PROGRAM INPGRAPH TO INPUT NUMERICAL DATA INTO EXFOR LIBRARY: NEW FEARTURES

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DIGITIZER INPGRAPH TO INPUT NUMERIC DATA INTO EXFOR LIBRARY

C5	(1) Centres will be encouraged to publish their EXFOR related activities in journals. NDS will assist it if necessary. (2) Digitization could be a good subject in the NRDC progress report presented in the ND2019 conference. (3) NDS will continue update of an initial draft of the “EXFOR big article” (WP2017-07) as per inputs from centres. (4) The ND2013 article (Nucl. Data Sheets 120(2014)272) will be used for citation by EXFOR users.

Report on the International Scientific Forum “Nuclear Science and Technologies” + Article for Nuclear Physics and Engineering:

“Activities on Experimental Data Compilation Performed for the International Library EXFOR in RFNC−VNIIEF Center of Nuclear Physics Data. Software Package EXFOR−Editor”

Report on the International Conference “XX Khariton’s Topical Scientific Readings” + Article for Voprosy Atomnoy Nauki I Tekhniki [in Rus]:

“Activities on Development of the International Library of Experimental Nuclear Data EXFOR in RFNC−VNIIEF Center of Nuclear Physics Data”

Generally, digitization is a conversion of an object (in the analogue form) into the form of a set of discrete values using special equipment.

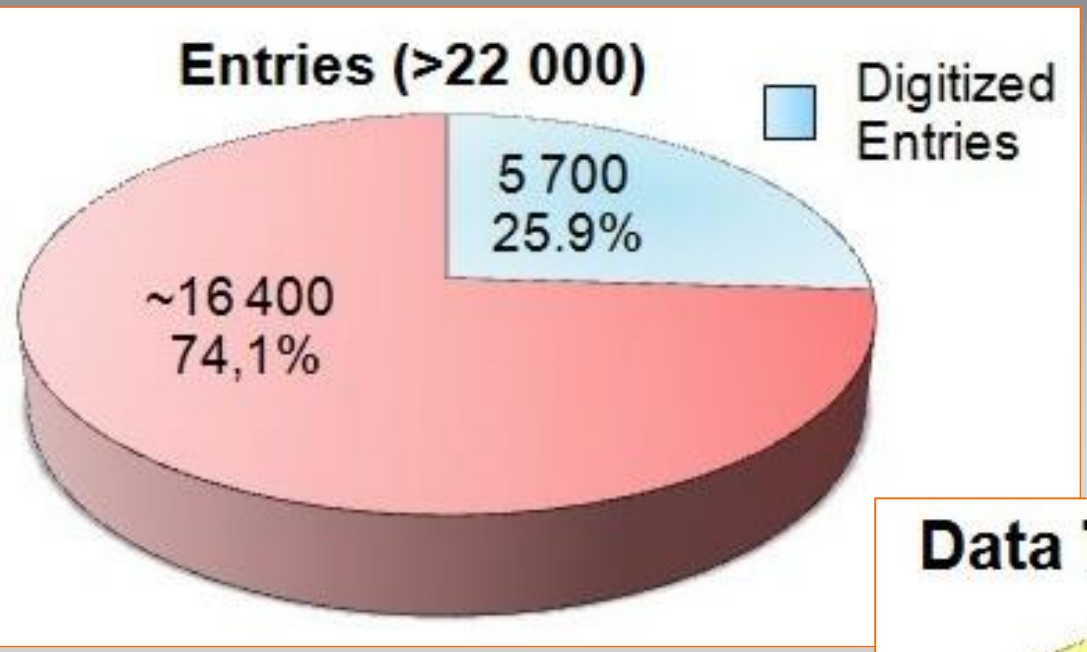
In our case the term «digitization» means getting of numeric data from an image obtained at original document scanning, at copying from a PDF-file or at capturing a part of the screen.

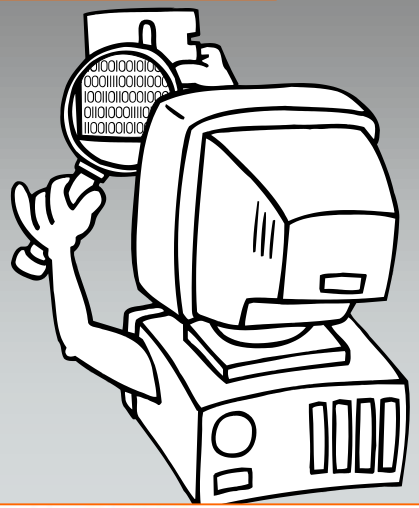
Application of digitizing:

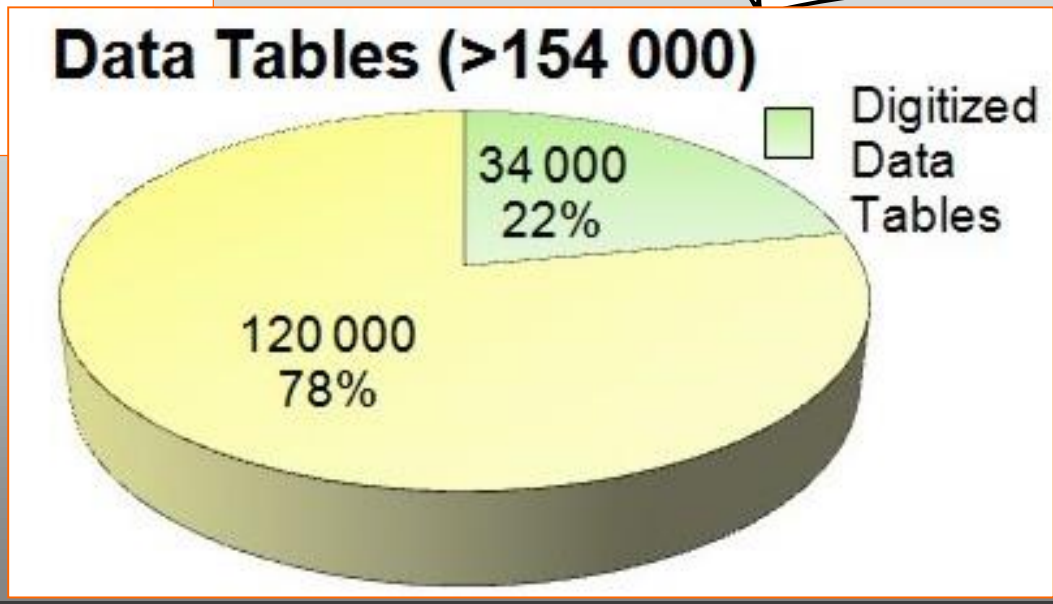
- At working with literature if tables or analytical formulas are inaccessible and the data are available only in the form of plots.
- For comparing measurement results and literary data in the form of plots or for comparing data from several literary sources where the plots are presented.
- At creating and completing databases on literary sources containing graphic information.
- For the tasks of inputting data basing on oscillograms obtained with the aid of a storage oscilloscope at measuring fast processes.

