

IBANDL maintenance system and new Web interface

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IBANDL at the IAEA-NDS

IBANDL (Ion Beam Analysis Nuclear Data Library) contains experimental data (set of files with angular distributions in R33 format), specialized for IBA community and applications

1. Library is maintained in the IAEA-NDS by NDS staff since 2013
2. Maintenance system: X4-R33 converter, Web-plotting for checking result of compilation. Staff: P. Dimitriou (data selection), V.Semkova (compilation), V.Zerkin (software support)
3. Web interface software: before 2013 (A.Gurbich): Perl scripts, Fortran executables (SigmaCalc), plotting Perl-library; after 2013 (V.Zerkin): Java-servlets, Web-ZVView plotting
4. Web interface features: connection IBANDL-EXFOR, additional entrance via summary, listing of publications

New features: summary

IBANDL - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://www-nds.iaea.org/exfor/ibandl.htm

EXFOR-Interpreted, V.Zerkin, IAE... EXFOR-Interpreted, V.Zerkin, IAE... IBANDL

IBANDL
Ion Beam Analysis
Nuclear Data Library

Database last updated: 2014-03-12,17:46:56
Statistics: number of datasets. Data type: NRA

Nucleus
C-13

Projectile
 p
 d
 ³He
 α
 ⁶Li
 ⁷Li

Type of data
 EBS
 NRA
 PIGE
 All

IBANDL
[Summary]
EXFOR

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#	Target		Projectile						
	Element	Nucleus	p	d	³ He	α	⁶ Li	⁷ Li	
1	H	H-1	-	-	2	32	-	2	
2		H-2	-	-	4	20	-	-	
3	He	He-3	-	3	-	-	-	-	
4	Li	Li-6	47	76	17	1	-	-	
5		Li-7	37	2	-	-	-	-	
6	Be	Be-7	8	-	-	-	-	-	
7		Be-9	44	12	17	-	-	-	
8	B	B-10	16	116	16	4	-	-	
9		B-11	28	16	19	4	-	-	
10	C	C-12	29	105	31	18	-	-	
11		C-13	7	22	8	2	-	-	
12	N	N-14	7	69	20	18	-	-	
13		N-15	12	6	-	-	-	-	
14	O	O-16	8	64	11	1	-	-	
15		O-18	16	4	-	-	-	-	
16	F	F-19	109	30	-	8	-	-	
17	Ne	Ne-20	3	3	-	-	-	-	
18		Ne-22	1	-	-	-	-	-	
19	Na	Na-23	31	28	-	-	-	-	
20	Mg	Mg-24	19	24	-	-	-	-	
21		Mg-25	10	15	-	-	-	-	
22		Mg-26	16	6	-	-	-	-	
23	Al	Al-27	40	51	-	6	-	-	
24	Si	Si-28	1	51	-	-	-	-	
25		Si-30	-	8	-	-	-	-	
26	P	P-31	13	26	-	2	-	-	
27	S	S-32	-	33	-	4	-	-	
28	Cl	Cl-35	2	3	-	-	-	-	
29		Cl-37	1	2	-	-	-	-	
30	Ar	Ar-38	1	-	-	-	-	-	
31	K	K-39	6	9	-	-	-	-	
32	Ca	Ca-40	3	3	-	6	-	-	
33		Ca-48	-	10	-	-	-	-	
34	Ti	Ti-46	10	-	-	-	-	-	
35		Ti-48	6	-	-	-	-	-	

¹³C + α

Type of data: NRA View: extended Convert units for plotting: C no rr->mb/sr C mb/sr->rr Plots: [reset]

No.	Reaction	Angle	Energy(keV)	Pts	Update	X4	Reference	File	Plot
1	¹³ C(α,d) ¹⁵ N	170°	15010-25090	30	2008-03-18	X4+	V.M. Lebedev et al. Izvestiya Akademii Nauk v. 37 (1973) 2663 »	View Save	<input type="checkbox"/> mb
2	¹³ C(α,d) ¹⁵ N	90°	13090-25290	37	2008-03-18	X4+	V.M. Lebedev et al. Izvestiya Akademii Nauk v. 37 (1973) 2663 »	View Save	<input type="checkbox"/> mb

Datasets: 2 Reactions: 1 Points: 67 References: 1
 -] Add your dataset in R33 format for plotting

Legend:
 X4 link to the dataset in EXFOR database retrieval system
 + search in EXFOR database the data of given reaction published by given author
 mb Cross section, mb/sr
 rr Ratio to Rutherford
 ru Cross section, Relative Units
 tot Cross section, mb
 yield Yield, Ngamma/sr/uC

Page generated: 2014/05/02,13:15:26 by I4sSearch3 on localhost.
 Request #8645 from: 127.0.0.1 [Ivd:161.5.6.220]
 Project: "Multi-platform Nuclear Reaction Database Retrieval Systems", IAEA, 1999-2013
 Web and Database Programming: Viktor Zerkin, NDS, International Atomic Energy Agency, (V.Zerkin@iaea.org)

Opening c3ad0b.r33

You have chosen to open:

c3ad0b.r33
 which is a: R33 file (2.6 kB)
 from: http://nds121.iaea.org

What should Firefox do with this file?

