Introduction of GSYS2.4.7 Digitizer

Vidya Thakur

IET Bhaddal Ropar, Punjab, India

EXFOR COMPILATION OF NUCLEAR DATA
M. S. UNIVERSITY OF BARODA, VADODARA
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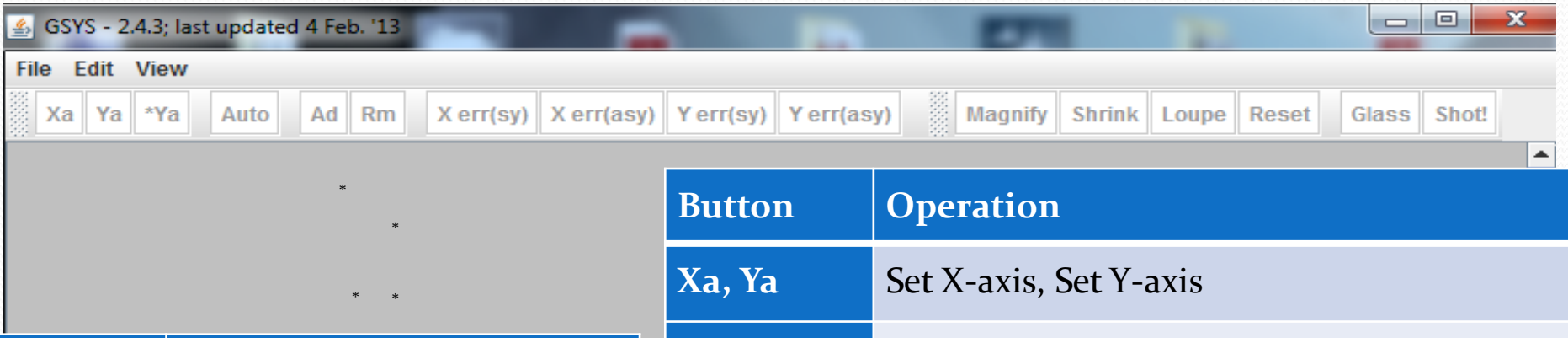
Introduction and Installation of GSYS 2.4.7 Digitizers

- Developed in 2005 by JCPRG (SAPPORO) group.
- Used by the EXFOR compilers in Japan and other countries.
- A software tool to digitize data points on the figure image.
- GSYS2.4.7 is the newest version.
- Works on Window, Linux and Mac.
- Support PNG, GIF and JPEG image format.
- Copy Gsys2.4.7.exe (for EXFOR compilers) on desktop. http://www.jcprg.org/gsys/
- Click the icon “Gsys2.4.7.exe” to start in the Windows.
- Install Java 1.4 or later if it does not work.

Introduction of the Main Panel of GSYS 2.4.7



Button	Operation
Xa, Ya	Set X-axis, Set Y-axis
*Ya	Set end point of Y-axis when starting point is the same as X axis
Auto	Set an axis by automatic axis detection.
Ad	Add data points.
Rm	To remove the uncorrected marked data point
X err(sy)	Set symmetric error for X direction
X err(asy)	Set asymmetric error for X direction.
Y err(sy)	Set symmetric error for Y direction.
Y err(asy)	Set asymmetric error for Y direction.

Button	Operation
Glass	To enlarge the particular data point.
Loupe	To enlarge a particular area.
Magnify	To enlarge the image.
Shrink	To obtained the original size.

1. Load Image and Define Scales

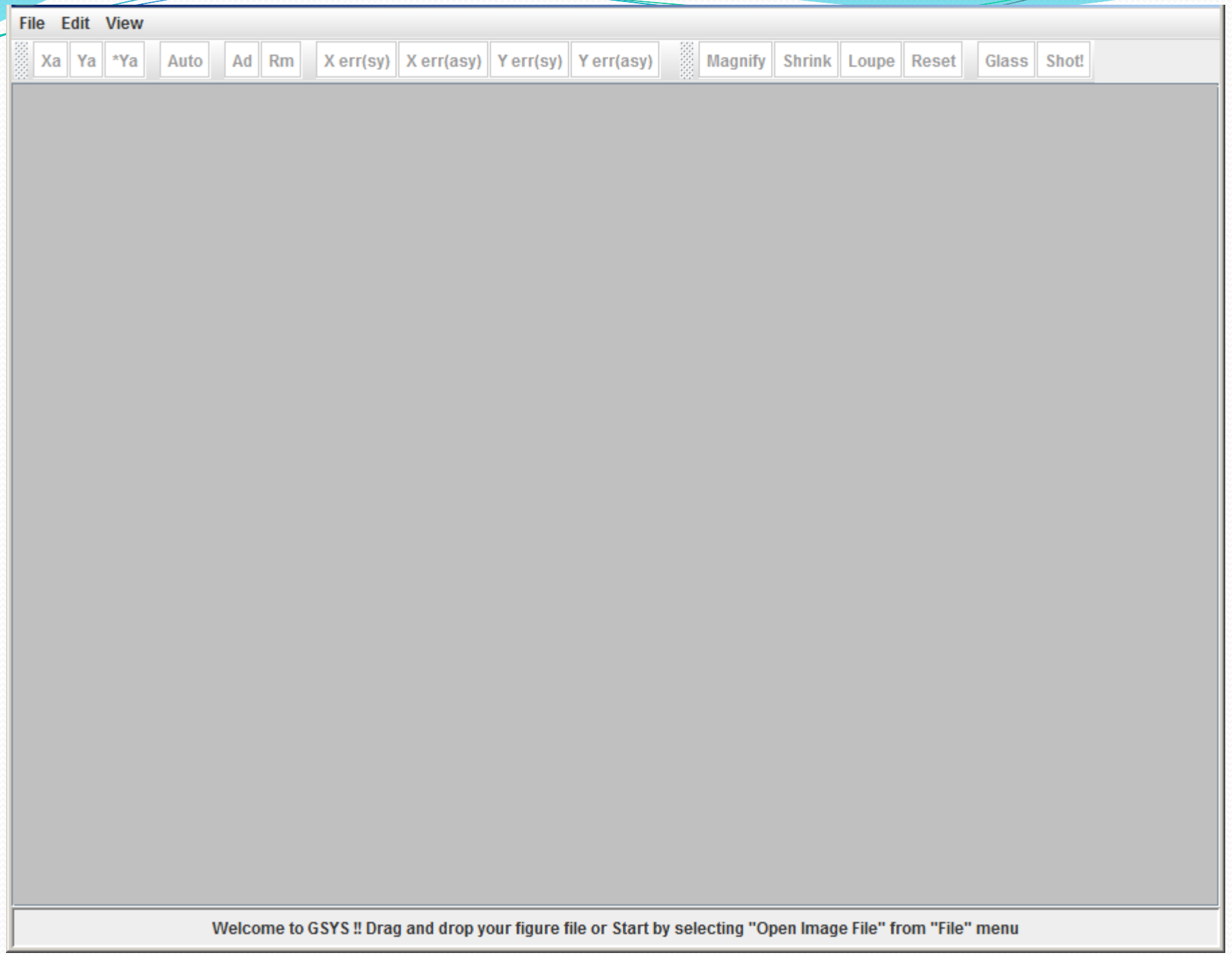
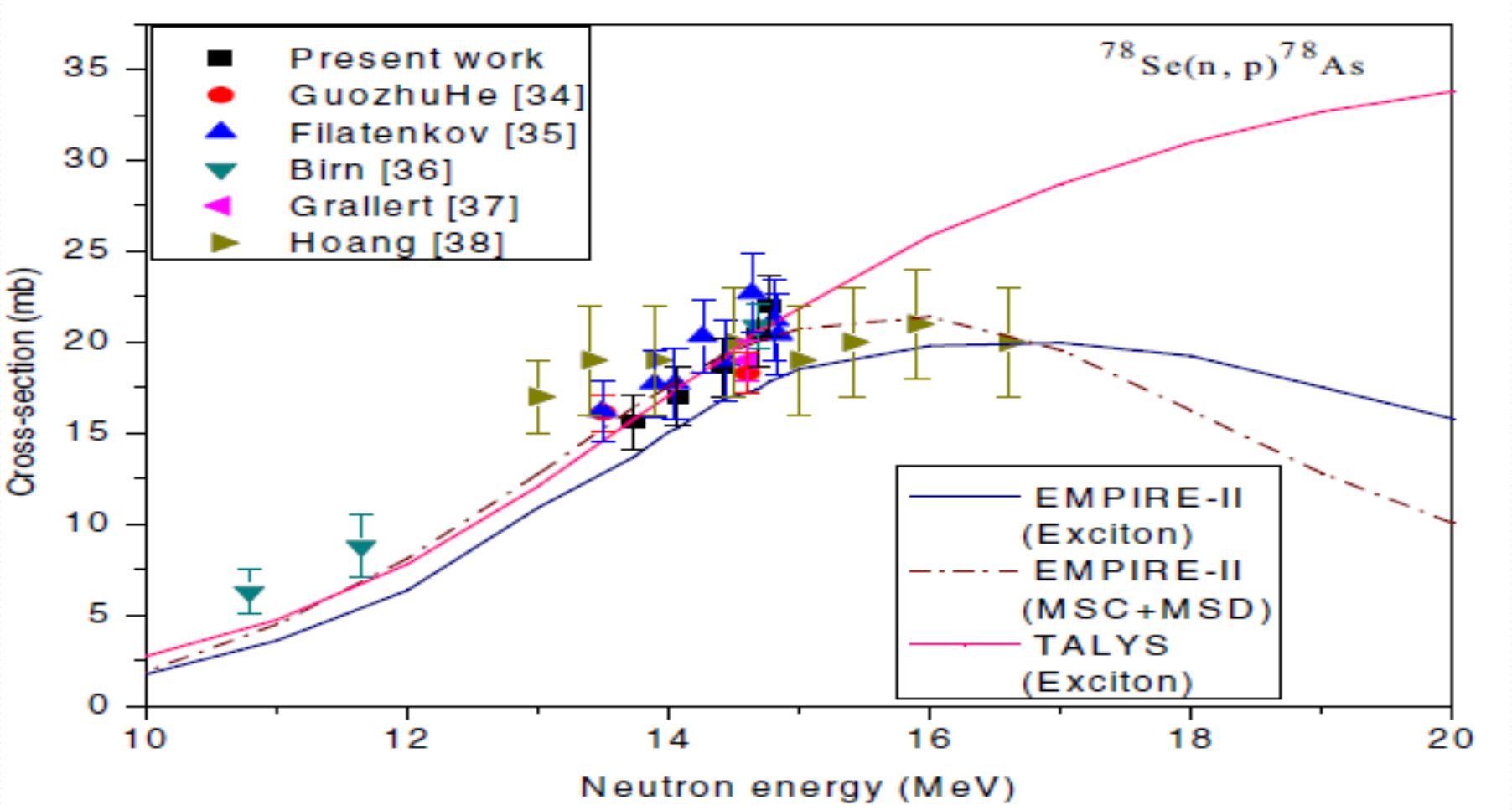
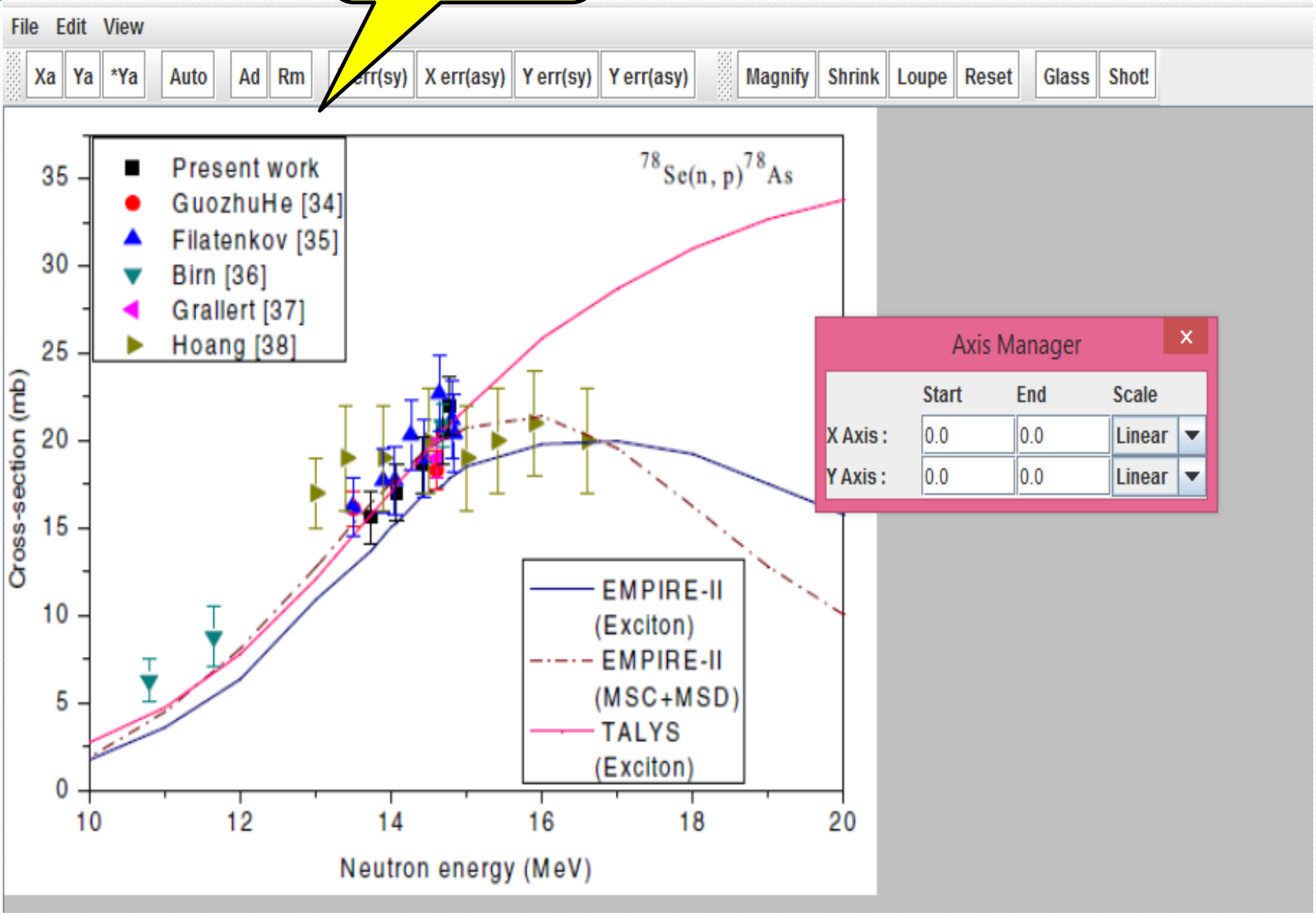