Share of Digitized Data

Exfor Statistics (May 2018)

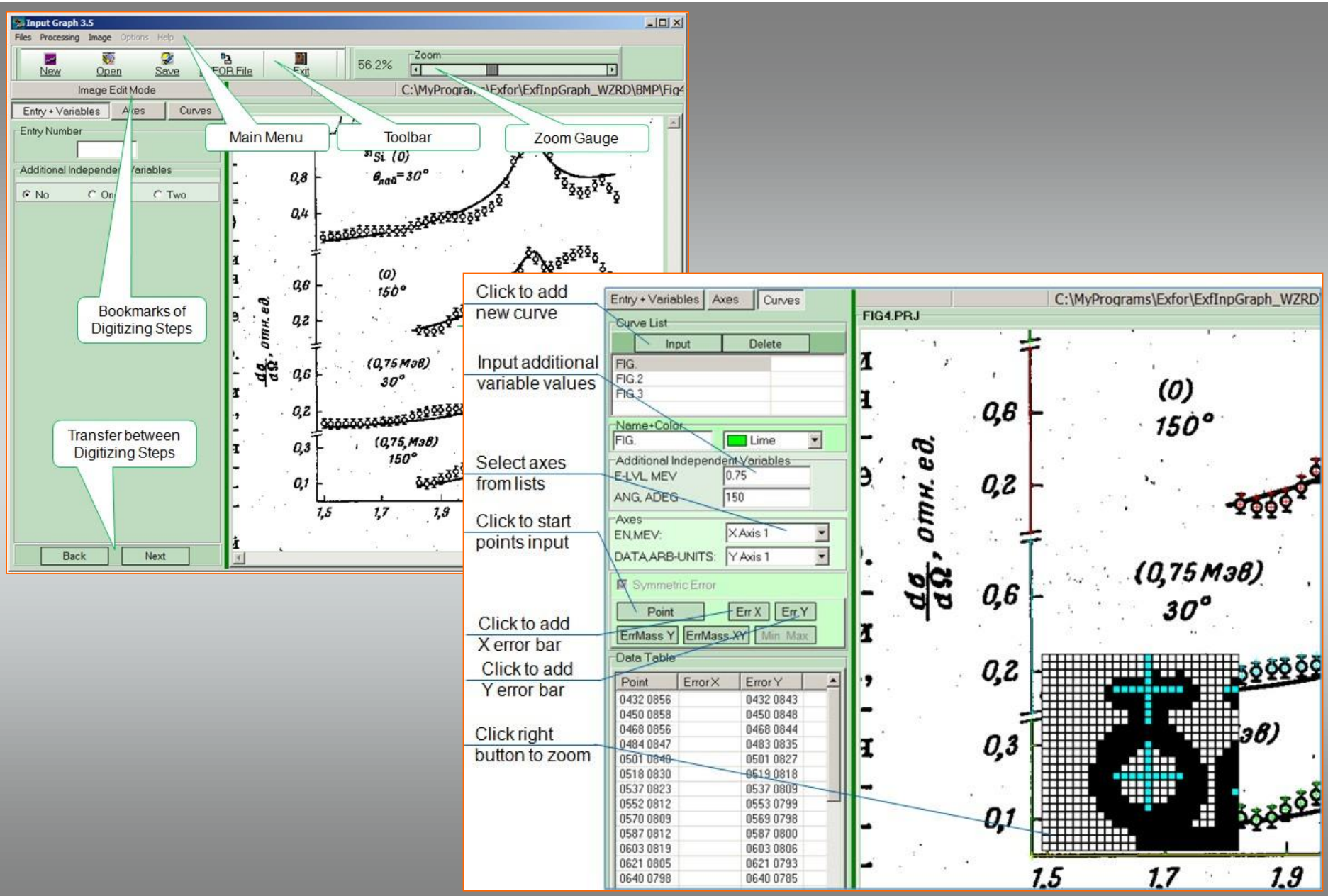






Digitization increases
the EXFOR content considerably.

INPGRAPH


Input Graph 3.5
Files Processing Image Options Help
New Open Save FOR File Exit
56.2% Zoom
Image Edit Mode
C:\MyPrograms\Exfor\ExfInpGraph_WZRD\BMP\Fig4
Entry + Variables Axes Curves
Entry Number
Additional Independent Variables
No One Two
Back Next
Main Menu
Toolbar
Zoom Gauge
Bookmarks of Digitizing Steps
Transfer between Digitizing Steps
Click to add new curve
Input additional variable values
Select axes from lists
Click to start points input
Click to add X error bar
Click to add Y error bar
Click right button to zoom
Curve List
Input Delete
FIG.
FIG.2
FIG.3
Name+Color
Lime
E-LVL, MEV 0.75
ANG, ADEG 150
Axes
EN,MEV: X Axis 1
DATA,ARB-UNITS: Y Axis 1
Symmetric Error
Point Err X Err Y
ErrMass Y ErrMass XY Min Max
Data Table
Point Error X Error Y
FIG4.PRJ
(0)
150°
(0,75 МэВ)
30°

UNDOCUMENTED FUNCTIONS OF THE INPGRAPH 3.5

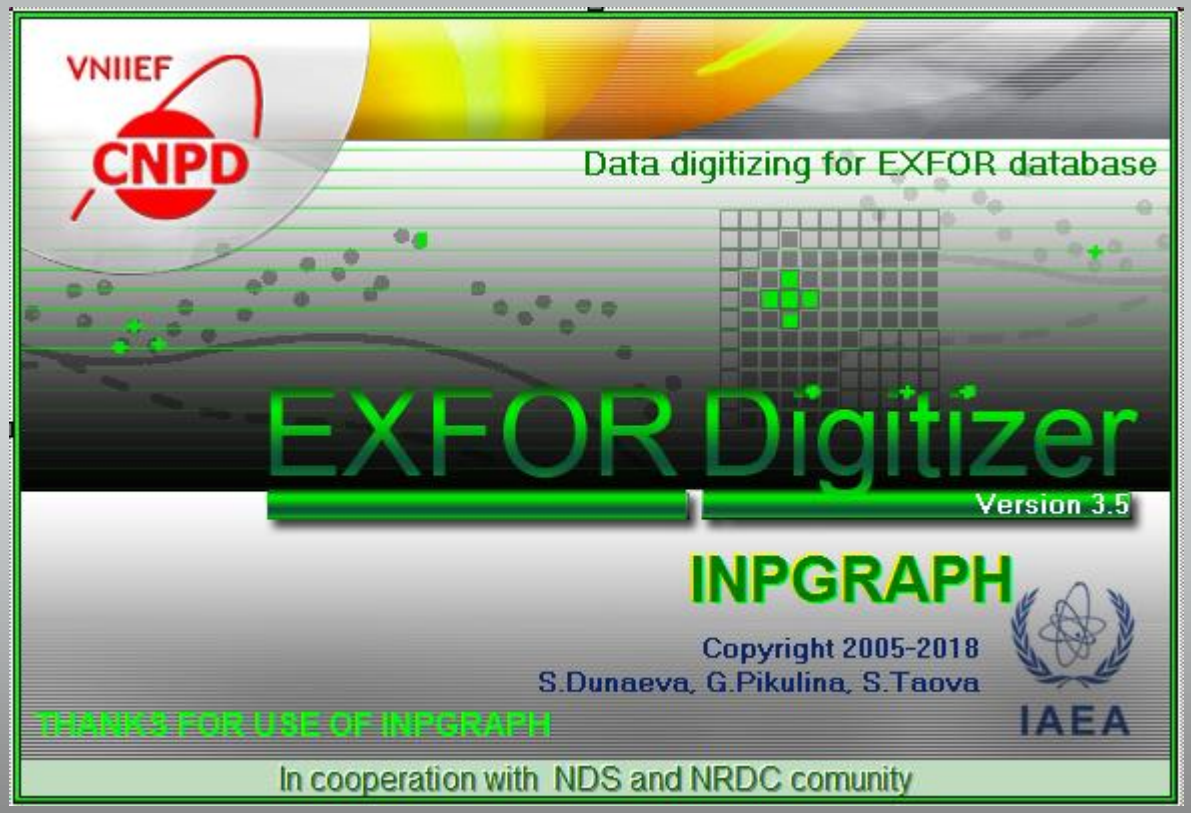
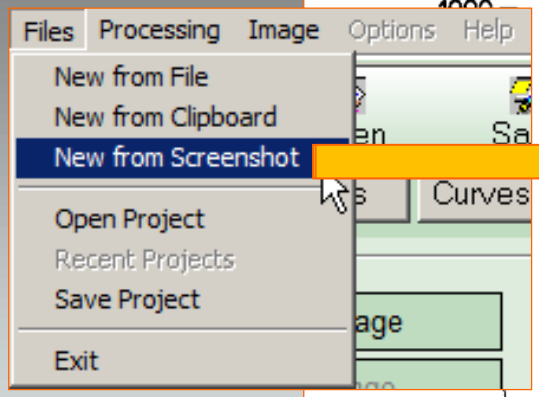


