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PCNUDAT
a PC Nuclear Data Program

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Abstract: The PC program PCNuDat is described which displays nuclear radioactive decay data and thermal cross section data. It requires 45 Megabytes (reduced version of PCNuDat requires 3 Megabytes) of disc space and can be obtained through Internet FTP or WWW from U.S. Nuclear Data Center or Nuclear Data Section of the IAEA. It can be obtained also on CD-ROM upon request sent to Nuclear Data Section.

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FENDL2 for FTP file transfer of FENDL-2.0;
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Web: http://www-nds.iaea.or.at

Note:

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Neither the originator of the data libraries nor the IAEA assume any liability for their correctness or for any damages resulting from their use.

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Citation guidelines:

When using data extracted from PCNuDat database, the citation should be the following:

Data produced using the PCNuDat program and extracted from Evaluated Nuclear Structure Data File on (see date on http://www.nndc.bnl.gov/nndcscr/pc_prog/).
R.R. Kinsey et al., The NUDAT/PCNUDAT Program for Nuclear Data, paper submitted to the 9th International Symposium on Capture-Gamma-Ray Spectroscopy and Related Topics, Budapest, Hungary, October 1996.

PC Nuclear Data Program: PCNuDat

Robert R. Kinsey
Oct. 27, 1998.

The program NUDAT (NUclear DATa) has been available on the NNDC (BNL, USA) Online Data Service since 1986. Th program PCNuDat (release version 2.7) and its associated data files designed to run on an IBM PC compatible computer is now available. Users familiar with the online NUDAT program should have no problems running PCNuDat. PCNuDat data base contains a variety of nuclear data in a form suitable for performing of wide range of searches for data satisfying user chosen constraints.

Data Types Available. The data types which may be obtained are the following:

Extracted from ENSDF (Evaluated Nuclear Structure Data File).

- **Adopted Levels** - information about nuclear levels which includes the nucleus, the level energy and its uncertainty, spin-parity, and the half-liife and its uncertainty.

- **Adopted Gammas** - information about nuclear gamma rays including their energy and uncertainty, source level energy, intensity, multipolarity, mixing ratio and conversion coefficient.

- **Adopted Levels and Gammas** - information about gamma rays with the addition of spin-parity and half-life of the parent level.

- **Decay Radiations** - information about the radioactive decay of nuclides including radiation type, energy, intensity and dose. For beta radiation both the median and endpoint energies are given.

Extracted from the Nuclear Wallet Cards.

- **Ground and Meta-stable Srate Properties** - information about ground and meta-stable state properties of nuclei including level energy, mass excess and uncertainty, spin-parity, half-life and uncertainty, decay mode with branching ratio, and Q-vaqlue. For naturally occuring nuclides, the abundance is given.

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The README file of the 1998 version

PCNUDAT release version 2.7, Oct. 27, 1998.

The PCNUDAT files in this directory (except README's), must be transferred to your PC's disk using a binary transfer. The current version of the PCNUDAT program is the release version 2.7, which is contained in the self extracting file NDT27_16.EXE. This file also contains all the other files and databases needed to run the program. The only limitation is that the nuclear structure data (levels, gammas, and radiations) are limited to A's 40 to 50. This database uses approximately 3 Mb of disk space along with the program and its supporting files. The full ENSDF adopted levels and gammas and the ENSDF decay radiations are also available. The full data base uses approximately 45 Mb of disk space.

Reduced Data Base Installation

Using **ftp** in the binary mode, transfer the self-extracted zip file `ndt26_16.exe:`

```
  ftp bnlnd2.dne.bnl.gov
  >login anonymous
  >user@your.machine
  >binary
  >cd pc_prog
  >mget *.zip
...
  >quit
```

You can also download this file from **Web**:

http://www.nndc.bnl.gov/nndcscr/pc_prog/
or
http://www-nds.iaea.or.at/ndspub/pc_prog/

Create a directory to contain the program and its data files.

```
C:\>md pcnudat
```

Change to that directory.

```
C:\>cd pcnudat
```

Execute the self extracting `ZIP` file. (Assume its on a floppy in the A drive.)

```
C:\PCNUDAT>a:\ndt26_16
```

You should now be in directory `\PCNUDAT` on your C drive and the program `PCNUDAT.EXE` should be in the directory along with the following files:

```
LEVELS   DB        Adopted levels from ENSDF as of Jan. 31, 1996.
LEVELS   IDX         (A's 40-50)
GAMMAS   DB        Adopted gammas from ENSDF as of Jan. 31, 1996.
```

```
GAMMAS   IDX         (A's 40-50)
RADTIONS DB        Radiations from ENSDF as of Jan. 31, 1996.
RADTIONS IDX         (A's 40-50)
PDATES   DB        Publication year of evaluations.
PDATES   IDX
NUCLEI   DB        Nuclear Wallet Card data.
NUCLEI   IDX
SIGMA    DB        Thermal cross sections and
SIGMA    IDX         Resonance Integrals.
MASS     HLP       Mass Status of ENSDF evaluations.
NUDAT    HLP       Help file for PCNUDAT
PCNUDAT  EXE       Program
DOSXMSF  EXE       PharLap DOS extender
DATABASE VER       Dates of updates.
DOSAPP   FON       Font file for PCNUDAT.
READ     ME        Explanation of ENSDF data included (A's 40-50).
WHATSNEW TXT       Features added to version 2.7 since version 1.01.
PCNUDAT  CFG       Default configuration file for PCNuDat.
PCNUDAT  ICO       Icon file for PCNuDat.
PCNUDAT  PIF       PIF file for PCNuDat.
```

Create a subdirectory, `C:\PCNUDAT\DB`,

```
C:\PCNUDAT>md db
```

And move the database files (`*.db` and `*.idx`) and the help files (`*.hlp`) to it. (You can do as you like with your directories but this is what the initial version specified in `pcnudat.cfg` expects.)

Full Data Base Installation

Using ftp in the binary mode, transfer the four zip files (`LEVELS.ZIP`, `GAMMAS.ZIP`, `RADTIONS.ZIP`, and `OTHERDB.ZIP`) to your PC. A sample ftp dialog would be

```
  ftp bnlnd2.dne.bnl.gov
  >login anonymous
  >user@your.machine
  >binary
  >cd pc_prog
  >mget *.zip
...
  >quit
```

You can also download these 4 files from:

http://www.nndc.bnl.gov/nndcscr/pc_prog/
or
http://www-nds.iaea.or.at/ndspub/pc_prog/

Unzip these to your `PCNUDAT` directory (i.e. `\PCNUDAT\DB`) and they will overwrite and replace your test files with the following files

```
GAMMAS.DB
GAMMAS.IDX
LEVELS.DB
LEVELS.IDX
```

```
NUCLEI.DB
NUCLEI.IDX
PDATES.DB
PDATES.IDX
RADTIONS.DB
RADTIONS.IDX
SIGMA.DB
SIGMA.IDX
MASS.HLP
DATABASE.VER
```

These were updated on Oct. 1, 1998 and correspond to the archival ENSDF data.

In case of trouble:

Did you transfer the files from the VAX to your PC using the binary/image mode of transfer provided by your software? Is your unzipping code current? (There is a current `PKUNZIP` in the VAX directory with the zip files.)