File
Edit
View
Xa
Ya
*Ya
Auto
Ad
Rm
X err(sy)
X err(asy)
Y err(sy)
Y err(asy)
Magnify
Shrink
Loupe
Reset
Glass
Shot!
Welcome to GSYS !! Drag and drop your figure file or Start by selecting "Open Image File" from "File" menu

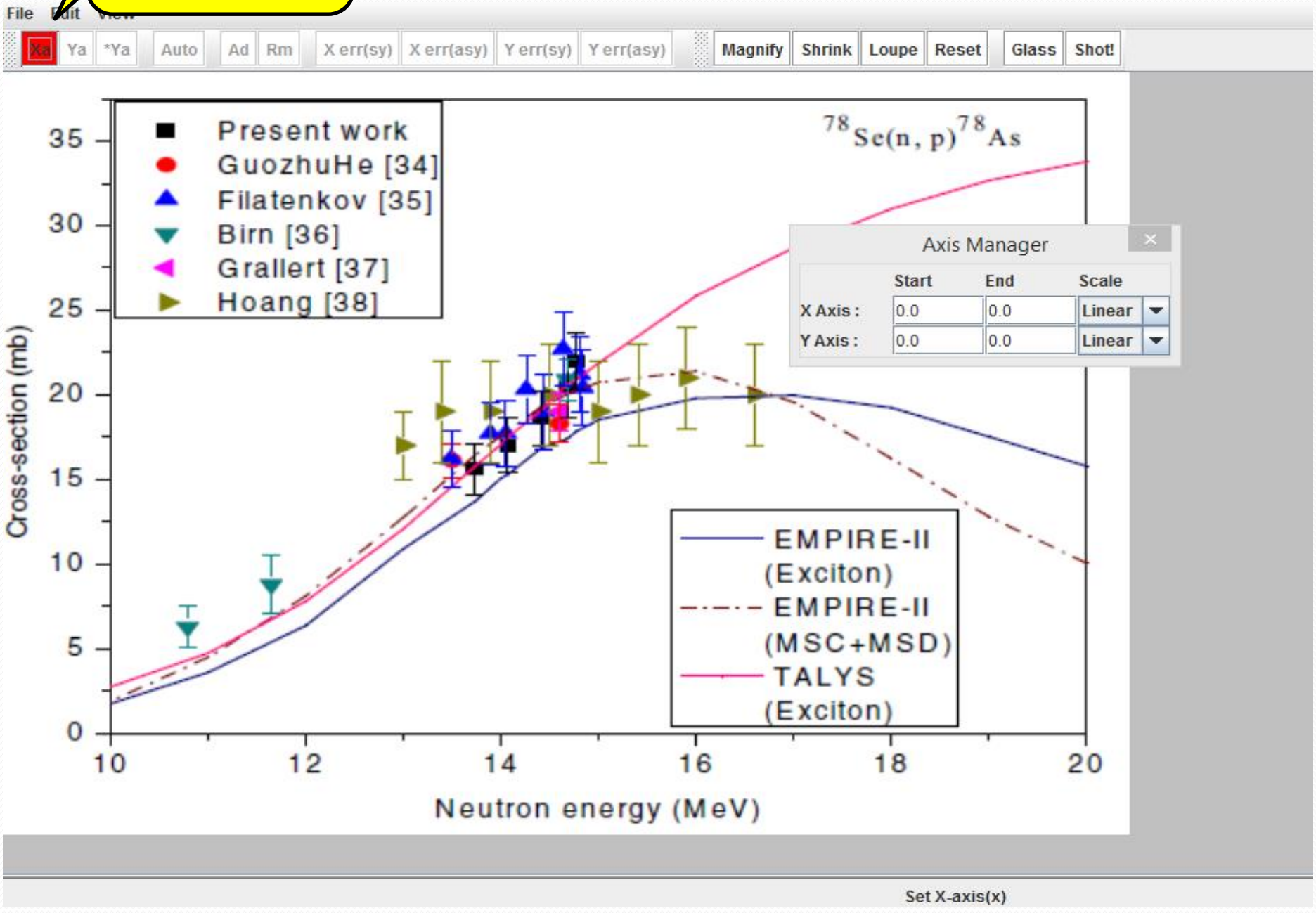
Fig.3 (PRC 90, 064609, 2014)