Image Loading



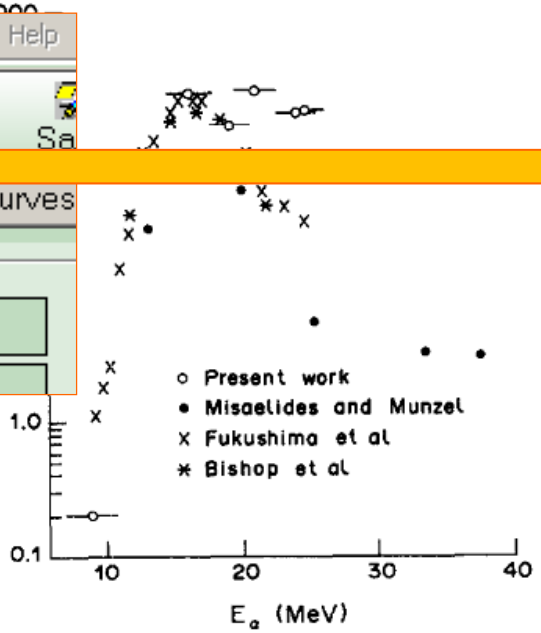


Fig. 2. Experimental excitation function for the reaction $^{107}Ag(\alpha,n)^{110m}In$ (69.1 min).

20 MeV our values are higher than the other reported values. Our results also show a broad peak in the excitation function. The total (α,n) cross-section as a function of the α-particle energy is shown in Fig. 3, along with other reported results (Fukushima *et al.*, 1963; Bishop *et al.*, 1964; Stelson and McGawan,

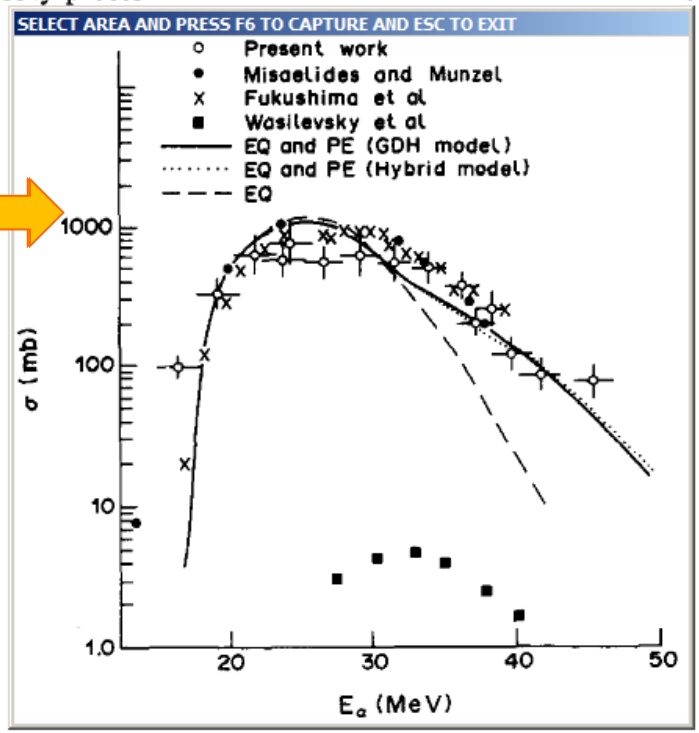
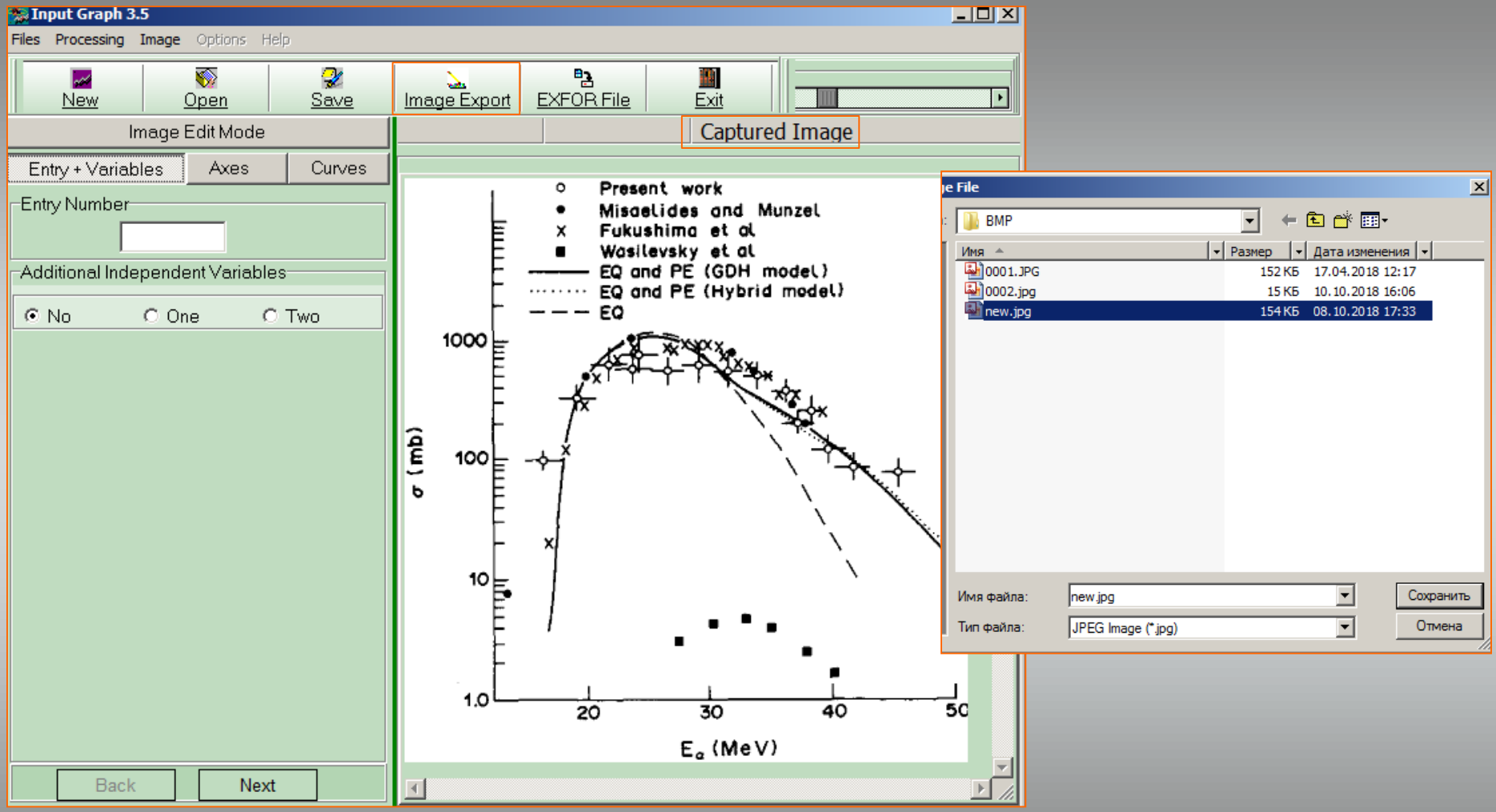


