

Nuclear Astrophysics Data Home Page

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A variety of data is needed in nuclear astrophysics; charged particle, neutron, and neutrino cross sections; atomic masses; decay modes and nuclear lifetimes from the valley of stability to the nucleon drip lines; beta decay strength functions; elemental and isotopic abundances; and theoretical values for all of these quantities when experimental values are unavailable. These data are found in many different places and forms including printed publications, computer files, journals and review articles, and private databases. Some data are available through electronic means, but at a variety of locations and in widely varying formats. The disbursed nature of these data often makes it difficult for theorists to perform their calculations with the best available input data.

In the past, much of the compiled data used for nuclear astrophysics was the result of work by relatively few people, in particular Willy Fowler and his collaborators. That era has ended, and astrophysicists recognize that a concerted and coordinated community effort must be initiated for the compilation, evaluation, and stewardship of the nuclear data they both generate and use. The expertise for evaluation of data is spread over many institutions, worldwide, and it seems inevitable that the data will be published in various formats in the foreseeable future. We can, however, bring these data to a central location where they can be (if not already) compiled, and formats standardized. The data can then be made conveniently available electronically through the WWW and file transfer protocols on the Internet.

We have made a start toward this goal by developing a home page for nuclear astrophysics data that can serve as a prototype for a more complete and elaborate effort. Even as a prototype, however, this home page contains a

variety of useful data, much of which has not been generally available before, or which appears on the WWW for the first time.

The data are arranged as follows:

Nuclear Astrophysics Data

1. Nuclear Data Reference List - a comprehensive bibliography for nuclear astrophysics, hypertext linked to available data.
2. Reaction Rates, Charged-Particle Induced Reactions, Neutron-Induced Reactions, EM Interactions, and Weak Interactions.
3. Nuclear Structure and Decay Data, Isotope Explorer (VuENSDF), Super Chart of the Nuclides, Table of Isotopes, Table of Radioactive Isotopes.
4. Atomic Masses, experimental and theoretical.
5. Nuclear and Particle Astrophysics Data from the Particle Data Group, Phys. Rev. D54 (1996)
6. Chemical and Isotopic Data, Elemental Abundance, Isotopic Abundance, Physical Constants, Periodic Table, and Chemical Properties.

Nuclear Astrophysics Meetings

Web Sites of Interests to Nuclear Astrophysics

We note that section 2 above contains the comprehensive data bases of Hoffman and Woosley, and of Thielemann, et al.

The Nuclear Astrophysics Data Home Page can be visited at:

<http://isotopes.lbl.gov/isotopes/astro.html>

Footnotes and References

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