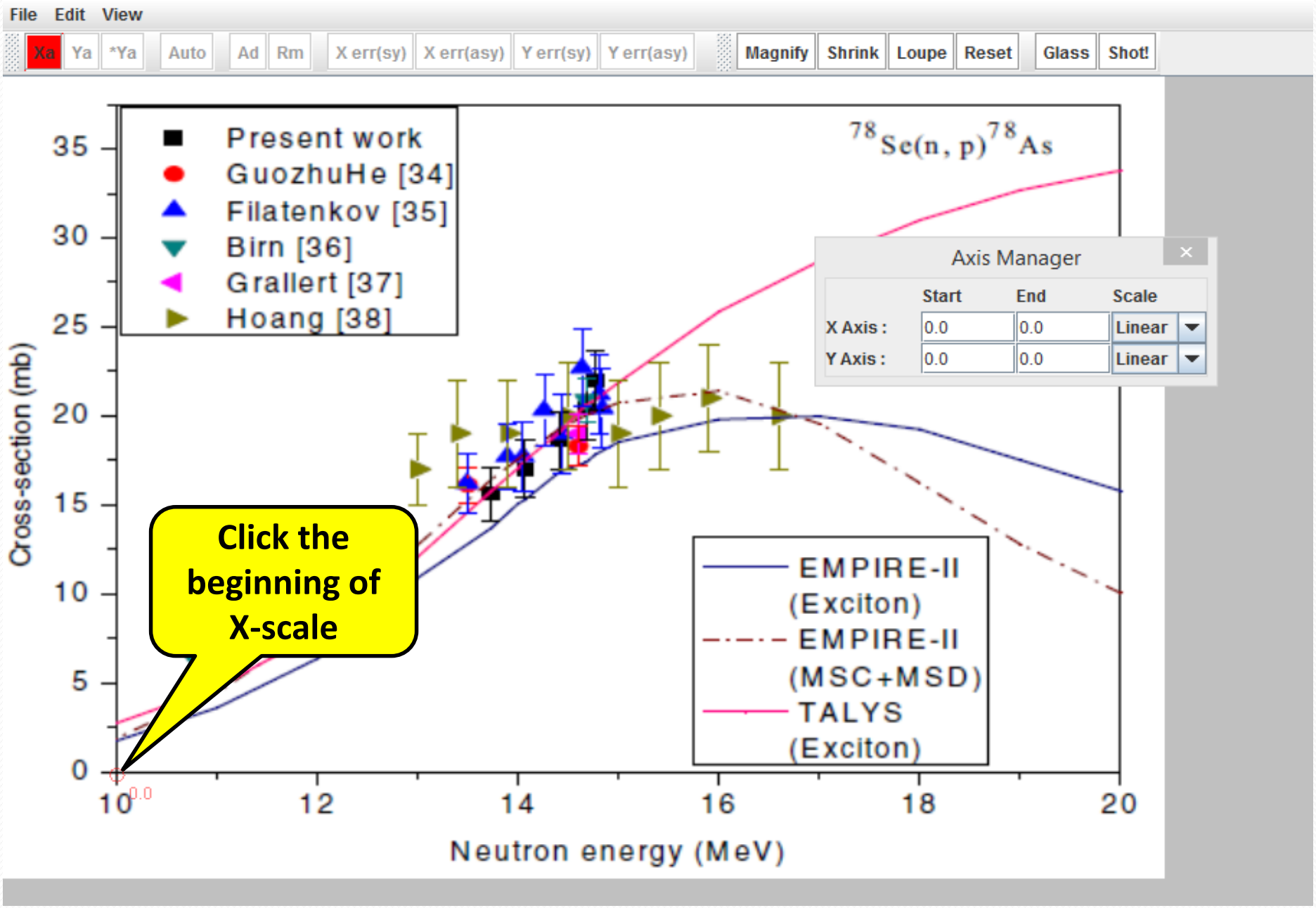


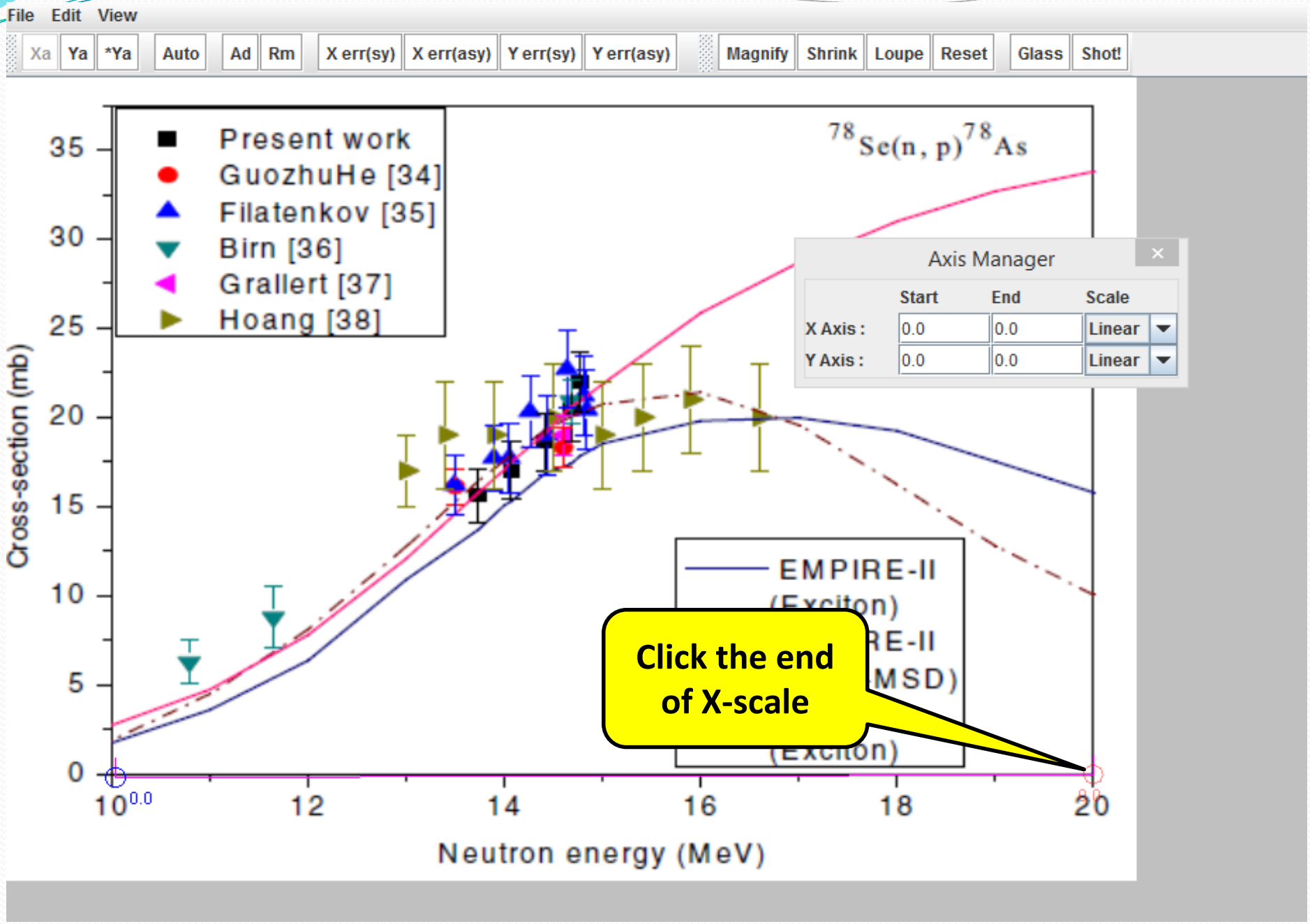
Drag and drop image

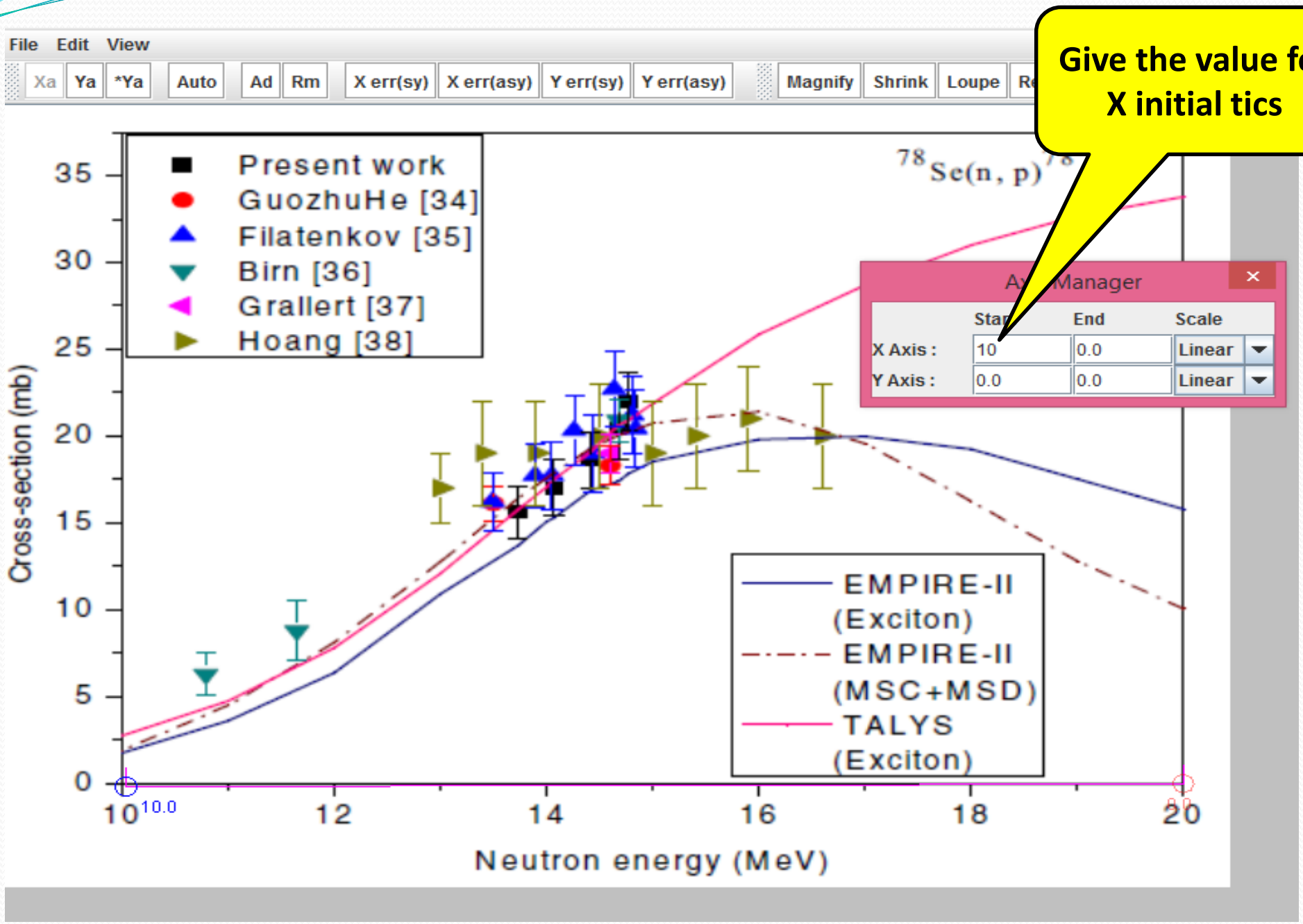


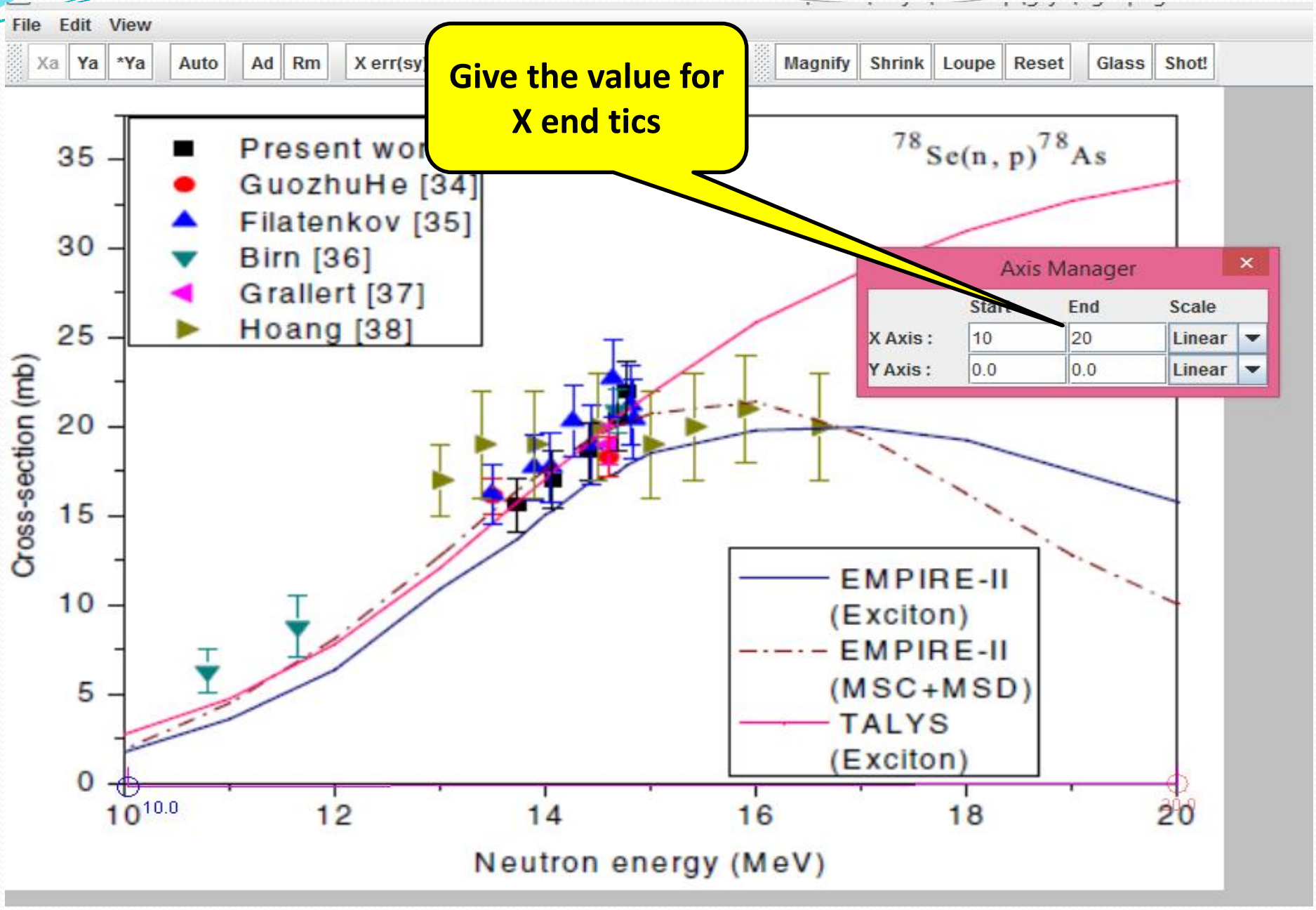
Click Xa

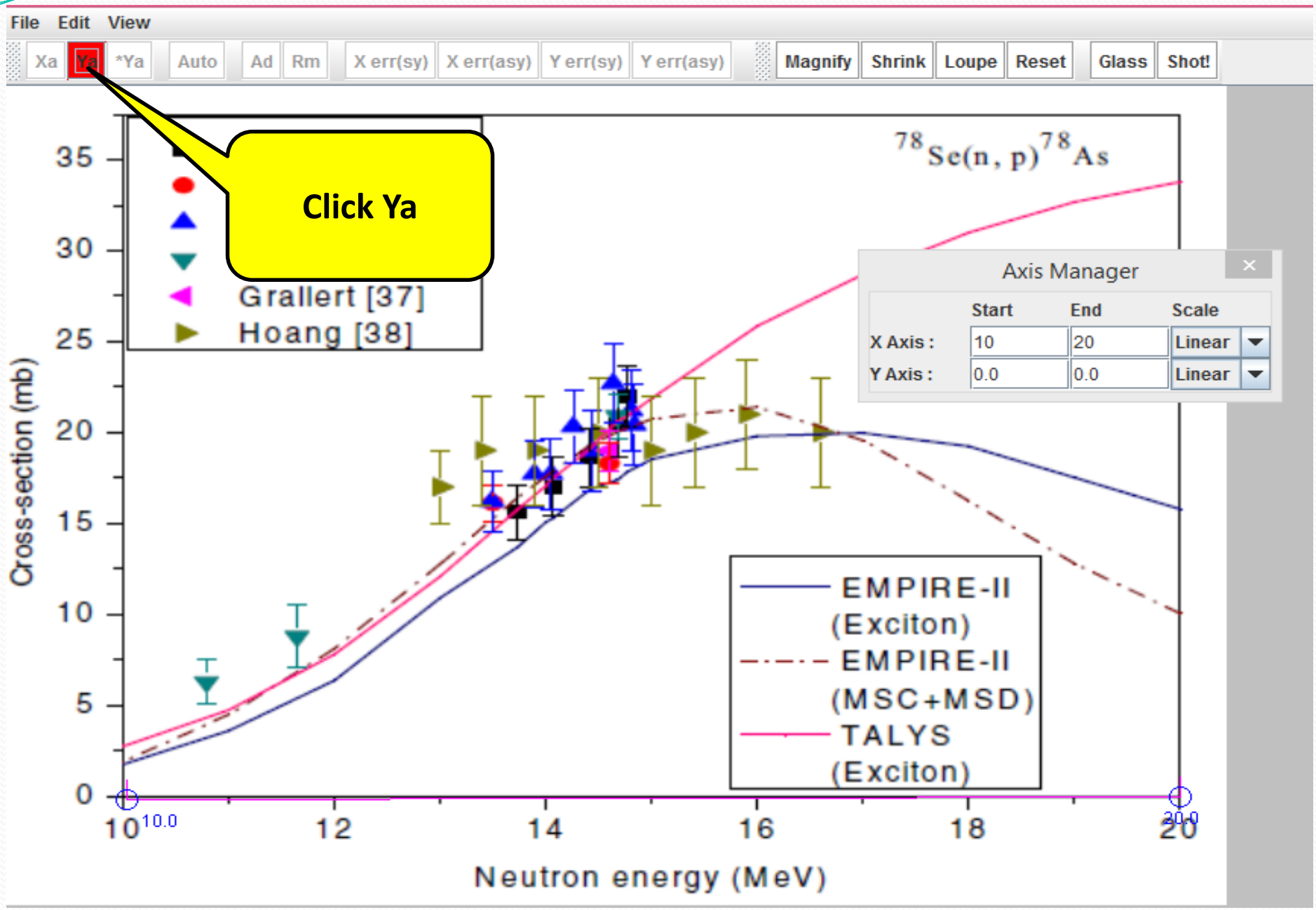

File Edit View
Xa
Ya
*Ya
Auto
Ad
Rm
X err(sy)
X err(asy)
Y err(sy)
Y err(asy)
Magnify
Shrink
Loupe
Reset
Glass
Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start
End
Scale
X Axis :
0.0
0.0
Linear
Y Axis :
0.0
0.0
Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20
Set X-axis(x)