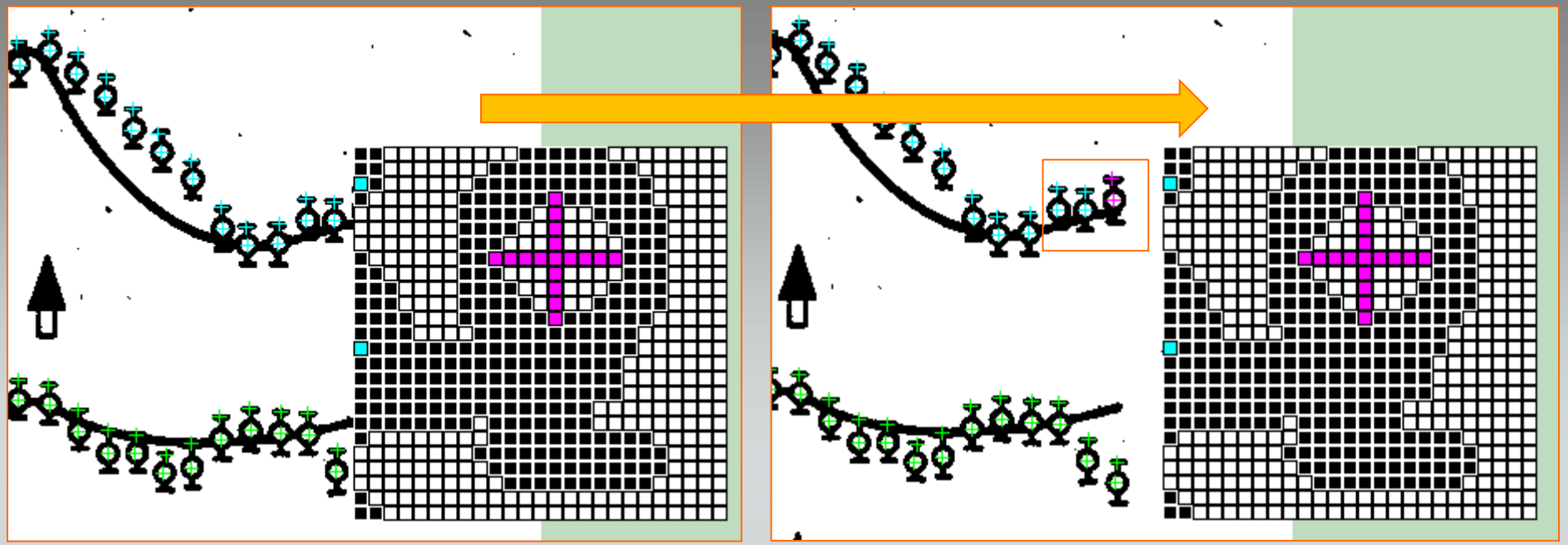
Fig. 4. Experimental and theoretical excitation functions for the reaction $^{107}Ag(\alpha,2n)^{109}In$.

The excitation function for the $^{107}Ag(\alpha,2n)^{109}In$ reaction is shown in Fig. 4 with the results of other measurements. Our results agree with the others except for the broader peak of the excitation function. The results of Wasilevsky *et al.* (1974) are much

Image Export



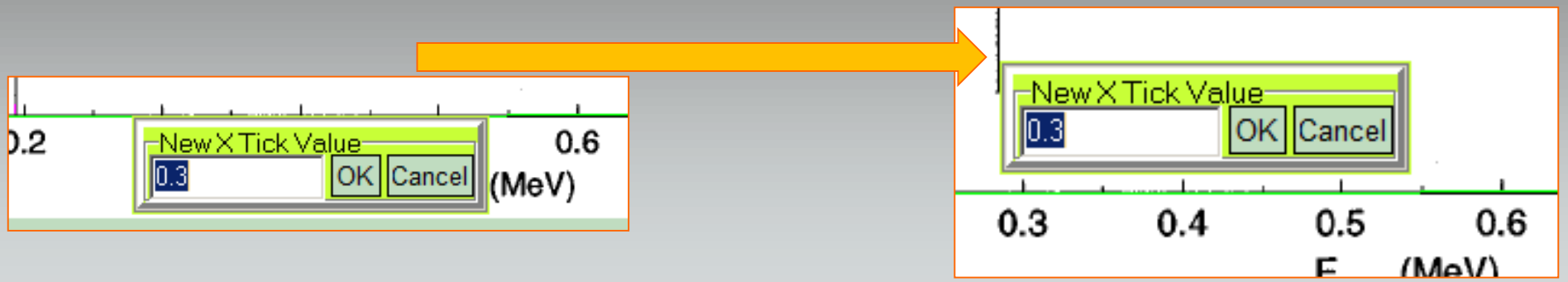
Zoom Mode



Keep pressed the **SHIFT** key button and drag the **Magnifier** window by the left mouse button to the required position.

The contrast colors for point border in the **Magnifier** window are used now.

Zoom Mode

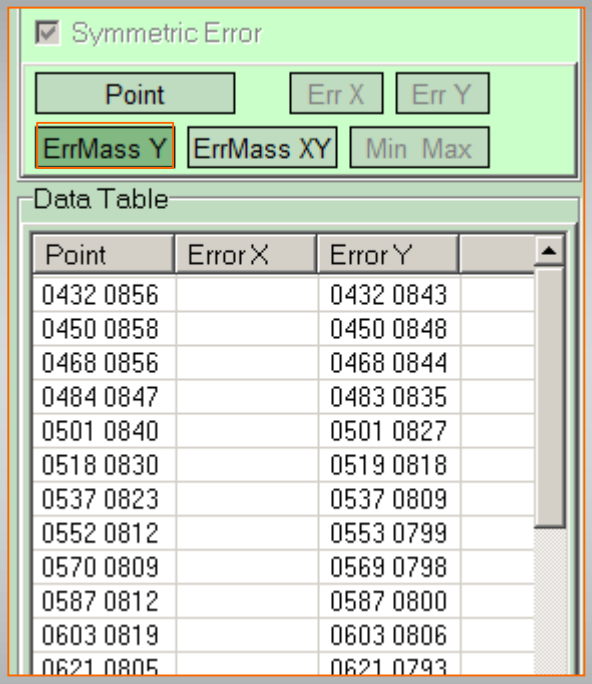


To drag the **New Tick Value Window** use the left mouse button. Keeping pressed the **SHIFT** key button is not needed in this case.