Open with Notepad (default)
 Save File
 Do this automatically for files like this from now on.

OK Cancel

New features: summary

The image displays three overlapping screenshots of the IBANDL website in a Mozilla Firefox browser. The top screenshot shows the main page with a search bar and a table of datasets. The middle screenshot shows a detailed view of a dataset with a list of references. The bottom screenshot shows a list of references with a note at the bottom.

IBANDL - Mozilla Firefox
File Edit View History Bookmarks Tools Help
https://www-nds.iaea.org/exfor/ibandl.htm

IBANDL
Ion Beam Analysis
Nuclear Data Library

Database last updated: 2014-03-12,17:46:56
Statistics: number of datasets. Data type: ALL

#	Target	Projectile	3He	a	6Li	7Li	SigmaCalc data (v-1.6, v-2.0)
71	Pt-195	3	-	-	-	-	-
72	Pt-196	1	-	-	-	-	-
73	Pt-198	1	-	-	-	-	-
74	Au	Au-197	2	-	-	-	-

Total datasets: 2803 Reactions: 153 Targets: 74 (33 elements) References: 723
SigmaCalc data: 39

References:

1. (H.Van Bebbet et al. Nucl. Instr. & Meth. B136-138 (1998) 72 *
2. +(2007), Jour. Nucl. Instrum. Methods in Physics Res., Sect.B, Vol.254, p.25 *
3. A. Cacioli et al., NIM B249 (2006) 95 *
4. A. Cacioli et al., NIM B249 (2006) 98 *
5. A. Cacioli et al., Nucl. Instr. and Meth. B 266 (2008) 1392 *
6. A. Fessler et al., NIM A450 (2000) 353 *
7. A. Goncharov *

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Nucleus
C-13

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References:

707. Xizhang, G.Li, B.Bing, Z. Li, Nucl.Instr.& Meth. v.B261 (2007) 331 *
708. Y. Qiu, A.P. Rice, T.A. Tombrello, Nucl.Instr.& Meth. B71 (1992) 324 *
709. Y. Rihet et al. Le Journal De Physique v.38 (1977) 17 *
710. Y. Takeuchi, et al. Nuclear Physics A, v.109 (1968) 105 *
711. Y.Cassagnou,J.M.F.Jeronymo,G.S.Mani,A.Sadeghi and P.D.Forsyth Nucl.Phys. 33 (1962) 449 *
712. Y.Ozawa et al. Nuclear Physics A v.440 (1985) 13 *
713. Yang Guohua et al. Nucl.Instr.& Meth. v.B61 (1991) 175 *
714. Yu.Kasanyu et al. Izvestiya Akademii Nauk v.32 (1968) 1650 *
715. Z. E. Switkowski et al, Nucl. Phys. A331 (1979) 50. NACRE Compilation *
716. Z. E. Switkowski et al, Nucl. Phys. A331 (1979) 50. NACRE Compilation Nucl. Phys. A 656 (1999) 3-183. *
717. Z. Liu et al., Nucl. Instr. Meth. B93 (1994) 404 *
718. Z. Siketic et al., Nucl. Instr. and Meth. B 229 (2005) 180 *
719. Z.A.Saleh+(1974), Jour. Annalen der Physik, Vol.31, p.76 *
720. Z.Elekes et al. Nucl. Instr. & Meth. B168 (2000) 305 *
721. Z.Liu et al. Nucl. Instr. Meth. v.B74 (1993) 439 *
722. Z.Siketic et al. Nucl.Instm.&Meth. 261 (2007) 414 *
723. Zhou Zhuying+(1989), Conf. High En.&Heavy Ion Beams in Mat.An.,Albuquerque 1989, p.153 *

Note. References in brown color (191) do not have links to EXFOR.

