

X4Plot: universal plotting of EXFOR data with arbitrary selection and grouping columns.

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There are several options for plotting EXFOR data. Usually they can be used for comparison data of different experiments and therefore they use some conversion procedures from EXFOR to computational formats (C4, C5, TABLE, XREF, XDAT). Most of conversion programs have some specialization and therefore they are somehow limited: for example X4TOC4 is oriented to comparison experimental and evaluated data and uses MF-MT designation from ENDF format.

X4Plot is a universal Web plotting tool constructed for plotting isolated EXFOR dataset as is – using only EXFOR definitions and dictionaries, i.e. without conversion to any computational formats. In principle, it should be working on any valid EXFOR data file. It is implemented in EXFOR Web retrieval system, but not yet in EXFOR Uploading system.

How to use it.

Example-1.

Plotting average cross sections given with columns EN-MIN, EN-MAX as histogram.

1) Use options: “Sort by: reaction” and “View: extended”. Click “Submit” button.

Request Examples: 1 2 3 4 5 6 7 ...

Submit Reset Help

Target

Reaction

Quantity

Product

Energy from to eV

Author(s)

Publication year

Accession # 22499003

Options

- Exclude superseded data
- No reaction combinations (ratios...)
- Enhanced search of Products
- Retrieve listing only
- Disable Prompt-Help

Sort by: reaction publication

View: basic extended

Ranges (Z,A)

Reaction Sub-Fields

2) Open “Extended features”: click [+] button.

Data Selection

Retrieve Selected Unselected All Reset

Output: X4+ EXFOR Bibliography TAB C4 PlotC4

Plot: Quick-plot (cross-sections only) Advanced plot [how-to] using C5 and converting

Narrow Energy (optional), eV: Min: Max:

Apply Data re-normalization (for advanced users, results in: C4, TAB and Plots)

n	Display	Year	Author-1	Energy range, eV	Points	Reference
1	+ Info X4+ X4± T4 Cov	2000	K.Wisshak+	3.00e3 2.25e5	18	[pdf]+ J, PR/C

3) Click [X4Plot]

Data Selection

Retrieve Selected Unselected All Reset

Output: X4+ EXFOR Bibliography TAB C4 PlotC4

Plot: Quick-plot (cross-sections only) Advanced plot [how-to] using C5 and converting


Narrow Energy (optional), eV: Min: Max:

Apply Data re-normalization (for advanced users, results in: C4, TAB and Plots)

n	Display	Year	Author-1	Energy range, eV	Points	Reference
1	(70-YB-171 (N,G)70-YB-172,,SIG,,AV) / (79-AU-197 (N,G)79-AU-198,,SIG,,AV)					C4: MF=3

Quantity: [CS] Cross section

1 - Info X4+ X4± T4 Cov 2000 K.Wisshak+ 3.00e3 2.25e5 18 [pdf]+ J,PR/C [22499003] [X4] [X4Info] [X4Out.txt] [X4Out.xml] [Bib] [X4Plot] [x]



4) Program shows table with columns with data: measured data (dependent variables Y), independent variables (X), and uncertainties (ΔY , ΔX) with data meaning, units, ranges, etc. **Select (or confirm) columns for plotting and grouping; click [plot]**

Data Selection

Retrieve Selected Unselected All Reset

Output: X4+ EXFOR Bibliography TAB C4 PlotC4

Plot: Quick-plot (cross-sections only) Advanced plot [how-to] using C5 and converting

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Quantity: [CS] Cross section


1 - Info X4+ X4± T4 Cov 2000 K.Wisshak+ 3.00e3 2.25e5 18 [pdf]+ J,PR/C [22499003] [X4] [X4Info] [X4Out.txt] [X4Out.xml] [Bib] [X4Plot] [x]

DatasetID=22499003
 Author1: K.Wisshak+
 Reference1: Jour: Physical Review, Part C, Nuclear Physics, Vol.61, Issue.6, p.065801 (2000)
 X4Reaction: (70-YB-171(N,G)70-YB-172,,SIG,,AV)/(79-AU-197(N,G)79-AU-198,,SIG,,AV)
 Quantity: Ratio of [Cross section]
 Formula: $Y = Y(X1)$
 X4Columns: 13 Data points: 18