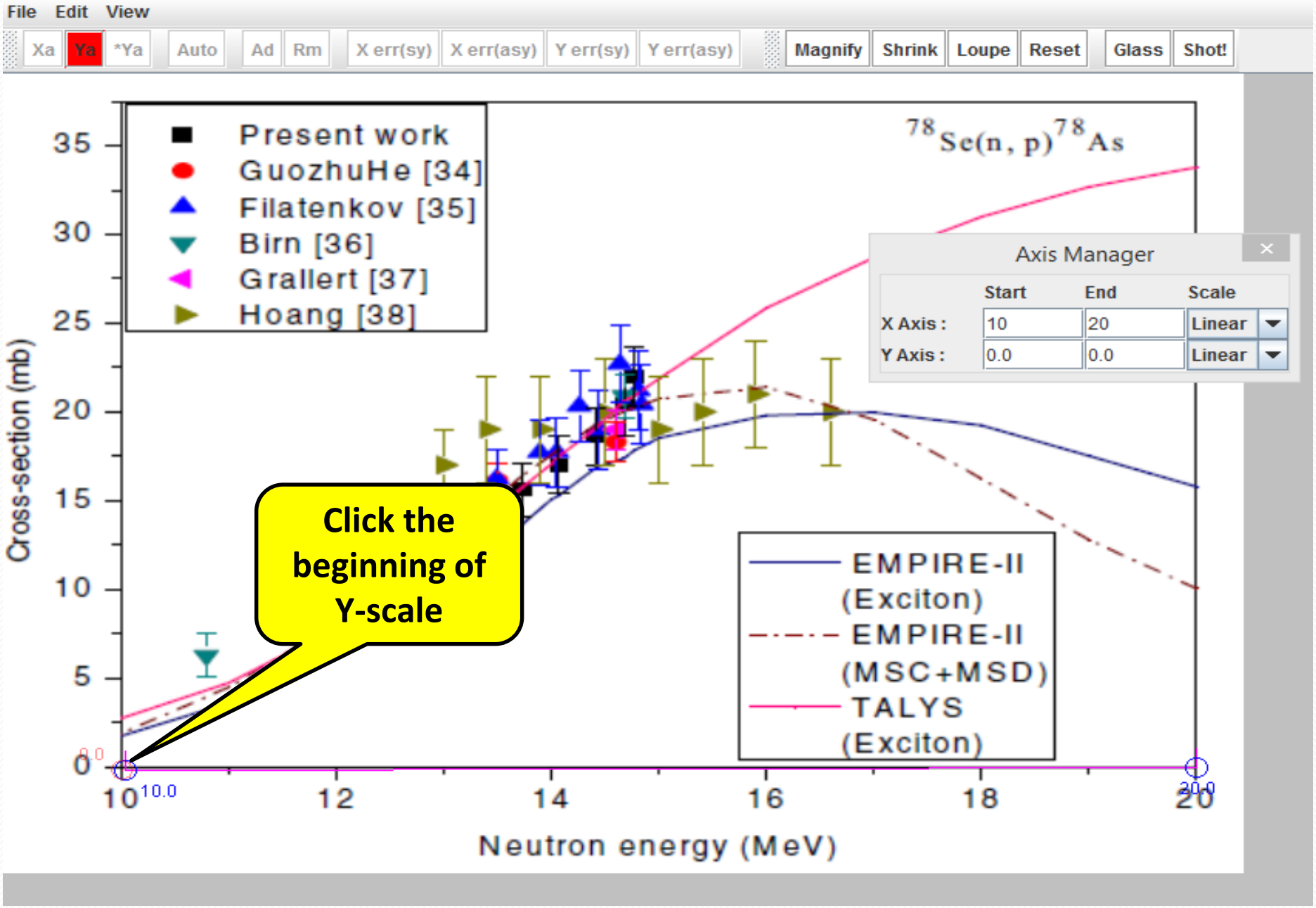

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 0.0 0.0 Linear
Y Axis : 0.0 0.0 Linear
Click the beginning of X-scale
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20
0.0

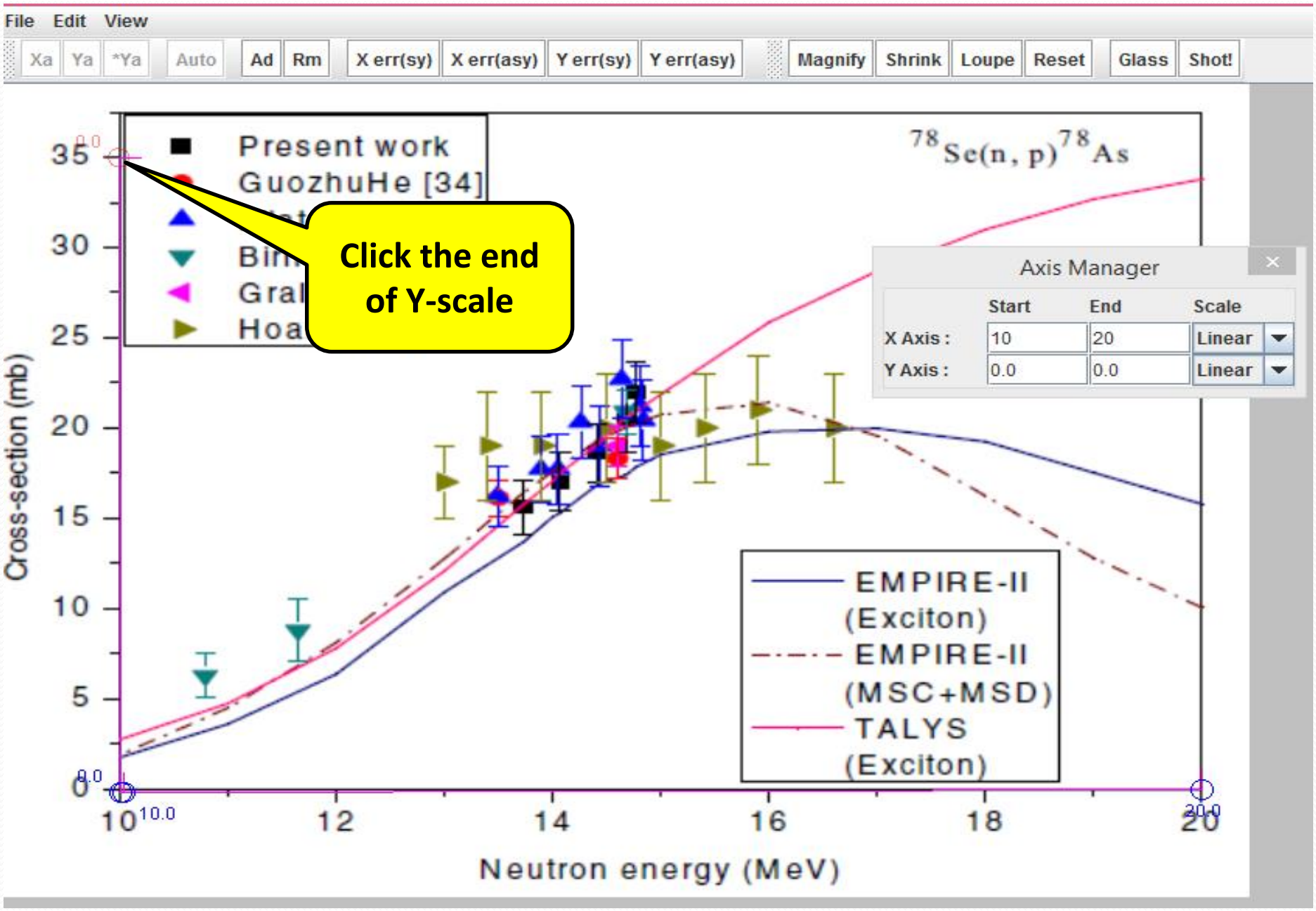

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 0.0 0.0 Linear
Y Axis : 0.0 0.0 Linear
EMPIRE-II
(Exciton)
RE-II
MSD)
(Exciton)
Click the end of X-scale
Cross-section (mb)
Neutron energy (MeV)
0 5 10 15 20 25 30 35
10 12 14 16 18 20
0.0

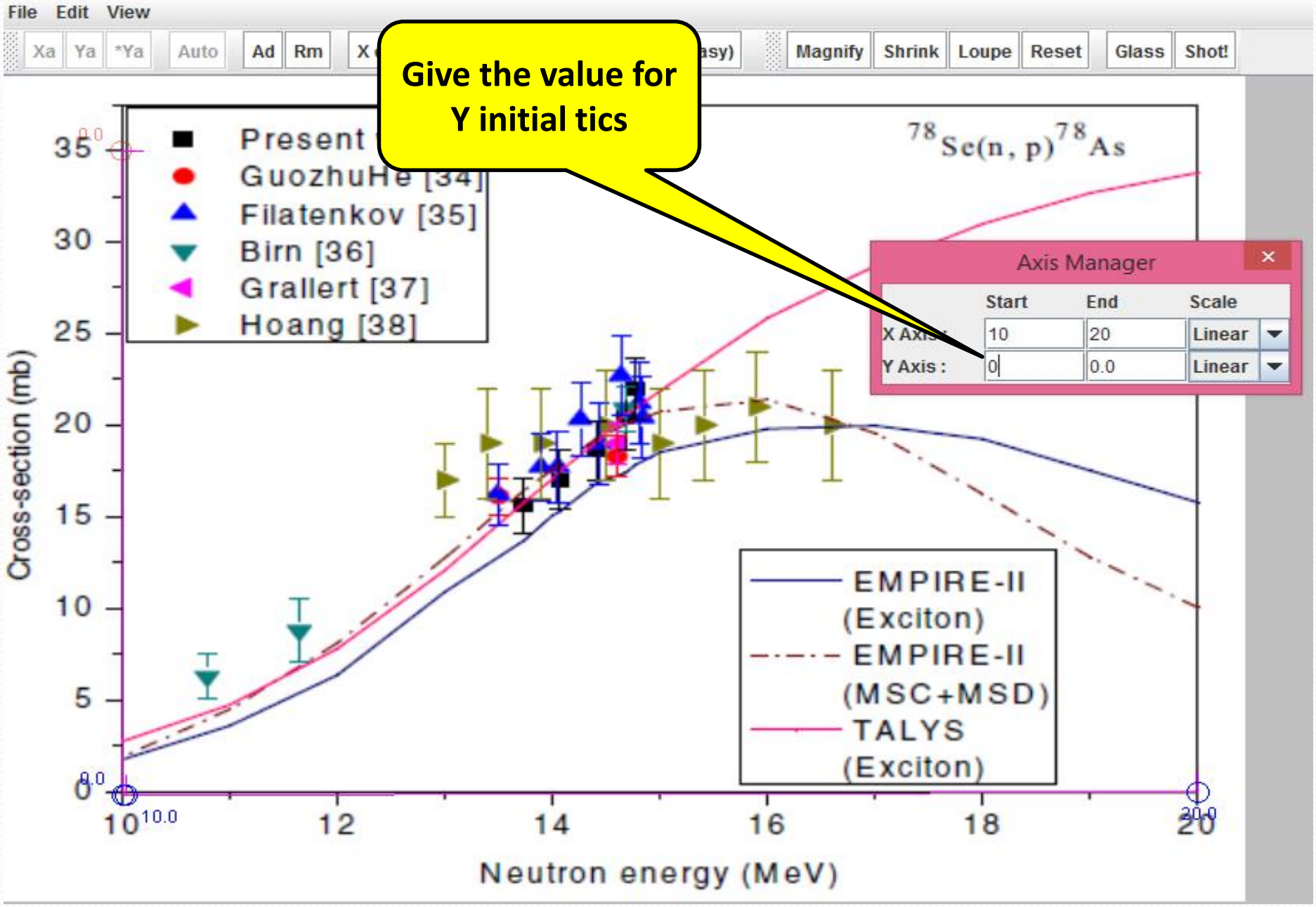

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe
Give the value for X initial tics
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)
Manager
Start
End
Scale
X Axis :
10
0.0
Linear
Y Axis :
0.0
0.0
Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
10.0
12
14
16
18
20

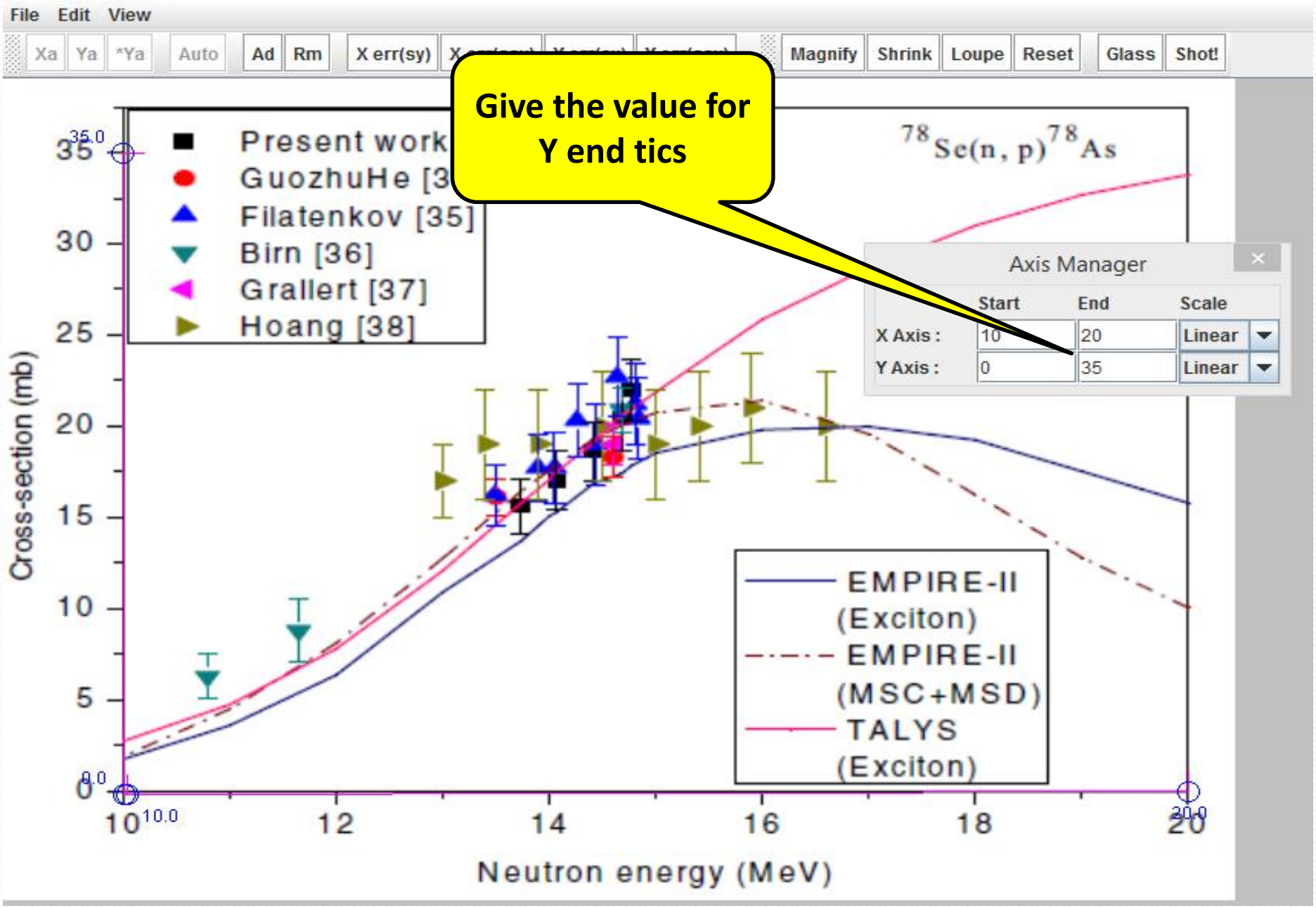

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy
Magnify Shrink Loupe Reset Glass Shot!
Give the value for X end tics
Present wor
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
End Scale
X Axis : 10 20 Linear
Y Axis : 0.0 0.0 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0 5 10 15 20 25 30 35
10 12 14 16 18 20


