

BNL-NCS-37669

CONF-851265--1

BNL-NCS--37669

DE86 007129

Reference Data for Nuclear Research

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REFERENCE DATA FOR NUCLEAR RESEARCH
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The evaluation of nuclear structure properties based on measurements is needed to test theories about the nucleus. Breakthroughs in nuclear theory such as the shell, vibrational, and rotational models, as well as the continuing revelations about the nucleus through band structure, are greatly facilitated by the selection and publication by experts of nuclear structure properties. Such compilations have been called "The Lifeblood of the Nuclear Sciences and Their Applications." The importance of this work and the shortage of scientists to participate has long been realized by scientific advisory groups.

The National Nuclear Data Center (NNDC) at Brookhaven National Laboratory is responsible for data compilation, evaluation and information services for neutron, charged particle and nuclear structure physics. The NNDC maintains bibliographic, experimental and evaluated data files and provides data services to basic and applied research scientists in the United States and Canada. In particular, the NNDC is responsible for the development, maintenance, promotion and distribution of the reference nuclear data bases, the Evaluated Nuclear Data File (ENDF/B) and the Evaluated Nuclear Structure File (ENSDF).

The ENDF/B library contains only one evaluation of cross sections for each material and cross sections for all significant reactions that extend nominally to 20 MeV. For various applications ENDF/B is tested in carefully performed and documented benchmark experiments. The information from such integral experiments, as well as the results of basic cross section measurements, are used to determine possible revisions on a periodic basis.

The ENSDF library contains evaluated nuclear structure data on all nuclides. The evaluated data in the ENSDF represent contributions from a cooperative effort by

the U.S. and international evaluator network which reviews available experimental data on nuclides and periodically updates the evaluations. The evaluations for $A \geq 45$ are published in the Nuclear Data Sheets (NDS) produced by the NNDC and published by the Academic Press; the $A < 45$ evaluations are published in Nuclear Physics.

The prominent features of the above files will be presented.