EXFOR Data Columns

No.	Plot				Group by	Header	Units	What	Given	Values			What:Exp
	Y	ΔY	X	ΔX						Number	Min	Max	
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		DATA	NO-DIM	Y.Value		18	1.2893	2.4593	Data: da
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-T	PER-CENT	Y.Err+-		9	1.	4.4	Uncertain
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-S	PER-CENT	Y.sErr+-		11	0.4	4.3	Uncertain
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-2	PER-CENT	Y.pErr+-		1	0.1	0.1	Uncertain
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-3	PER-CENT	Y.pErr+-		1	0.2	0.2	Uncertain
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-4	PER-CENT	Y.pErr+-		1	0.2	0.2	Uncertain
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-5	PER-CENT	Y.pErr+-		1	0.2	0.2	Uncertain
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-6	PER-CENT	Y.pErr+-		1	0.2	0.2	Uncertain
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-7	PER-CENT	Y.pErr+-		1	0.4	0.4	Uncertain
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-8	PER-CENT	Y.pErr+-		1	0.7	0.7	Uncertain
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-SYS	PER-CENT	Y.pErr+-		1	0.9	0.9	Uncertain
12	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		EN-MIN	KEV	X1.Min	Minimum	18	3.	200.	Incident
13	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		EN-MAX	KEV	X1.Max	Maximum	18	5.	225.	Incident

Select EXFOR columns and [plot]



5) Program opens new Popup-Windows showing how data were prepared for plotting. **Confirm and call plotting procedure: click [Plot]**

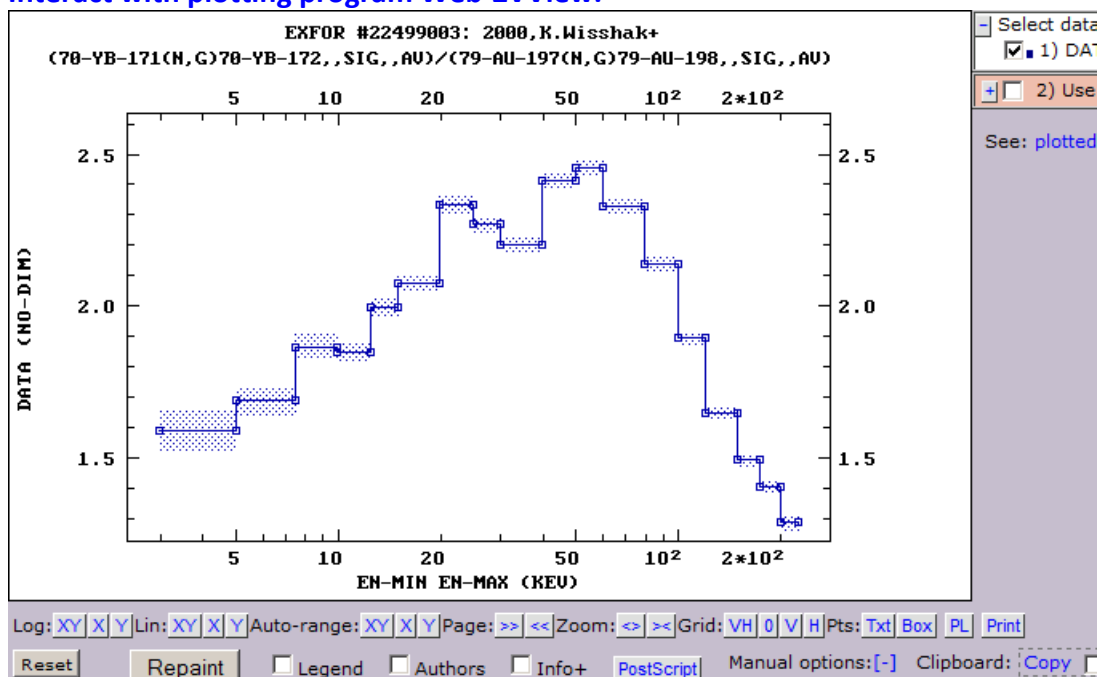
Plotting of EXFOR data.
This is an experimental page.

```

...Preparing data for plotting...
Data array: lx=13 ly=18
#Dataset      = 22499003
#Year,Author1= 2000,K.Wisshak+
#Reaction     = (70-YB-171(N,G)70-YB-172,,SIG,,AV)/(79-AU-197(N,G)79-AU-198,,SIG,,AV)
#ReactionType= Ratio
#Quantity     = Ratio of [Cross section]
1) DATA Units:(NO-DIM)=(NO-DIM)*1.0 Number=0 Val(Err)=1
2) ERR-T Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
3) ERR-S Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
4) ERR-2 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
5) ERR-3 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
6) ERR-4 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
7) ERR-5 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
8) ERR-6 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
9) ERR-7 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
10) ERR-8 Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
11) ERR-SYS Units:(PER-CENT)=(PER-CENT)*1.0 Number=0 Val(Err)=0
12) EN-MIN Units:(KEV)=(EV)*1000.0 Number=1 Val(Err)=1
13) EN-MAX Units:(KEV)=(EV)*1000.0 Number=1 Val(Err)=1
...X: ind=11 Header=EN-MIN Units=KEV :: EV
...X: ind=12 Header=EN-MAX Units=KEV :: EV
...Y: ind=0 Header=DATA Units=NO-DIM :: NO-DIM
...dY:ind=1 Header=ERR-T Units=PER-CENT
...Group-0) out2zvd []
  