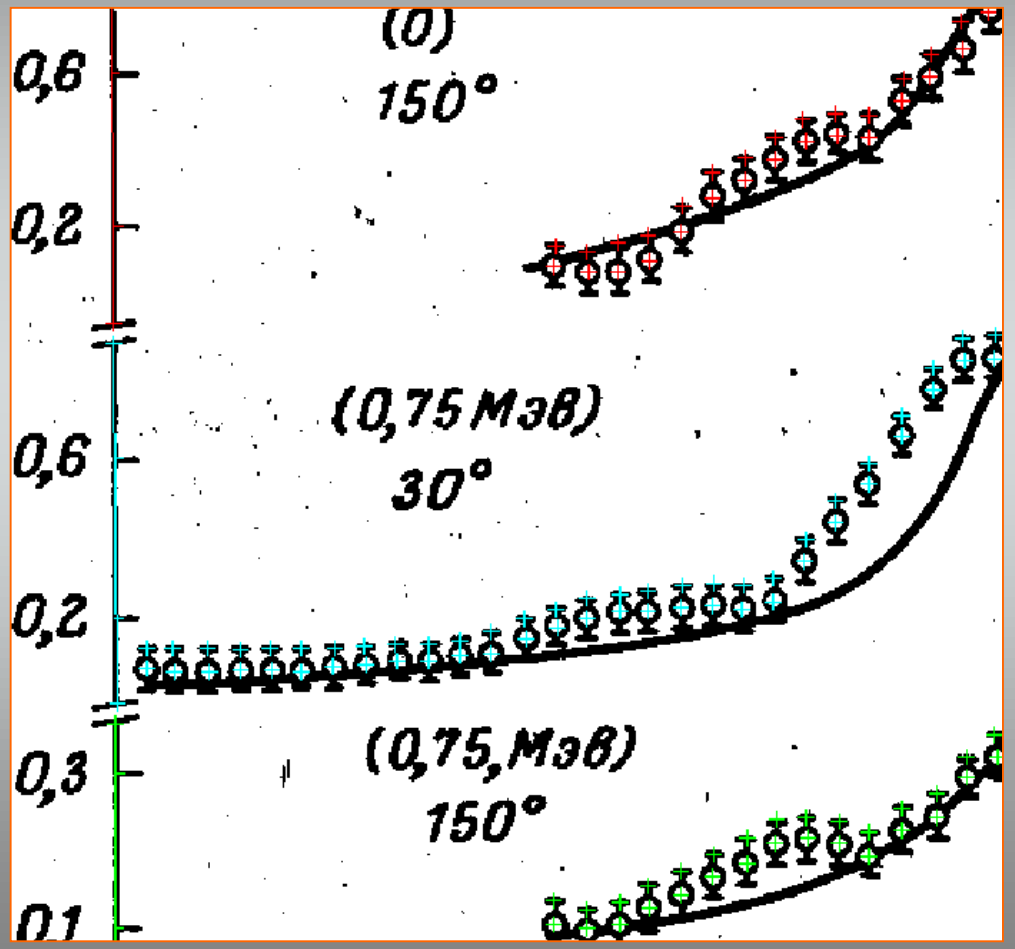
Input of Curves with Symmetric Error Bars

ErrMass Y Mode

To digitize an array of points with symmetric error bars along Y-axis activate the **ErrMassY** button and click in turn couples of a point and an edge of its Y-error bar. The point should be digitized first.



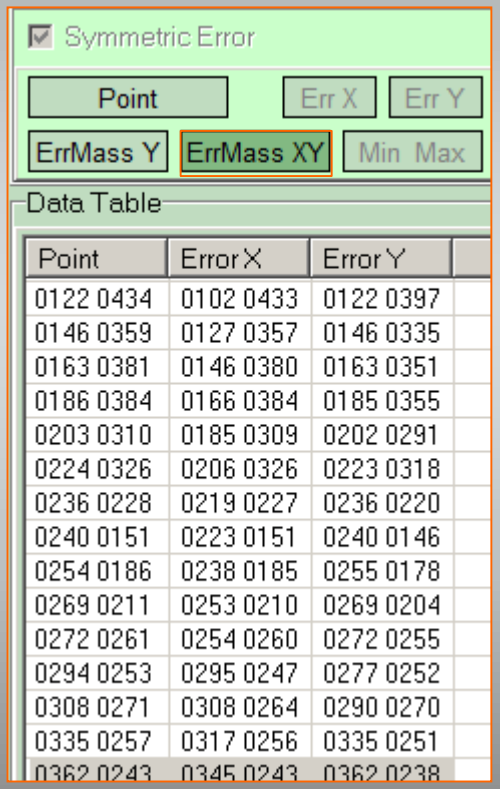
Point	Error X	Error Y
0432 0856		0432 0843
0450 0858		0450 0848
0468 0856		0468 0844
0484 0847		0483 0835
0501 0840		0501 0827
0518 0830		0519 0818
0537 0823		0537 0809
0552 0812		0553 0799
0570 0809		0569 0798
0587 0812		0587 0800
0603 0819		0603 0806
0621 0805		0621 0793



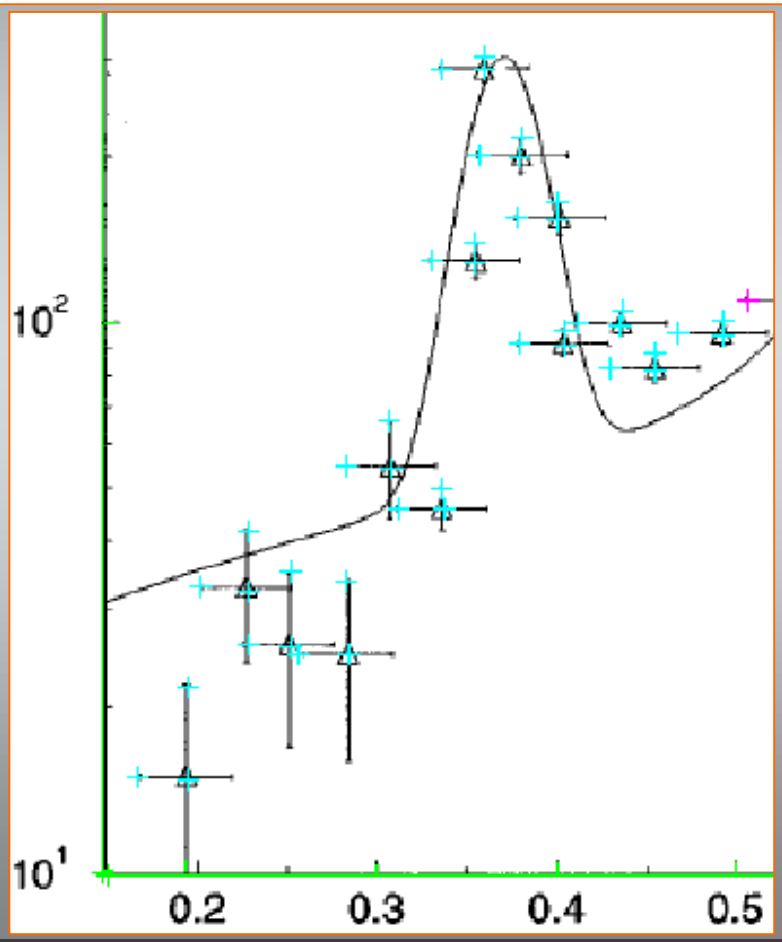
Input of Curves with Symmetric Error Bars

ErrMass XY Mode

To digitize an array of points with symmetric error bars along X-axis and Y-axis activate the **ErrMassXY** button and click in turn groups of three objects − a point and edges of its both error bars . The point should be digitized first, then the X-error and the last one is the Y-error.