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Click Ya
78Se(n, p)78As
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0.0 0.0 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0 5 10 15 20 25 30 35
10 12 14 16 18 20
10.0
20.0

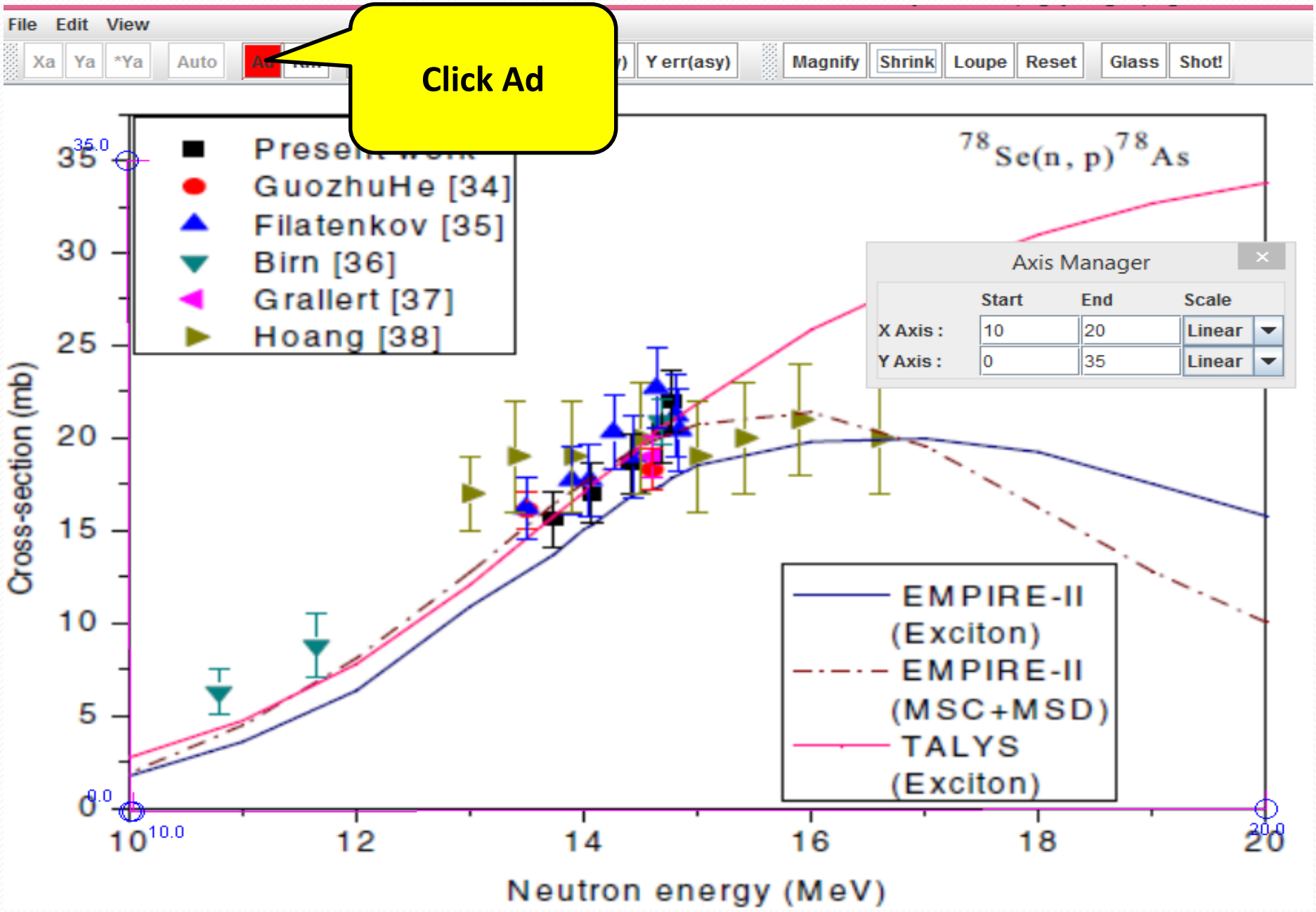

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0.0 0.0 Linear
Click the beginning of Y-scale
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20
10.0
20.0

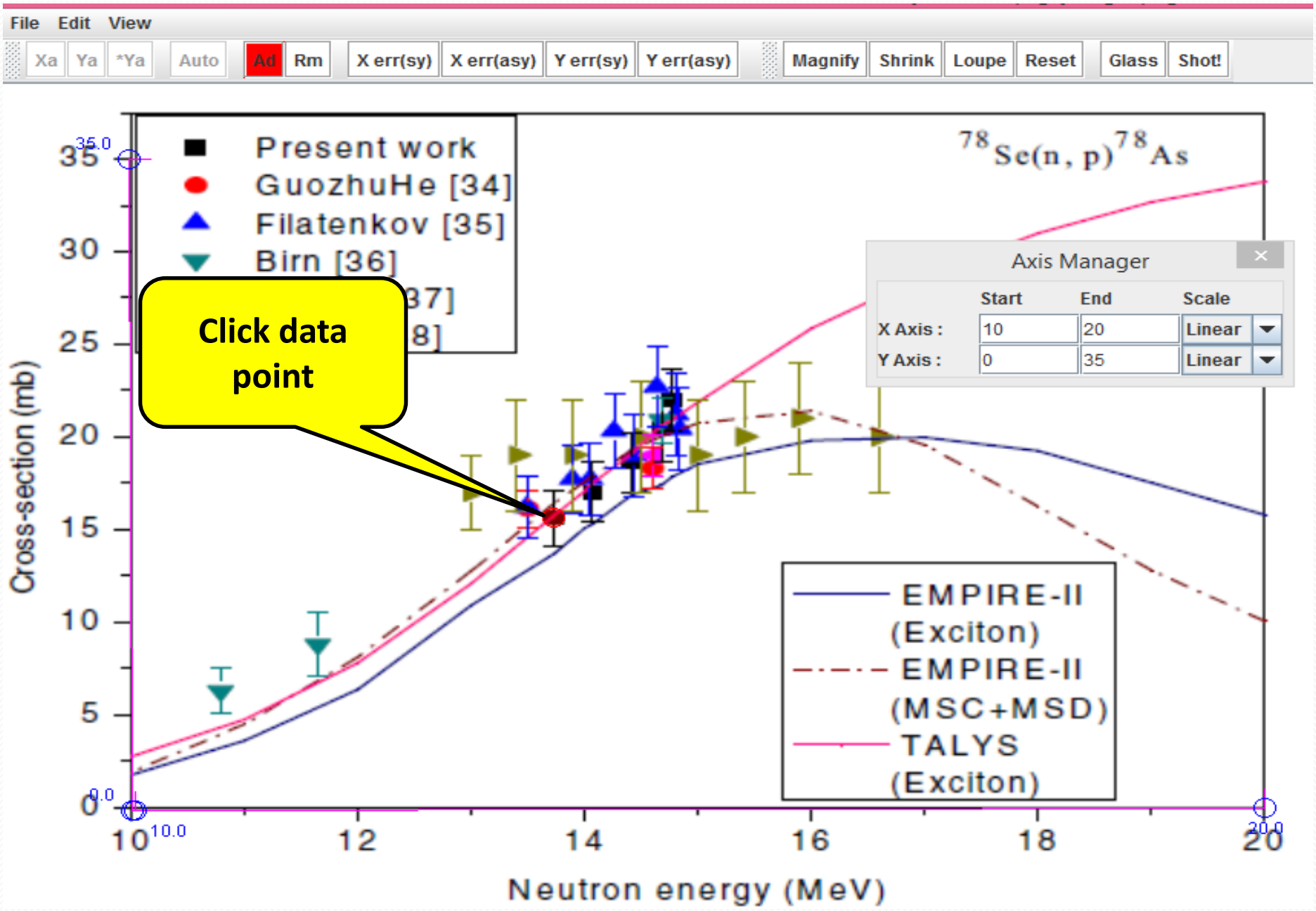

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Click the end of Y-scale
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0.0 0.0 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
35
30
25
20
15
10
5
0
10.0
12
14
16
18
20
20.0

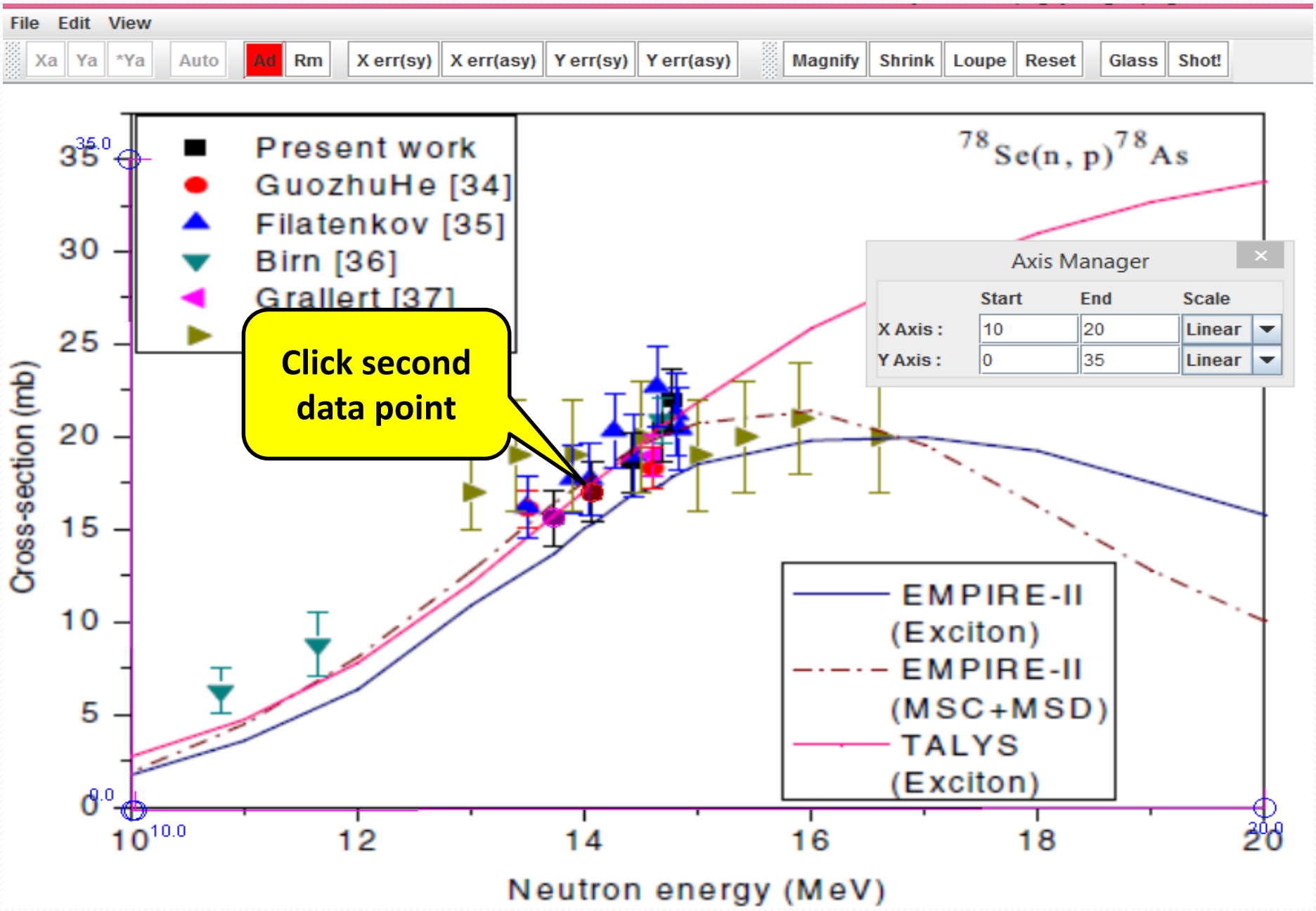

File Edit View
Xa Ya *Ya Auto Ad Rm
Magnify Shrink Loupe Reset Glass Shot!
Give the value for Y initial tics
^{78}Se(n, p)^{78}As
Present
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 0.0 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20