```

Go to: [\[Plot\]](#)

6) Program will plot selected data: histogram with Y-uncertainties. **Interact with plotting program Web-ZVView.**



Example-2.

Plotting cumulative cross sections depending from ZA-product when SF4 is ELEM/MASS.

1) Use options: "Sort by: reaction" and "View: extended". Click "Submit" button.

Request Examples: 1|2|3|4|5|6|7|... ▾

Submit Reset Help

Target W-186 »

Reaction p,x »

Quantity CS »

Product Ta-183 »

Energy from to eV ▾ »

Author(s) »

Publication year »

Accession # »

Options

Exclude superseded data

No reaction combinations (ratios,...)

Enhanced search of Products

Retrieve listing only

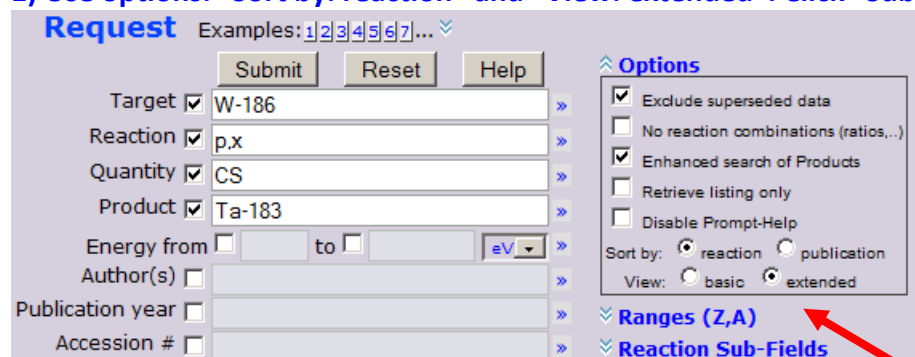
Disable Prompt-Help

Sort by: reaction publication

View: basic extended

Ranges (Z,A)

Reaction Sub-Fields



2) Open "Extended features": click [+] button.

3) Click [X4Plot]

4) Program shows table with columns with data: measured data (dependent variables Y), independent variables (X), and uncertainties (ΔY , ΔX) with data meaning, units, ranges, etc. Select (or confirm) columns for plotting and grouping; click [plot]

n Display Year Author-1 Energy range,eV Points Reference

1) 74-W-186 (P,X)ELEM/MASS,CUM,SIG C4: MF=3 MT=?

Quantity: [CS] Cumulative cross section

1	<input type="checkbox"/>	+	Info	X4+	X4±	T4	Cov	2004	S.A.Karamian+	2.68e8	6.30e8	106	[pdf]+ J,NIM/
2	<input type="checkbox"/>	-	Info	X4+	X4±	T4	Cov	2003	Yu.E.Titareno	2.00e8	1.60e9	169	+ R,INDC