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718. Z. Siketic et al., Nucl. Instr. and Meth. B 229 (2005) 180 *
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721. Z.Liu et al. Nucl. Instr. Meth. v.B74 (1993) 439 *
722. Z.Siketic et al. Nucl.Instm.&Meth. 261 (2007) 414 *
723. Zhou Zhuying+(1989), Conf. High En.&Heavy Ion Beams in Mat.An.,Albuquerque 1989, p.153 *

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Web-interface to IBANDL and SigmaCalc data

IBANDL - Mozilla Firefox

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IBANDL

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Type of data
 EBS
 NRA
 PIGE
 All

IBANDL
[Summary]

EXFOR

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¹³C + p

Type of data: ALL View: extended Convert units for plotting: no rr->mb/sr mb/sr->rr Plots: [reset]

No.	Reaction	Angle	Energy(keV)	Pts	Update	X4	Reference	File	Plot
1	¹³ C(p,p0) ¹³ C	140	700-2500	451	2013-10-29		Evaluated data from SigmaCalc archive (A. Gurbich, 2013)	View Save	<input checked="" type="checkbox"/> mb
			450-2500	501		Evaluated data from current version of [SigmaCalc] >>> Calculate (timeout=5min) Received: remote; waiting time=5 sec SigmaCalc 2.0. File created 2-5-2014, θ=140° (remote)	View Save	<input type="checkbox"/> mb	
2	¹³ C(p,p0) ¹³ C	163.8°	2600-4990	169	2006-06-22	-	E. Kashy et al., Phys. Rev. 122(3) (1961) 884 »	View Save	<input type="checkbox"/> mb
3	¹³ C(p,p0) ¹³ C	160°	780-2430	96	2013-05-27	+	N.P.Barradas et al., to be published »	View Save	<input type="checkbox"/> rr
4	¹³ C(p,p0) ¹³ C	158.4°	450-1620	90	2011-11-22	X4+	E.Milne, Phys. Rev. 93 (1954) 762 »	View Save	<input type="checkbox"/> mb
5	¹³ C(p,p0) ¹³ C	146.5°	1630-3310	80	2011-11-22	X4+	D.Zipoy et al., Phys. Rev. 106 (1957) 793 »	View Save	<input checked="" type="checkbox"/> mb
6	¹³ C(p,p0) ¹³ C	140°	780-2430	97	2013-09-18	+	N.P.Barradas et al., Nucl. Instr. and Meth. B 316 (2013) 81 »	View Save	<input checked="" type="checkbox"/> rr
7	¹³ C(p,p0) ¹³ C	137°	450-1600	93	2011-11-22	X4+	E.Milne, Phys. Rev. 93 (1954) 762 »	View Save	<input type="checkbox"/> mb
8	¹³ C(p,p0) ¹³ C	124.1°	1620-3340	97	2011-11-22	X4+	D.Zipoy et al., Phys. Rev. 106 (1957) 793 »	View Save	<input type="checkbox"/> mb
9	¹³ C(p,p0) ¹³ C	121.5°	1000-2580	279	2011-08-29	X4+	V.A.Latorre+(1966), Jour. Physical Review, Vol.144, p.891 »	View Save	<input type="checkbox"/> mb
10	¹³ C(p,p0) ¹³ C	116°	410-1600	88	2011-11-22	X4+	E.Milne, Phys. Rev. 93 (1954) 762 »	View Save	<input type="checkbox"/> mb
11	¹³ C(p,p0) ¹³ C	102.1°	1600-3340	82	2011-11-22	X4+	D.Zipoy et al., Phys. Rev. 106 (1957) 793 »	View Save	<input type="checkbox"/> mb
12	¹³ C(p,p0) ¹³ C	85.6°	1610-3340	85	2011-11-22	X4+	D.Zipoy et al., Phys. Rev. 106 (1957) 793 »	View Save	<input type="checkbox"/> mb
13	¹³ C(p,p0) ¹³ C	85.6°	1580-4380	75	2011-11-22	-	H.J.Kim, W.T.Milner and F.K.McGowan Nuclear Data Tables v.A2 (1966) 353 »	View Save	<input type="checkbox"/> mb
14	¹³ C(p,p0) ¹³ C	85.6°	430-1590	92	2011-11-22	X4+	E.Milne, Phys. Rev. 93 (1954) 762 »	View Save	<input type="checkbox"/> mb
15	¹³ C(p,γ) ¹⁴ N	360°	150-440	38	2014-02-04	-	D.F. Hebbard and J.L. Vogl, Nucl. Phys. 21 (1960) 652. NACRE Compilation Nucl. Phys. A 656 (1999) 3-183. »	View Save	<input type="checkbox"/> tot
16	¹³ C(p,γ0) ¹⁴ N	360°	110-940	48	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View Save	<input type="checkbox"/> tot

Converting units

Remote calculations

Plotting with Web-ZVView

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https://www-nds.iaea.org/exfor/ibandl.htm

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Type of data
 EBS
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IBANDL
[Summary]

EXFOR

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Welcome to Web-ZVView!
Interactive plotting of IBANDL and SigmaCalc data

- 1) $\theta=146.5^\circ$ D.Zipoy et al., Phys. Rev. 106 (1957) 793
- 2) $\theta=140^\circ$ N.P.Barradas et al., Nucl. Instr. and Meth. B 316 (2013) 81
- 3) $\theta=140^\circ$ SigmaCalc 2.0. File created 25-6-2013
- 4) $\theta=140^\circ$ SigmaCalc 2.0. File created 2-5-2014.