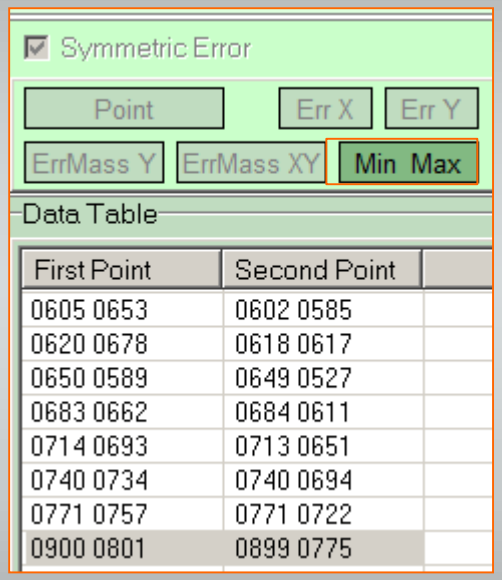
Point	Error X	Error Y
0122 0434	0102 0433	0122 0397
0146 0359	0127 0357	0146 0335
0163 0381	0146 0380	0163 0351
0186 0384	0166 0384	0185 0355
0203 0310	0185 0309	0202 0291
0224 0326	0206 0326	0223 0318
0236 0228	0219 0227	0236 0220
0240 0151	0223 0151	0240 0146
0254 0186	0238 0185	0255 0178
0269 0211	0253 0210	0269 0204
0272 0261	0254 0260	0272 0255
0294 0253	0295 0247	0277 0252
0308 0271	0308 0264	0290 0270
0335 0257	0317 0256	0335 0251
0362 0243	0345 0243	0362 0238



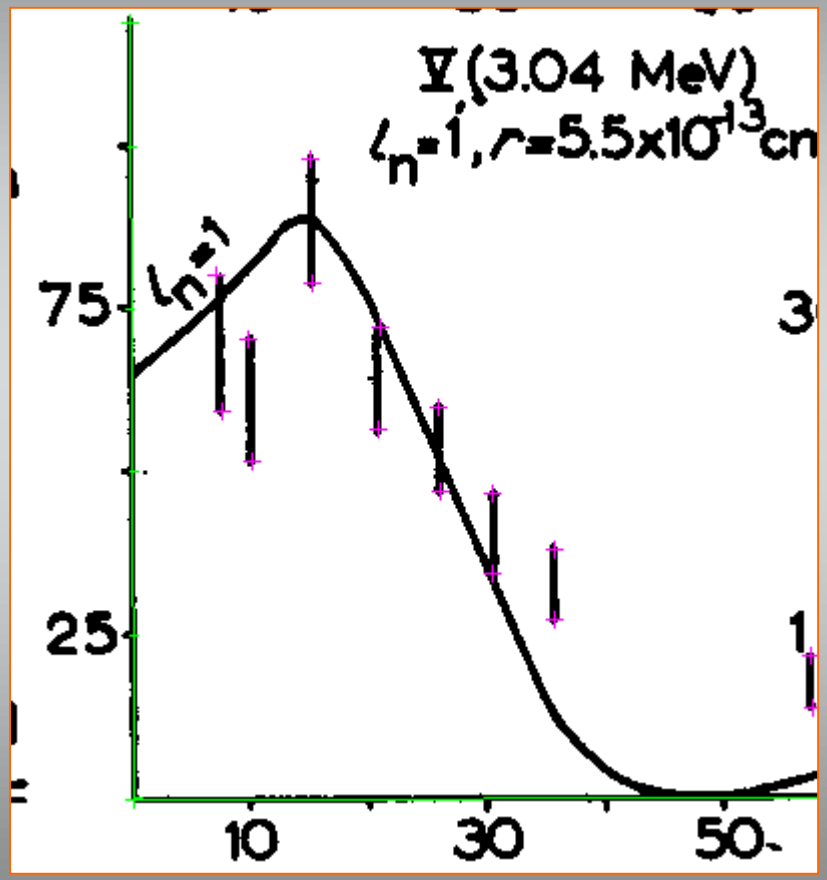
Input of Curves with Symmetric Error Bars

Min Max Mode

To digitize an array of vertical lines (bars) activate the **Min Max** button and click in turn the start and end points of bars.



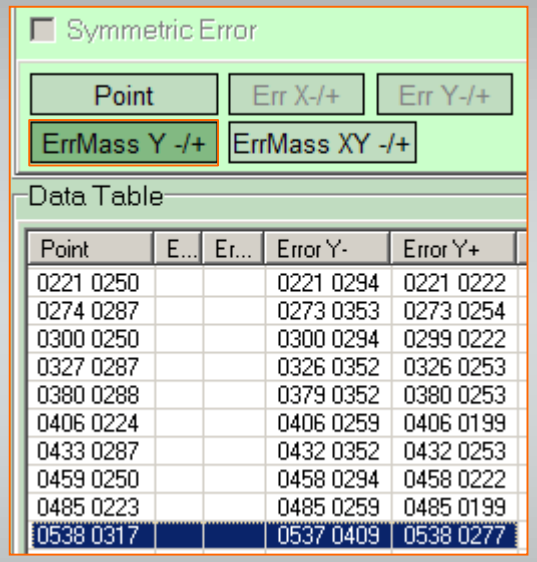
First Point	Second Point
0605 0653	0602 0585
0620 0678	0618 0617
0650 0589	0649 0527
0683 0662	0684 0611
0714 0693	0713 0651
0740 0734	0740 0694
0771 0757	0771 0722
0900 0801	0899 0775



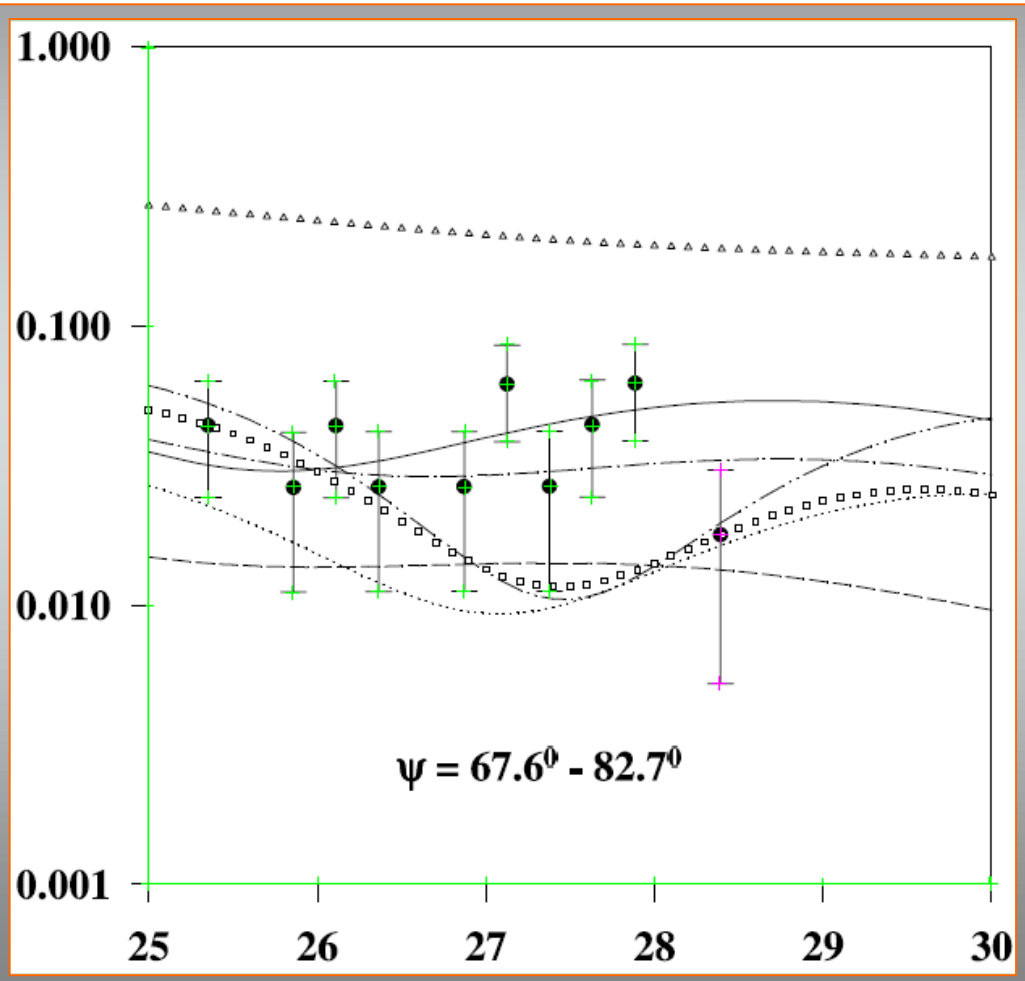
Input of Curves with Unsymmetrical Error Bars

