# Nuclear Data Uncertainty Propagation using SANDY

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Nuclear data are inherently uncertain, and it is now well established that they represent one of the major sources of uncertainty in key nuclear applications, including criticality safety, reactor design, shielding analysis, and nuclear waste management. Propagating these uncertainties through simulation models is therefore essential for obtaining realistic and reliable results.

This workshop introduces the principles and practical use of the **SANDY** code for nuclear data uncertainty quantification. Participants will learn how stochastic sampling techniques are applied to nuclear data, how to generate perturbed evaluations, and how to propagate these uncertainties through reactor simulations. The session combines theoretical background with hands-on demonstrations of SANDY in typical reactor analysis workflows.

**Target audience:**

Researchers, nuclear engineers, and analysts working in reactor physics, nuclear data evaluation, or uncertainty quantification. The workshop is also suitable for graduate students and code developers interested in stochastic methods for nuclear data applications.

**Main topics:**

- Overview of nuclear data and covariance information
- Principles of stochastic sampling and random nuclear data generation
- Structure and use of the SANDY code
- Integration with reactor simulation tools
- Demonstration of nuclear data uncertainty propagation in benchmark cases

Participants are expected to bring a personal laptop, preferably with Python, Jupyter, and NJOY installed (installation instructions are available at https://github.com/luca-fiorito-11/sandy/blob/develop/INSTALL.md ). Example input files and datasets will be provided at the workshop. Some familiarity with the ENDF-6 format and reactor physics codes would be beneficial, and minimal knowledge of Python is recommended.