146.5deg c3pp0b.r33 13C(p,p0)13C $\chi^2=1.03252$ (vs:1,pt:2,err:14-18%)
140deg c3pp0k.r33 13C(p,p0)13C $\chi^2=8.49846$ (vs:1,pt:97,err:12-27%)
140deg C-13_pp0_140000.sc 13C(p,p0)13C
140deg C-13_pp0_140000.sc.r33 13C(p,p0)13C

Select data for plotting [all] [none]
 1) 146.5deg c3pp0b.r33 13C(p,p0)13C
 2) 140deg c3pp0k.r33 13C(p,p0)13C
 3) 140deg C-13_pp0_140000.sc 13C(p,p0)13C
 4) 140deg C-13_pp0_140000.sc.r33 13C(p,p0)13C
 5) Use my data [example]

See: plotted data (37Kb)

Log: XY X Y | Lin: XY X Y | Auto-range: XY X Y | Page: >> << | Zoom: <> <> | Grid: V H 0 V H | Pts: Txt Box PL Print
Reset Repaint Legend Authors Info+ PostScript Manual options:[+] Clipboard: Copy
Shift legend:x=0 y=0 Split:0 1:xy;2:y Plot data or ratio:0 0:data; 1:ratio to dataset-1; 2:ratio to 2-nd, etc.
Data for plotting: ZVD (26Kb), send to ZVView; download ZVView; upload and plot your ZVD file

Add new dataset to Web interface for plotting

IBANDL - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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14	$^{13}\text{C}(p,p_0)^{13}\text{C}$	85.6°	430-1590	92	2011-11-22	X4+	E.Milne, Phys. Rev. 93 (1954) 762 »	View	Save	<input type="checkbox"/> mb
15	$^{13}\text{C}(p,\gamma)^{14}\text{N}$	360°	150-440	38	2014-02-04	-	D.F. Hebbard and J.L. Vogl, Nucl. Phys. 21 (1960) 652. NACRE Compilation Nucl. Phys. A 656 (1999) 3-183. »	View	Save	<input type="checkbox"/> tot
16	$^{13}\text{C}(p,\gamma_0)^{14}\text{N}$	360°	110-940	48	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot
17	$^{13}\text{C}(p,\gamma_1)^{14}\text{N}$	360°	150-850	42	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot
18	$^{13}\text{C}(p,\gamma_2)^{14}\text{N}$	360°	110-940	47	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot
19	$^{13}\text{C}(p,\gamma_3)^{14}\text{N}$	360°	150-940	46	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot
20	$^{13}\text{C}(p,\gamma_4)^{14}\text{N}$	360°	150-940	42	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot
21	$^{13}\text{C}(p,\gamma_5)^{14}\text{N}$	360°	110-940	45	2014-02-27	X4+	J.D.King+(1994), Jour. Nuclear Physics, Section A, Vol.567, p.354 »	View	Save	<input type="checkbox"/> tot

Datasets: 20 Reactions: 8 Points: 1731 References: 9

- Add your dataset in R33 format for plotting

```

1 Source: N.P.Barradas et al., to be published
Name: file prepared and uploaded by A.Gurbich
Address1: Institute for Physics and Power Engineering
Serial Number:
Reaction: 13C(p,p0)13C
Distribution: Energy
Composition:
Masses: 1.0078, 13.003, 1.0078, 13.003
Zeds: 1, 6, 1, 6
Qvalue: 0.00, 0.00, 0.00, 0.00, 0.00
Theta: 160.0
Sigfactors: 1.00, 0.00
Enfactors: 1.00, 0.00, 0.00, 0.00
Units: rr
Data:
787.10 17.3 1.791 0.217
837.95 16.7 1.859 0.228
887.75 16.2 1.897 0.230
932.30 15.8 1.990 0.242
989.85 15.2 2.102 0.254
    
```

plot

- References.

1. D.F. Hebbard and J.L. Vogl, Nucl. Phys. 21 (1960) 652. NACRE Compilation Nucl. Phys. A 656 (1999) 3-183. »
2. D. Zipoy et al., Phys. Rev. 106 (1957) 793 »
3. E. Kashy et al., Phys. Rev. 122(3) (1961) 884 »
4. F. Milne, Phys. Rev. 93 (1954) 762 »

User's data in R33 format

Plot together with others

Concluding remarks

- 1) Maintenance of IBANDL in NDS and cross-checking with EXFOR can be useful for EXFOR compilation
- 2) Checking IBANDL references and keeping them uniformed can help for comparing to EXFOR database

Thank you