ErrMass Y-/+ Mode

To digitize an array of points with unsymmetrical error bars along Y-axis activate the **ErrMassY-/+** button and click in turn groups of three objects − a point and then minimum and maximum of its Y-error bar.



Point	E...	Er...	Error Y-	Error Y+
0221 0250			0221 0294	0221 0222
0274 0287			0273 0353	0273 0254
0300 0250			0300 0294	0299 0222
0327 0287			0326 0352	0326 0253
0380 0288			0379 0352	0380 0253
0406 0224			0406 0259	0406 0199
0433 0287			0432 0352	0432 0253
0459 0250			0458 0294	0458 0222
0485 0223			0485 0259	0485 0199
0538 0317			0537 0409	0538 0277



Input of Curves with Unsymmetrical Error Bars

ErrMass XY-/+ Mode

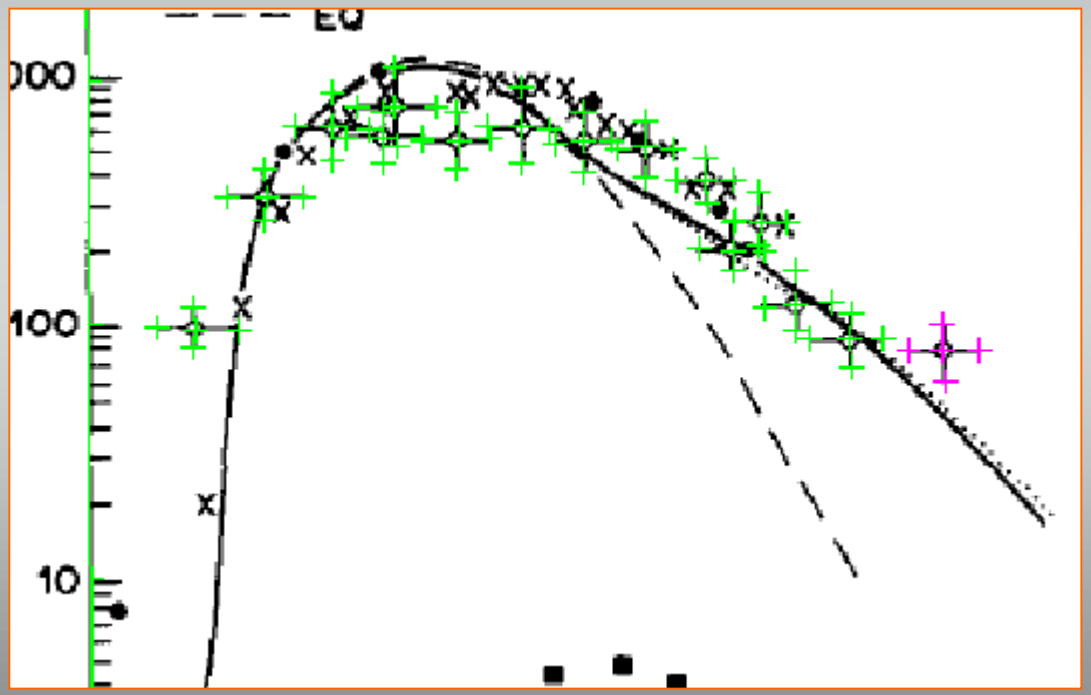
To digitize an array of points with unsymmetrical errors along both axes activate the **ErrMass XY-/+** button and click in turn groups of five objects − a point, then minimum and maximum of its X-error bar and at last minimum and maximum of its Y-error bar.

Symmetric Error

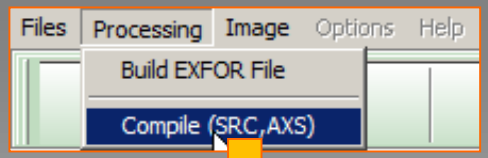
Point | Err X-/+ | Err Y-/+ | ErrMass Y -/+ | ErrMass XY -/+

