

Lawrence Livermore National Laboratory

COG Accomplishments



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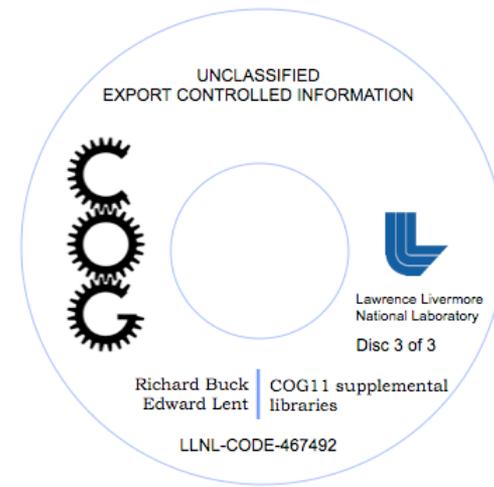
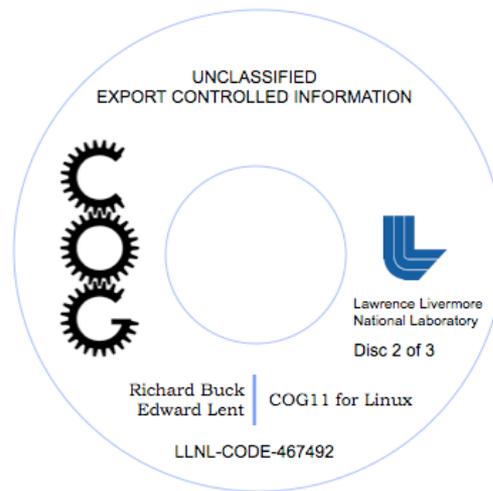
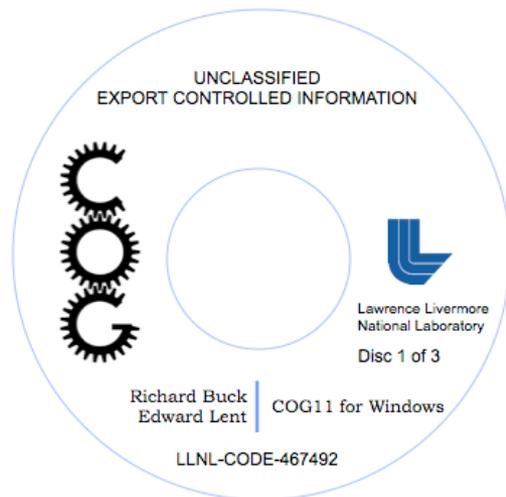
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Latest version accomplishments

- **COG11** = Modern, General Purpose, High-Fidelity, Multi-Particle, Monte Carlo transport code
 - LLNL approved **safety software** for criticality safety applications
 - LLNL approved limited distribution as **export controlled** software
 - Completed LLNL-SM-461824, “COG11 Manual Supplement”



Latest version status

- **COG11** = Modern, General Purpose, High-Fidelity, Multi-Particle, Monte Carlo transport code
 - **ICNC2011** paper submitted describing new features in COG11
 - **RSICC** testing in progress
 - Available soon!
 - <http://cog.llnl.gov>

What's new?

- **Geometry enhancements**

- **LATTICE** geometry feature allows the user to easily specify a regular array of identical units of arbitrarily complex structure
- **NOT** (exclusion) operator may be used to describe a sector as a volume that excludes other specified volumes and may be defined explicitly – in terms of its bounding surfaces – or implicitly – in terms of other previously-defined sectors

- **Enhanced visualization**

- “COG11 **-xi** inputfile” enables interactive X-Window graphics

- **Enhanced parallel processing for Windows**

- **MPICH2**

What's new?

- **New continuous energy cross-section libraries**
 - ENDL99
 - ENDL2008
 - ENDFB6R8
 - ENDFB7R0
 - IAEAPNUC
 - JEFF2.2
 - JEFF3.1
 - JEFF3.1.1
 - JENDL3.3
 - MCNP.50c, MCNP.51c, MCNP.55c, MCNP.66c, MCNP.70c

What's new?

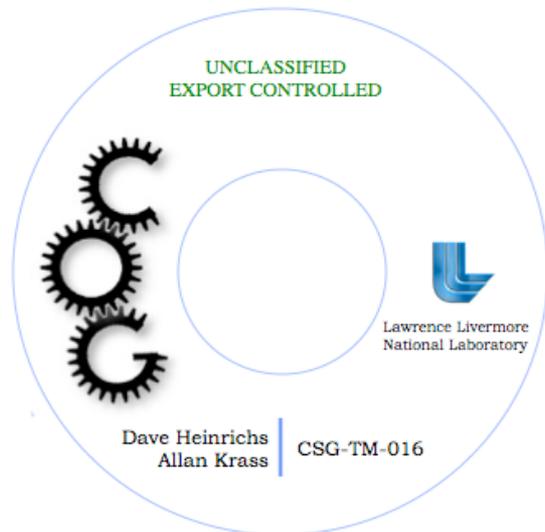
- **New unresolved resonance region probability table libraries**
 - PT.ENDFB7R0.BNL
 - PT.JEFF3.1
 - PT.JEFF3.1.1
 - PT.MCNP.66c, PT.MCNP.70c

- **New thermal scattering – $S(\alpha,\beta)$ – libraries**
 - T.ENDFB7R0, T.ENDFB7R0.BNL, T.ENDFB7R0.LANL
 - T.JEFF3.0, T.JEFF3.1, T.JEFF3.1.1

What's new?

- New user training workbook

– **CSG-TM-016**



What's next?

- **More physics**
 - **JENDL4.0** (in progress)
 - **RadSrc** for α -decay to a user defined time to generate the gamma source (useful for shielding applications)
 - **COGDFG** library of delayed fission gammas (useful for criticality applications)
- **Enhanced visualization**
 - **WebGL** for 3-D visualization and manipulation

What's next?

- **Enhanced verification and validation**

- ENDF/B-VII.1 testing
- More benchmarking to ICSBEP handbook (HEU in progress)
- V&V reports and input files available for downloading:
- <http://cog.llnl.gov/validation.html>

- **Continued outreach**

- CSG-TM-016 training for external users
- Additional training modules (in progress)