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Title: Nuclear Data Activities Supporting MCNP6.3

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Los Alamos NATIONAL LABORATORY

Nuclear Data Activities Supporting MCNP6.3

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Nuclear Data for MCNP

- MCNP6.2 released in 2018
- Nuclear Data accompanied on 2 DVDs
  - ENDF/B-VII.1-based data (endf71x) (new with MCNP6.2)
  - ENDF/B-VII.1-based thermal scattering data (new with MCNP6.2)
  - *All* previous data sets included

ENDF/B-VIII.0-Based ACE Files Available

- ENDF/B-VIII.0 released in February 2018
- https://nucleardata.lanl.gov
  - ENDF/B-VIII.0-based ACE files release in June 2018
  - ENDF/B-VIII.0-based thermal scattering ($S(\alpha,\beta)$) ACE files released in July 2018 and October 2020
  - Incident charged-particle ACE files released April 2021
  - Instructions for modifying xsdir file

- So much unfulfilled potential
  - Limited number of libraries
  - Slow download speeds
  - Looks rather simple

Website Improvements

- All of our Monte Carlo data will be made available
  - Packaged as “libraries”—all 62 of them
- Hosted on servers with fast internet connection
- Python utility to automate getting the data
  - Simple download from https://nucleardata.lanl.gov
  - List what libraries are available
  - Automatic installation (if desired)
  - Only download what doesn’t already exist
- Potential to expand capabilities in the future

- Coming Fall 2021

What data is available to MCNP?

- Appendix G of MCNP5 manual listed data available
- “Listing of Available ACE Data Tables” LA-UR-17-20709
  - Static document
  - Represented what was on LANL HPC machine—not the user’s machine

- Need something more flexible and specific to the user

Data Listing Tool

- Dynamic Python tool
  - JupyterLab
- Examines data on machine of interest
  - Looks through XSDIR file
  - No internet connection required
- Open Source project
  https://github.com/NuclearData/DataListing
  - Interested partners may contribute via Pull Requests
  - Please begin a conversation with developers before spending a lot of time
    https://github.com/NuclearData/DataListing/discussions

Demo

Conclusion

- Nuclear Data Team at LANL working to improve nuclear data availability
- Updated/modernized/improved website
  https://nucleardata.lanl.gov
- New, dynamic tool for examining what ACE data is on your machine
  https://github.com/NuclearData/DataListing

Nuclear Data Office Hour

Thursday, July 15
12:00—13:00 MDT