- Unique traits of AP1000, APWR, EPR, ABWR, ESBWR, SMRs
- Single lattice to multi-assembly effects
- Small reactor critical configurations
- Fuel storage pool/rack configurations and criticality analysis
- Reference calculations (when no measured data is available)
- Higher order Pn-scattering





Methodology

CASMO5 represents the culmination of Studsvik's 30 years of experience in transport-based lattice physics. The 2D transport solution is based on the well established Method of Characteristics with a linear source approximation, delivering unparalleled fidelity with production-level run times, even with today's longer fuel cycles.

CASMO5-SIMULATE5

CASMO5 was developed to provide the required cross-section data for the expanded capabilities of SIMULATE5, Studsvik's steady-state reactor analysis code. Together, they make the most advanced light water reactor physics analysis system in the world.

All neutron and gamma libraries required by SIMULATE5 are automatically generated by CASMO5.

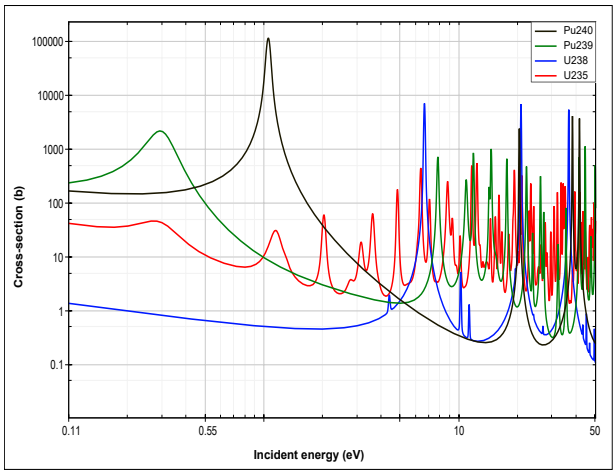
CASMO5 is Studsvik's most advanced lattice physics code specifically designed to support SIMULATE5.

Accuracy

CASMO5 has been extensively validated against measured critical experiments, continuous-energy Monte Carlo calculations, and post-irradiation benchmarks. CASMO5 delivers exceptional accuracy for traditional and newer, advanced fuel designs.

Superior Nuclear Data: ENDF/B-VII.1

Using the ENDF/B-VII.1 nuclear data, Studsvik has developed a high-resolution, 586-group neutron library for use with CASMO5. This extensive update from the previous 70-group CASMO library improves accuracy and reduces reliance on approximate resonance treatments. CASMO5 also includes an updated 18-group gamma library for gamma-sensitive in-core detector modeling and gamma energy deposition calculations.



Cross-section data is available for over 1095 nuclides and materials, including more than 491 explicitly defined fission products and 119 heavy nuclides, making this library state-of-the-art in every sense.

Improved Modeling Detail

Exploiting the power of today's computational hardware, CASMO5 requires fewer approximations and performs more rigorous solutions than previous generations of lattice physics codes.

Several significant physics enhancements, including resonance upscattering, higher-order Pn scattering, extended depletion chains, and a localized energy released per fission model, make CASMO5 the most accurate lattice physics code available.

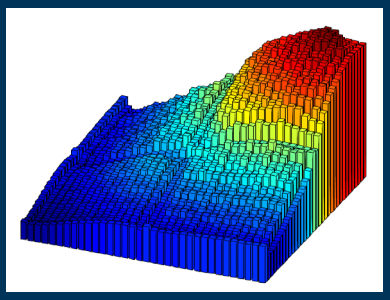
Even with the refined physics and numeric models, CASMO5 still delivers excellent runtimes by using shared-memory multicore CPUs. In fact, if sufficient CPUs are available, most case matrix calculations can run in an hour or less.

Applications

CASMO5 is commonly used to generate cross-section data for SIMULATE. CASMO5 can help support efforts in the following areas:

- Fuel management
- Core follow
- Plant Operations
- Reload physics
- Spent nuclear fuel management

CASMO5 can also perform burnup credit analysis as expanded MxN capabilities explicitly model fresh and depleted fuel and fuels storage rack components.



CASMO5 accurately models any type of commercially available fuel designs with simple, straightforward input designed to get your model right the first time.

Requirements

CASMO5 is built entirely on Fortran-2008, and is available for all standard computing platforms running most modern operating systems. Linux and Windows are typical environments for CASMO5.

Unparalleled Customer Support

Studsvik's technical support puts the needs of its customers first.

- 24-hour response time
- Easy ticketing system
- On-line support portals
- Access to technical documentation
- Active and growing user communities of practice

For further information please contact:

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