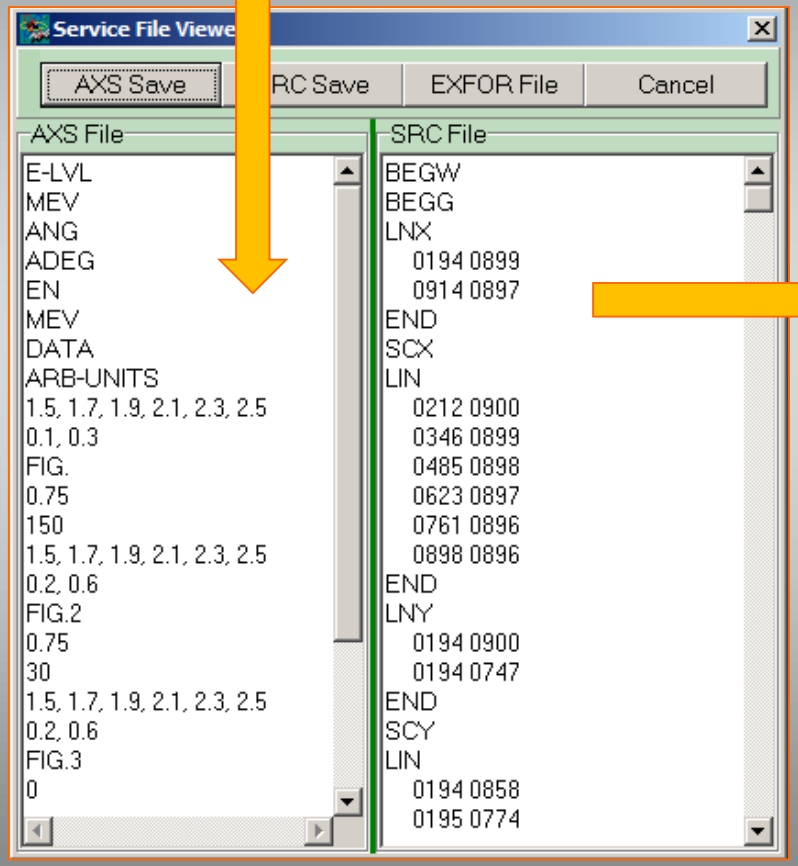
Data Table

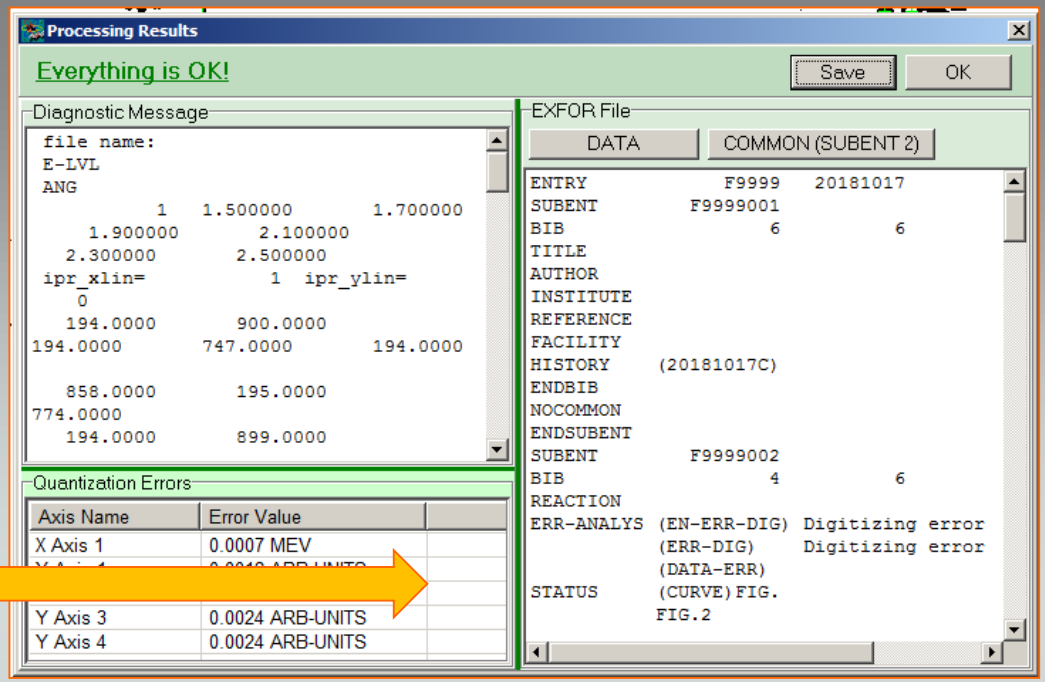
Point	Error X-	Error X+	Error Y-	Error Y+
0075 0219	0061 0218	0090 0219	0074 0225	0074 0211
0100 0172	0086 0172	0113 0172	0099 0180	0099 0162
0123 0147	0110 0147	0136 0148	0123 0159	0123 0135
0141 0151	0128 0151	0155 0151	0141 0160	0141 0142
0145 0140	0132 0140	0160 0140	0146 0154	0145 0126
0168 0152	0155 0152	0179 0151	0167 0162	0167 0142
0190 0147	0178 0147	0200 0148	0190 0160	0190 0133
0212 0152	0202 0153	0222 0152	0212 0163	0212 0142
0234 0154	0224 0155	0244 0155	0234 0165	0234 0145
0255 0166	0245 0166	0265 0166	0256 0174	0255 0158
0265 0191	0253 0190	0276 0191	0265 0198	0265 0181
0275 0181	0266 0180	0284 0181	0274 0189	0274 0170
0287 0210	0276 0211	0300 0209	0287 0219	0287 0198
0306 0222	0292 0222	0318 0222	0307 0232	0307 0213
0339 0226	0327 0226	0352 0226	0339 0217	0340 0237



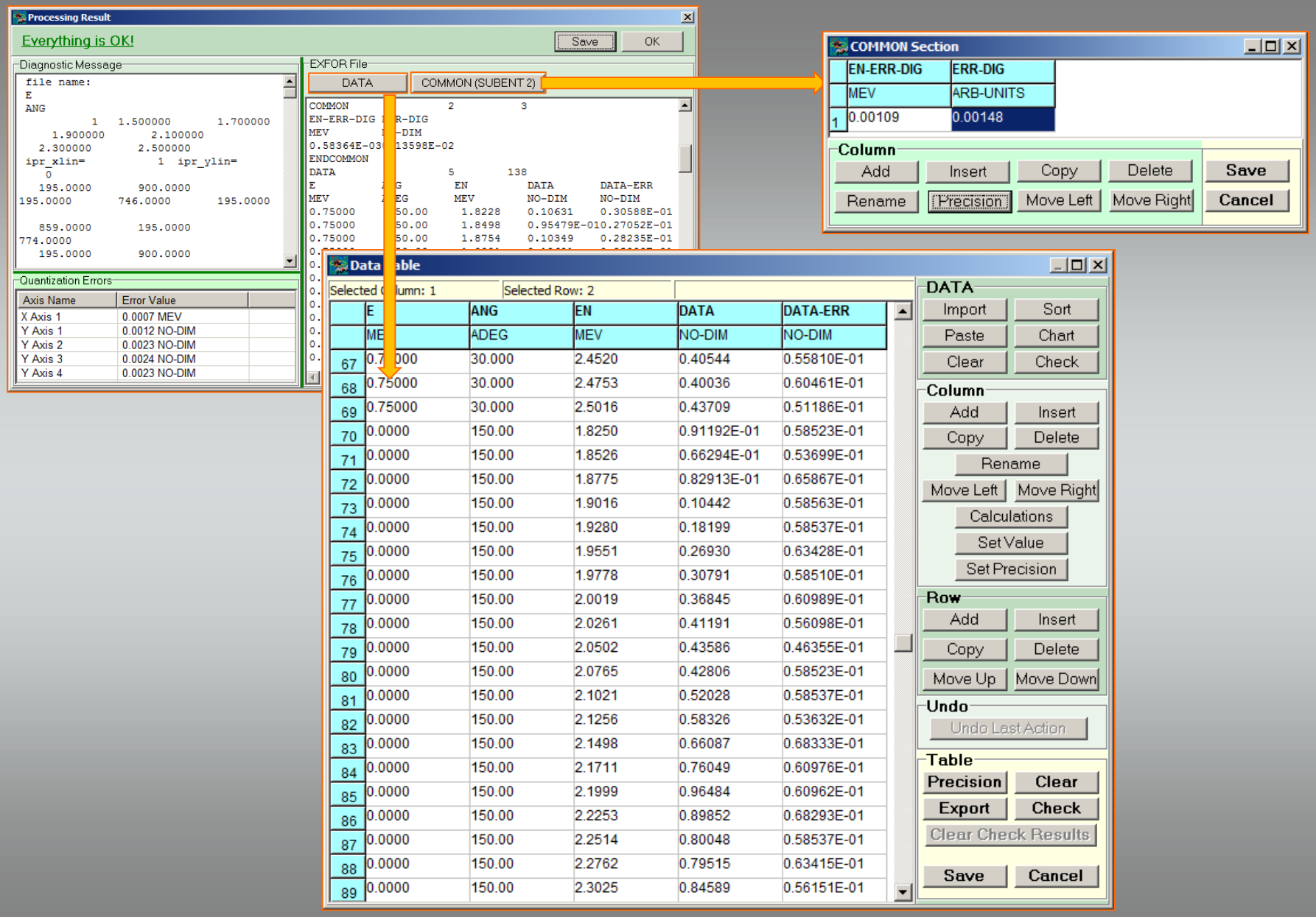
Stages of Exfor File Compilation







Stages of Exfor File Compilation




THANK YOU