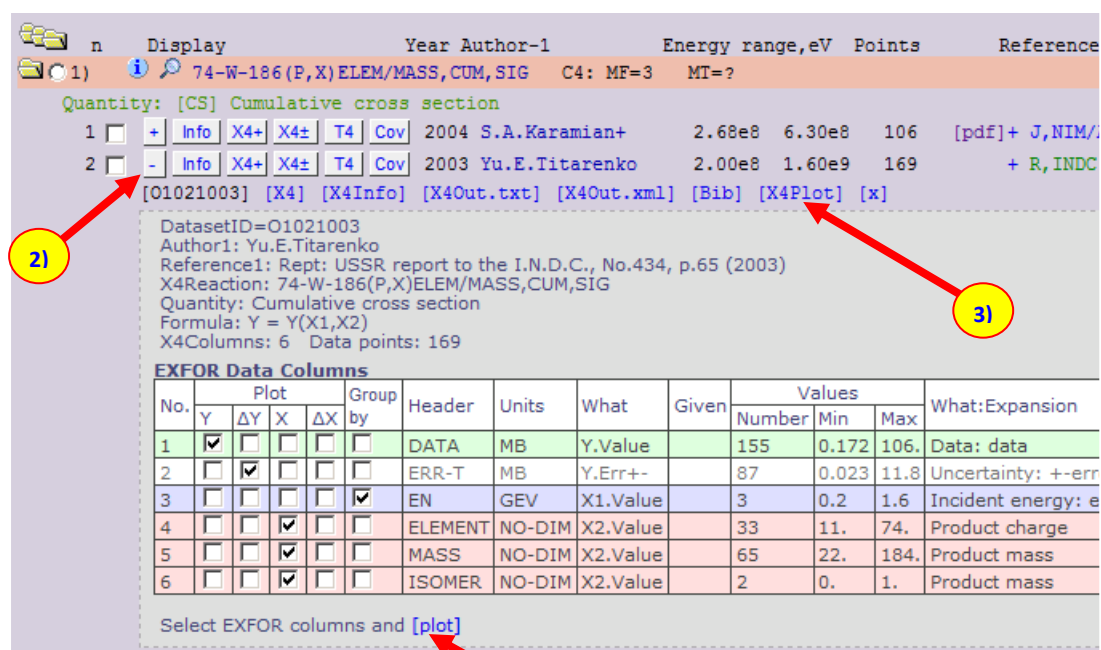
[01021003] [X4] [X4Info] [X4Out.txt] [X4Out.xml] [Bib] [X4Plot] [x]

DatasetID=O1021003
 Author1: Yu.E.Titareno
 Reference1: Rept: USSR report to the I.N.D.C., No.434, p.65 (2003)
 X4Reaction: 74-W-186(P,X)ELEM/MASS,CUM,SIG
 Quantity: Cumulative cross section
 Formula: $Y = Y(X1,X2)$
 X4Columns: 6 Data points: 169

EXFOR Data Columns

No.	Plot				Group by	Header	Units	What	Given	Values			What:Expansion
	Y	ΔY	X	ΔX						Number	Min	Max	
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		DATA	MB	Y.Value		155	0.172	106.	Data: data
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		ERR-T	MB	Y.Err+-		87	0.023	11.8	Uncertainty: +-err
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	EN	GEV	X1.Value		3	0.2	1.6	Incident energy: e
4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		ELEMENT	NO-DIM	X2.Value		33	11.	74.	Product charge
5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		MASS	NO-DIM	X2.Value		65	22.	184.	Product mass
6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		ISOMER	NO-DIM	X2.Value		2	0.	1.	Product mass

Select EXFOR columns and [plot]



5) Program opens new Popup-Windows showing how data were prepared for plotting. **Confirm and call plotting procedure: click [Plot]**

Plotting of EXFOR data.
This is an experimental page.

```

...Preparing data for plotting...
Data array: lx=6 ly=169
#Dataset      = 01021003
#Year,Author1= 2003,Yu.E.Titareenko
#Reaction     = 74-W-186(P,X)ELEM/MASS,CUM,SIG
#ReactionType= CS
#Quantity     = Cumulative cross section
 1) DATA Units:(MB)=(B)*0.001 Number=0 Val(Err)=1
 2) ERR-T Units:(MB)=(B)*0.001 Number=0 Val(Err)=0
 3) EN Units:(GEV)=(EV)*1.0E9 Number=1 Val(Err)=1
 4) ELEMENT Units:(NO-DIM)=(NO-DIM)*1.0 Number=2 Val(Err)=1
 5) MASS Units:(NO-DIM)=(NO-DIM)*1.0 Number=2 Val(Err)=1
 6) ISOMER Units:(NO-DIM)=(NO-DIM)*1.0 Number=2 Val(Err)=1
...Group-1:[ EN=0.2(GEV) ]
...Group-2:[ EN=0.8(GEV) ]
...Group-3:[ EN=1.6(GEV) ]
...X: ind=3 Header=ELEMENT Units=NO-DIM :: NO-DIM
...X: ind=4 Header=MASS Units=NO-DIM :: NO-DIM
...X: ind=5 Header=ISOMER Units=NO-DIM :: NO-DIM
...Y: ind=0 Header=DATA Units=MB :: B
...dY:ind=1 Header=ERR-T Units=MB
...Group-0) out2zvd [ EN=0.2(GEV) ]
...Group-1) out2zvd [ EN=0.8(GEV) ]
...Group-2) out2zvd [ EN=1.6(GEV) ]

```

Go to: [\[Plot\]](#)

6) Program will plot selected data: $Y(X) = \text{DATA} (\text{ELEMENT} * 1000 + \text{MASS} + \text{ISOMER} / 10.)$
Interact with plotting program Web-ZVView.