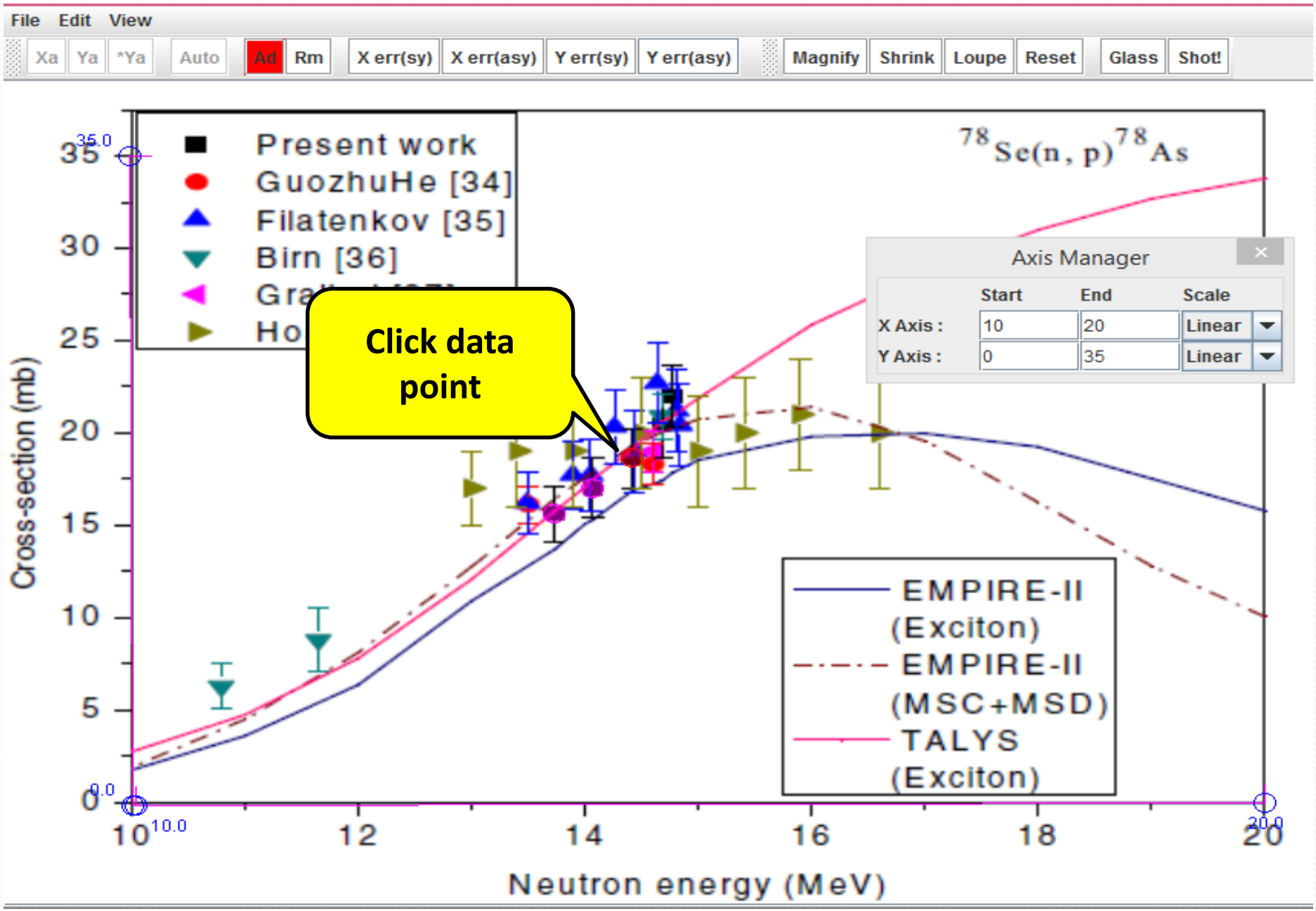

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy)
Magnify Shrink Loupe Reset Glass Shot!
Give the value for Y end tics
$^{78}Se(n, p)^{78}As$
Present work
GuozhuHe [3
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

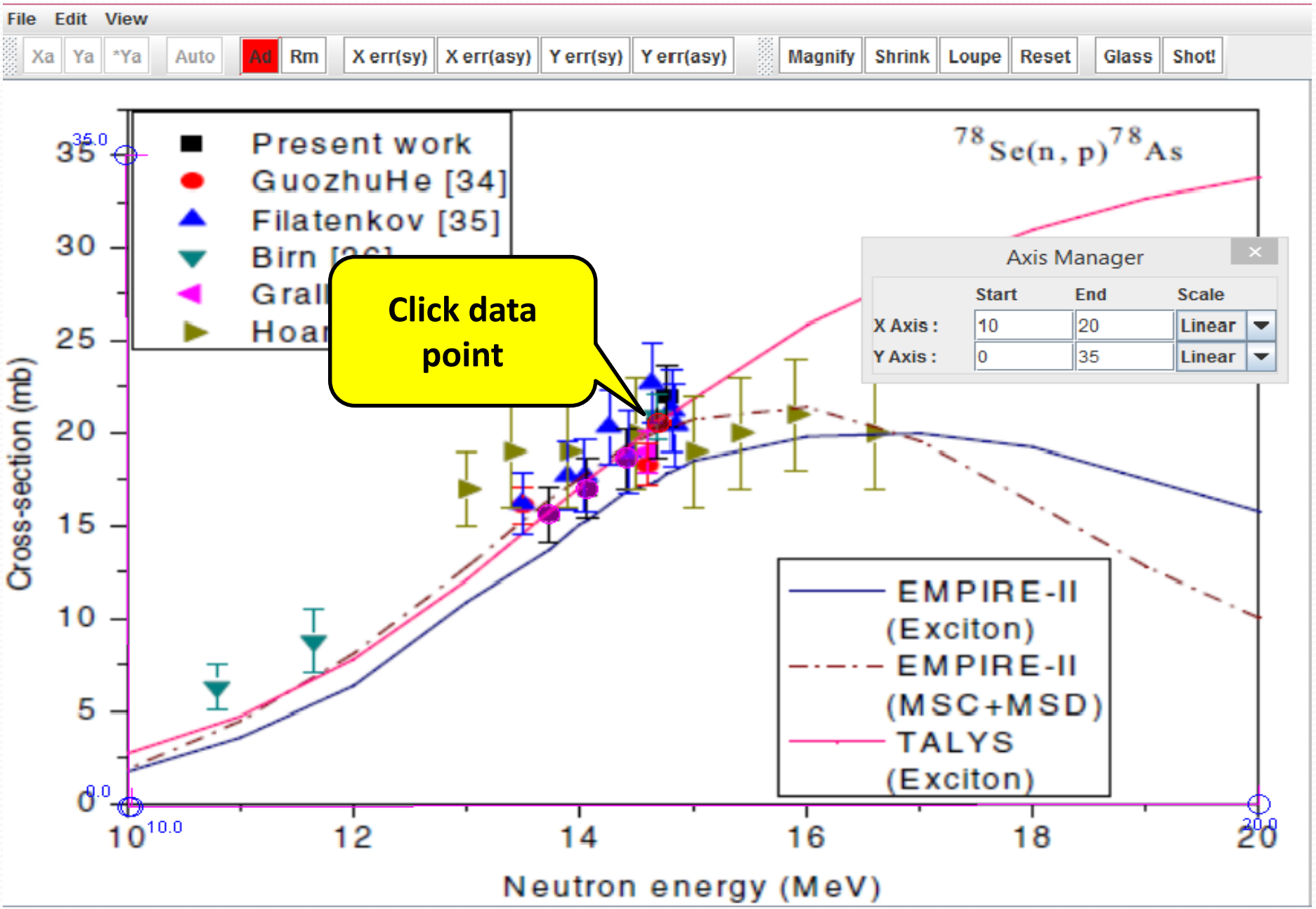
2. Digitize Centre of Data Points

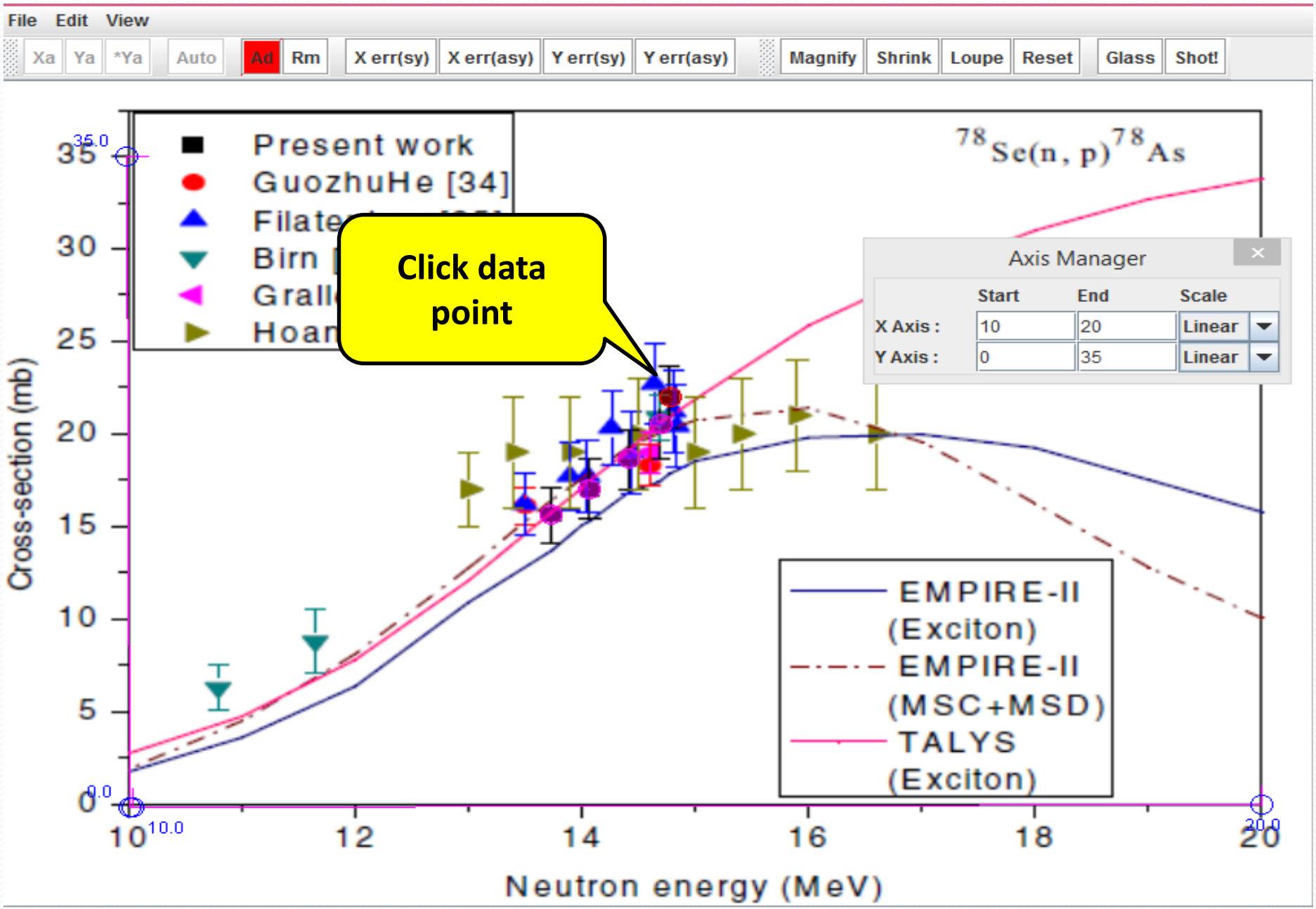

File Edit View
Xa Ya *Ya Auto Ad
Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Click Ad
^{78}Se(n, p)^{78}As
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Click data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
10.0
20.0
35.0

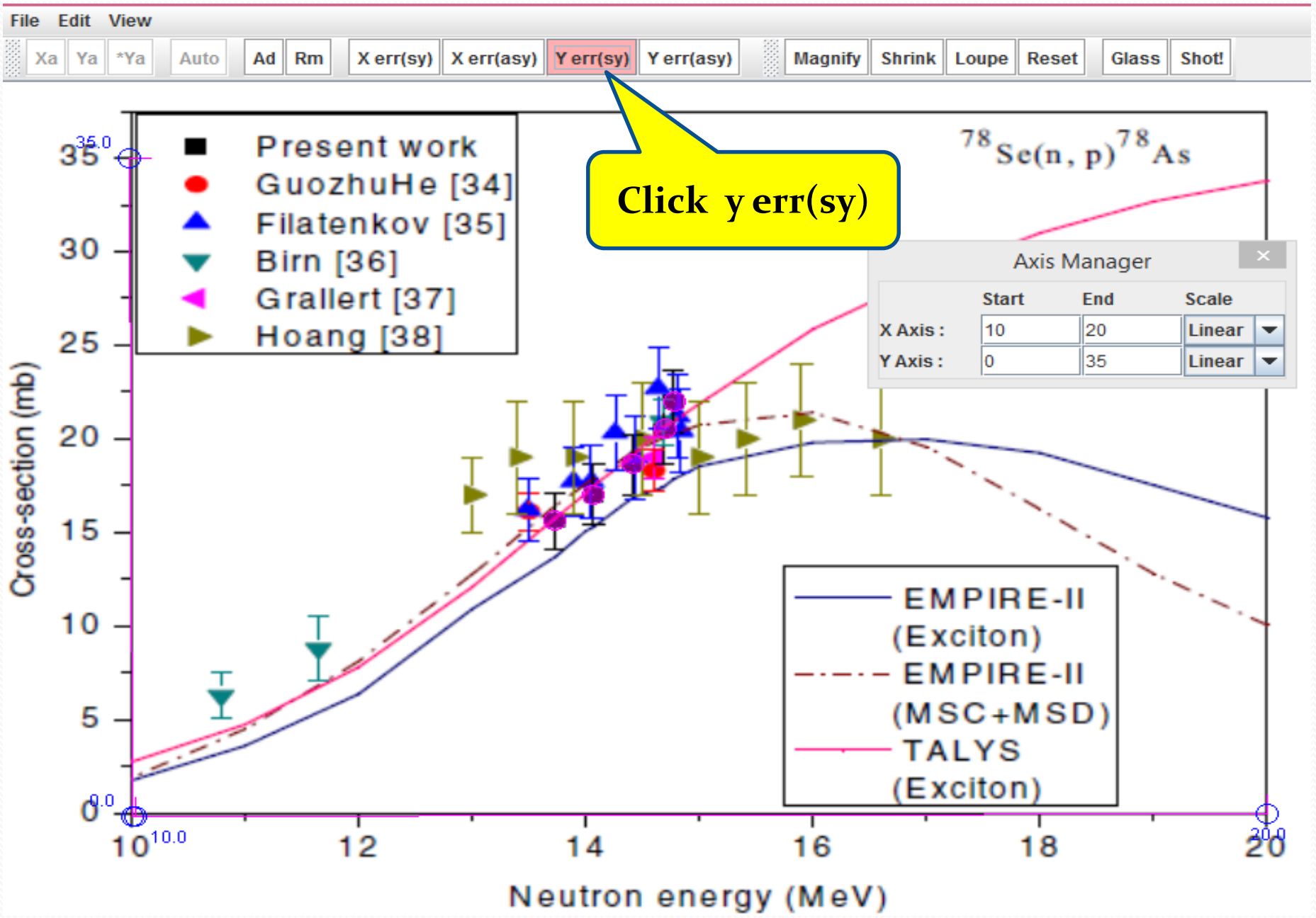

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
78Se(n, p)78As
Click second data point
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

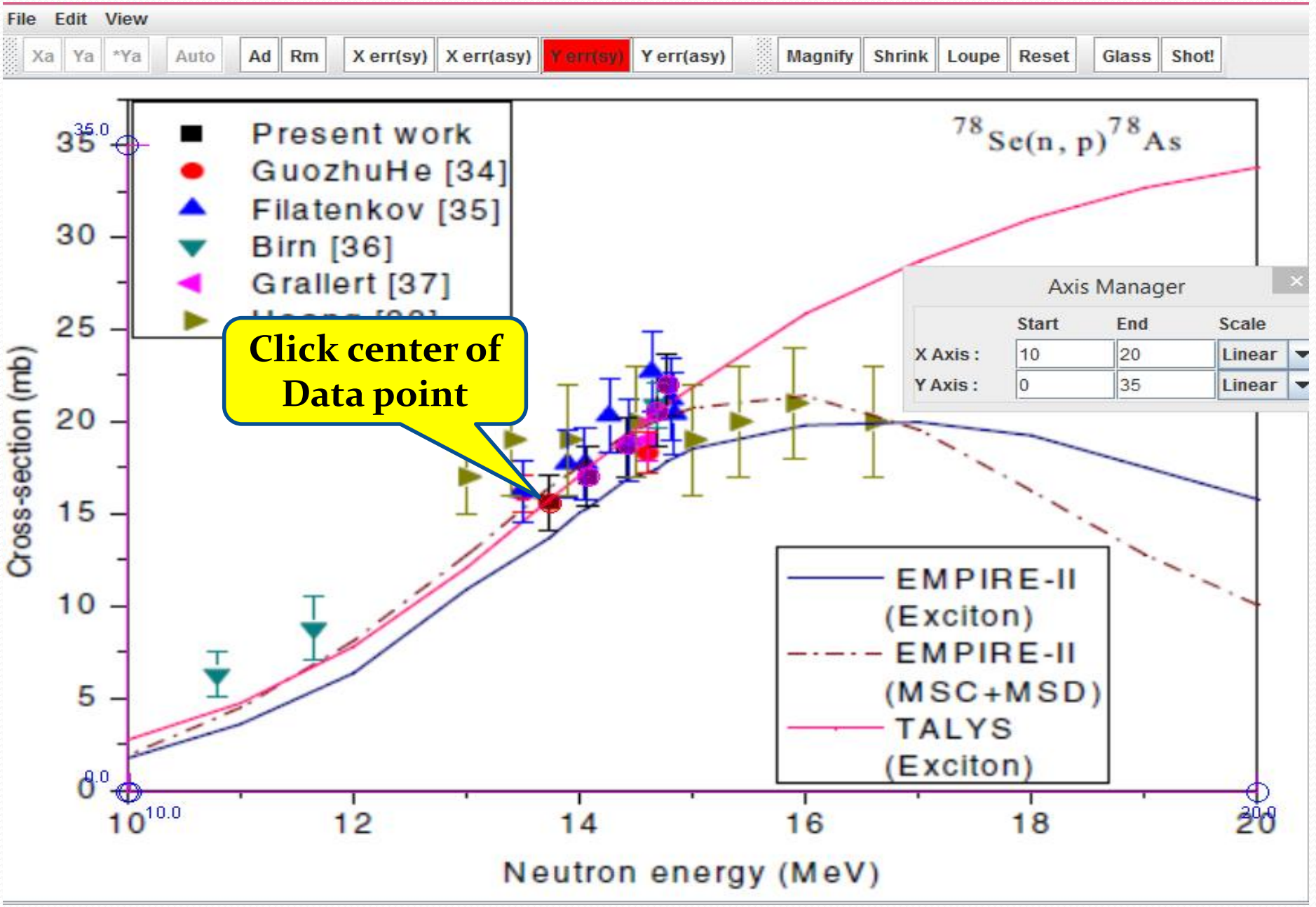

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Click data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

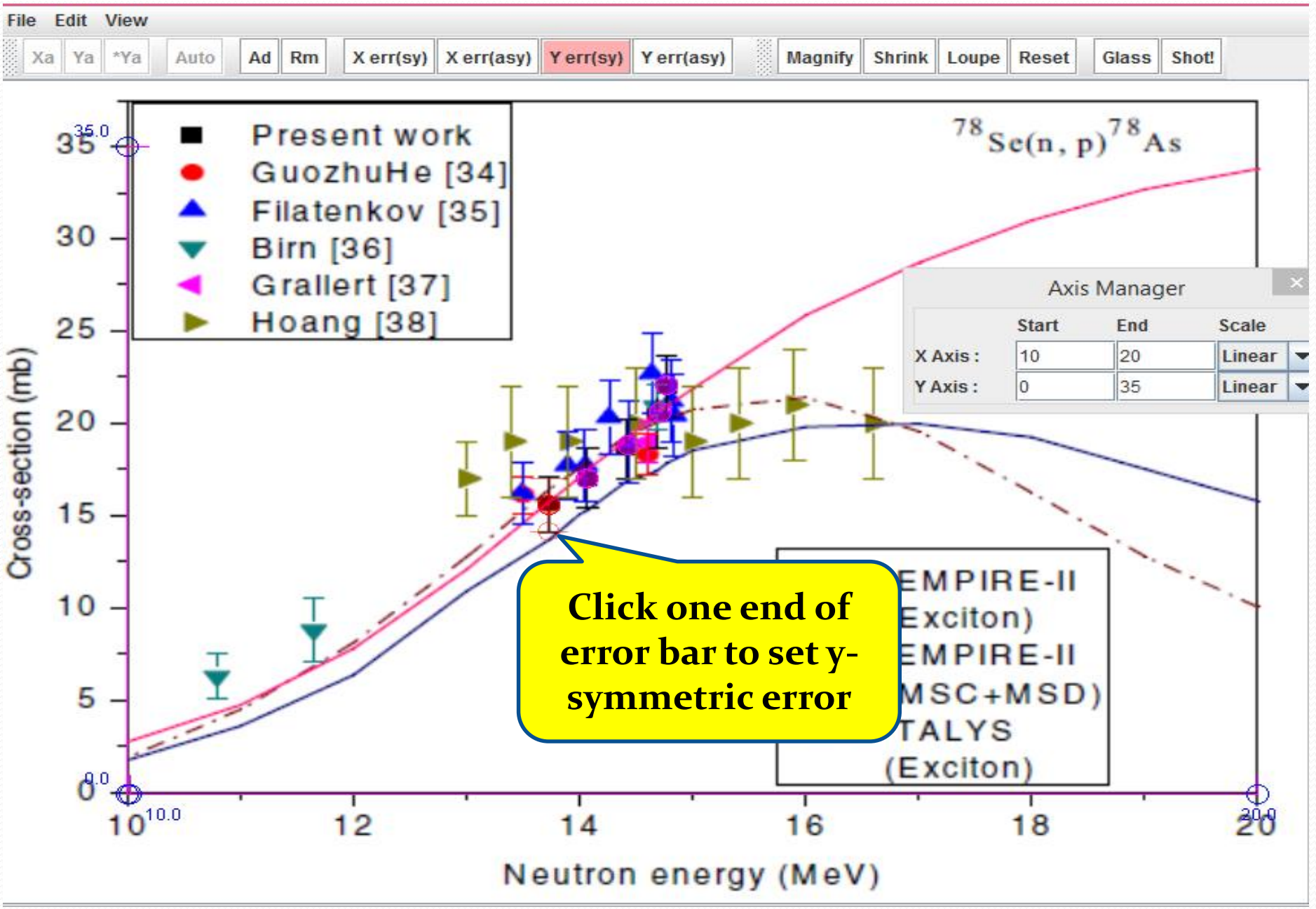

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [26]
Grall
Hoar
Click data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

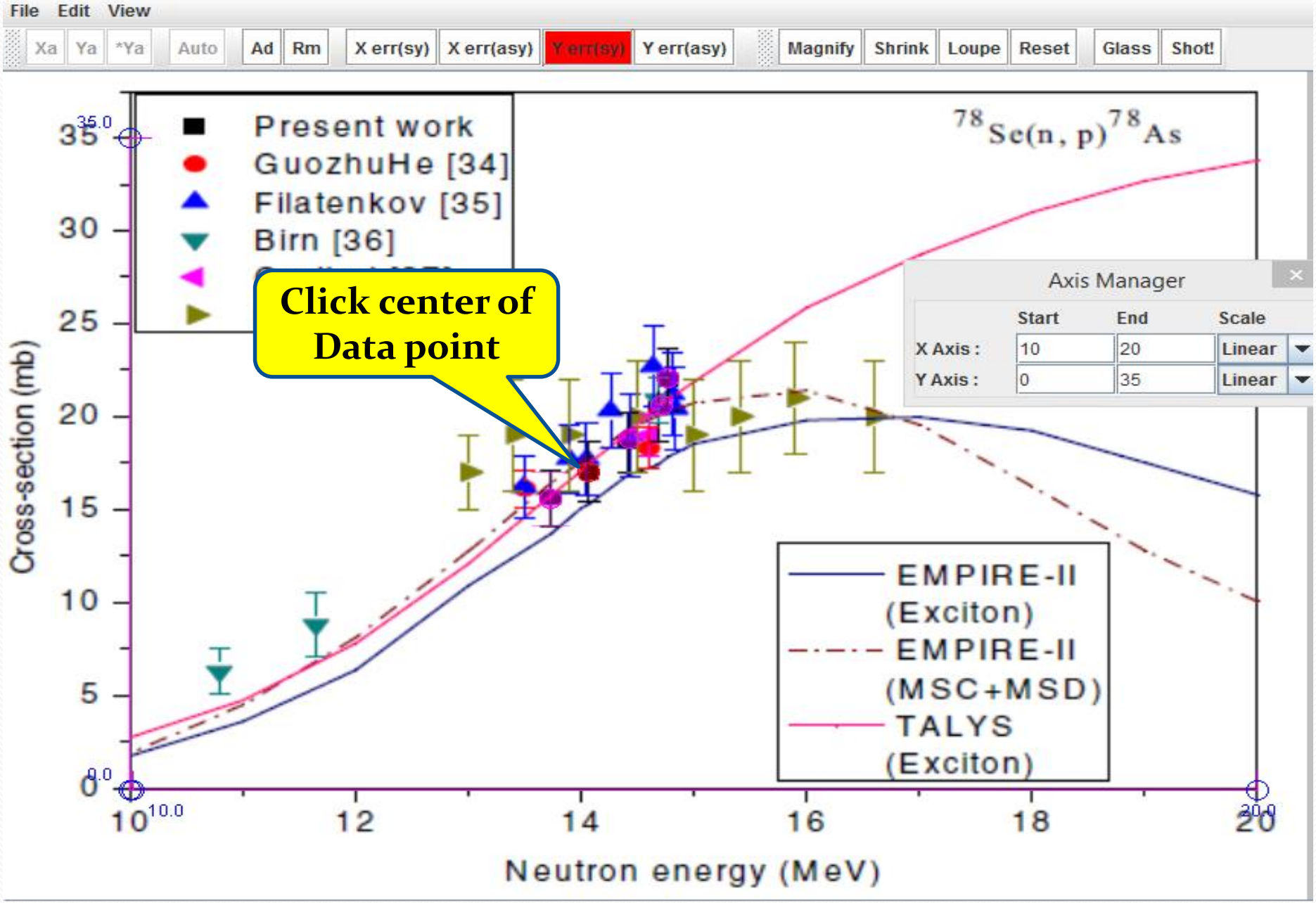

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Click data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
35
10
12
14
16
18
20

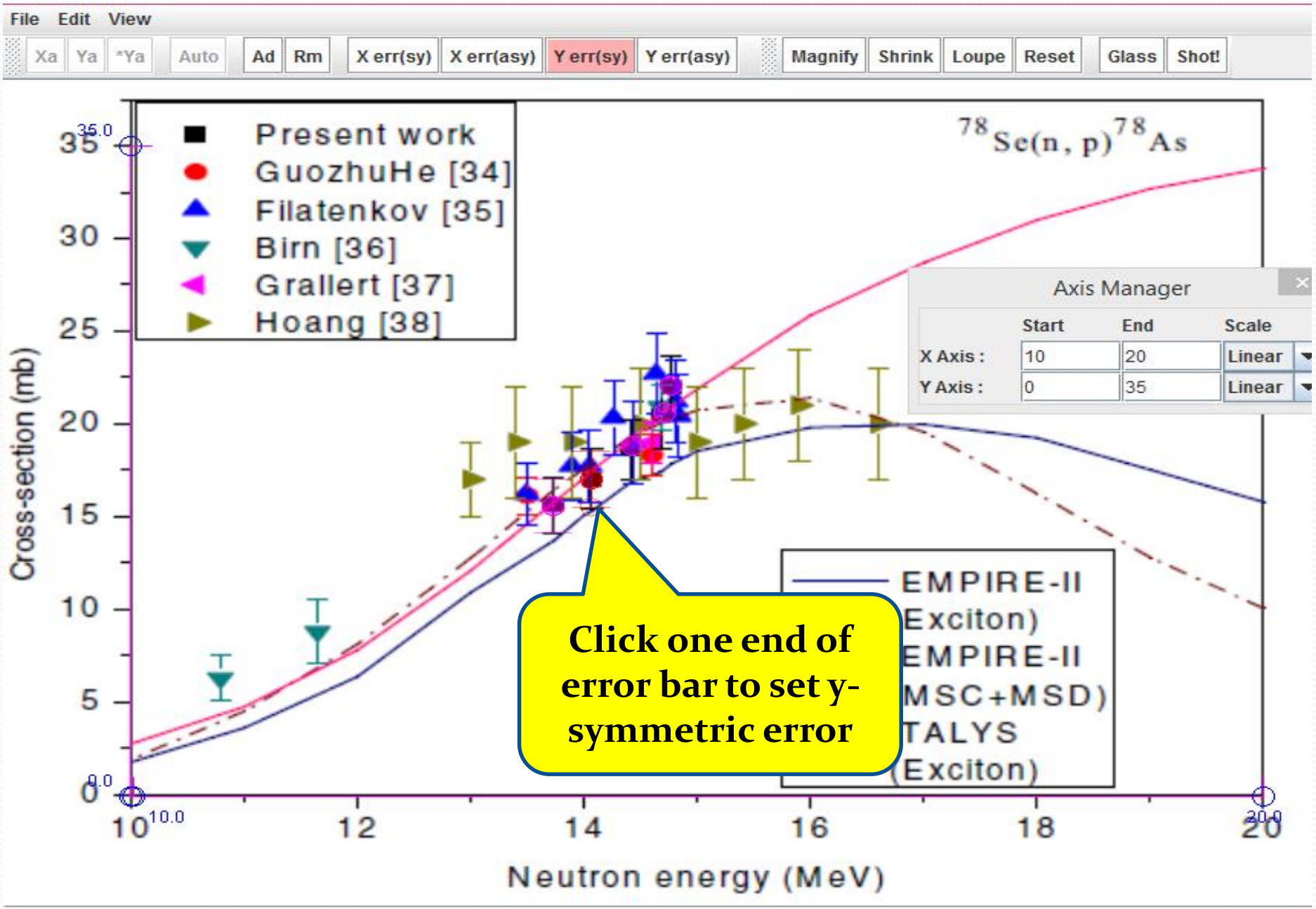
3. Digitize y-symmetric Error Bar

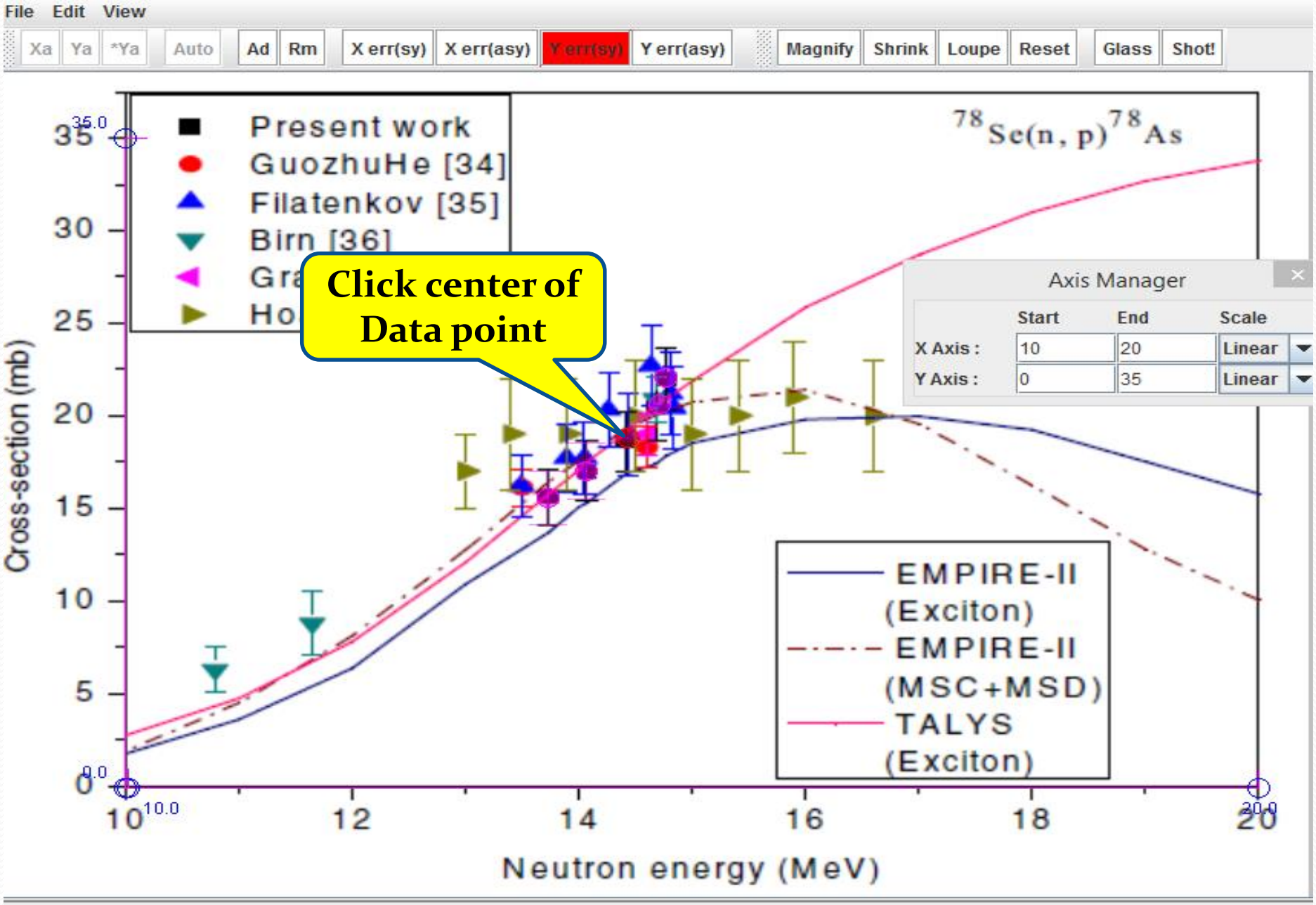

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Click y err(sy)
78Se(n, p)78As
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
10.0
20.0
35.0

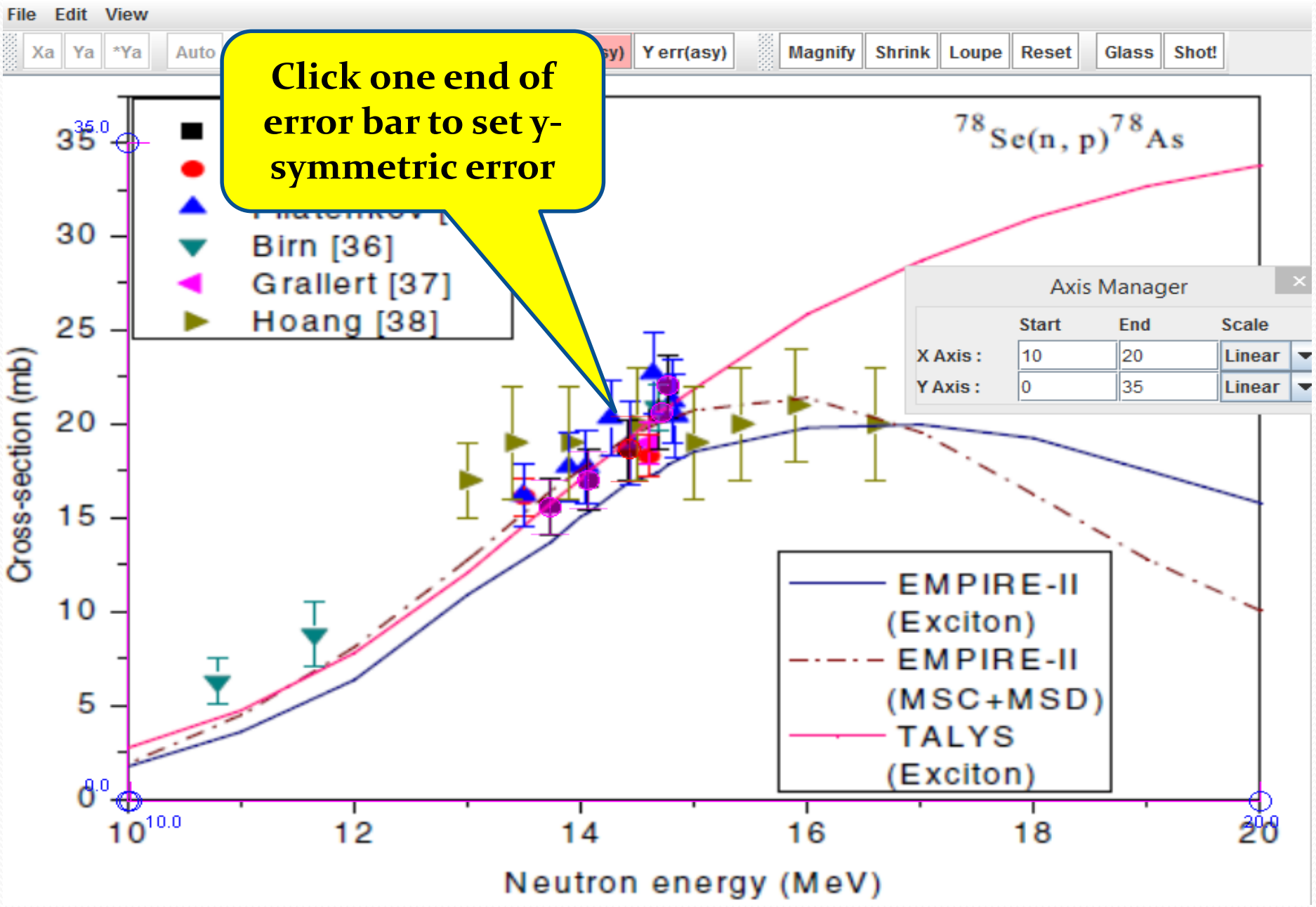

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
78Se(n, p)78As
Click center of Data point
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
30
25
20
15
10
5
0.0
10.0
12
14
16
18
20.0

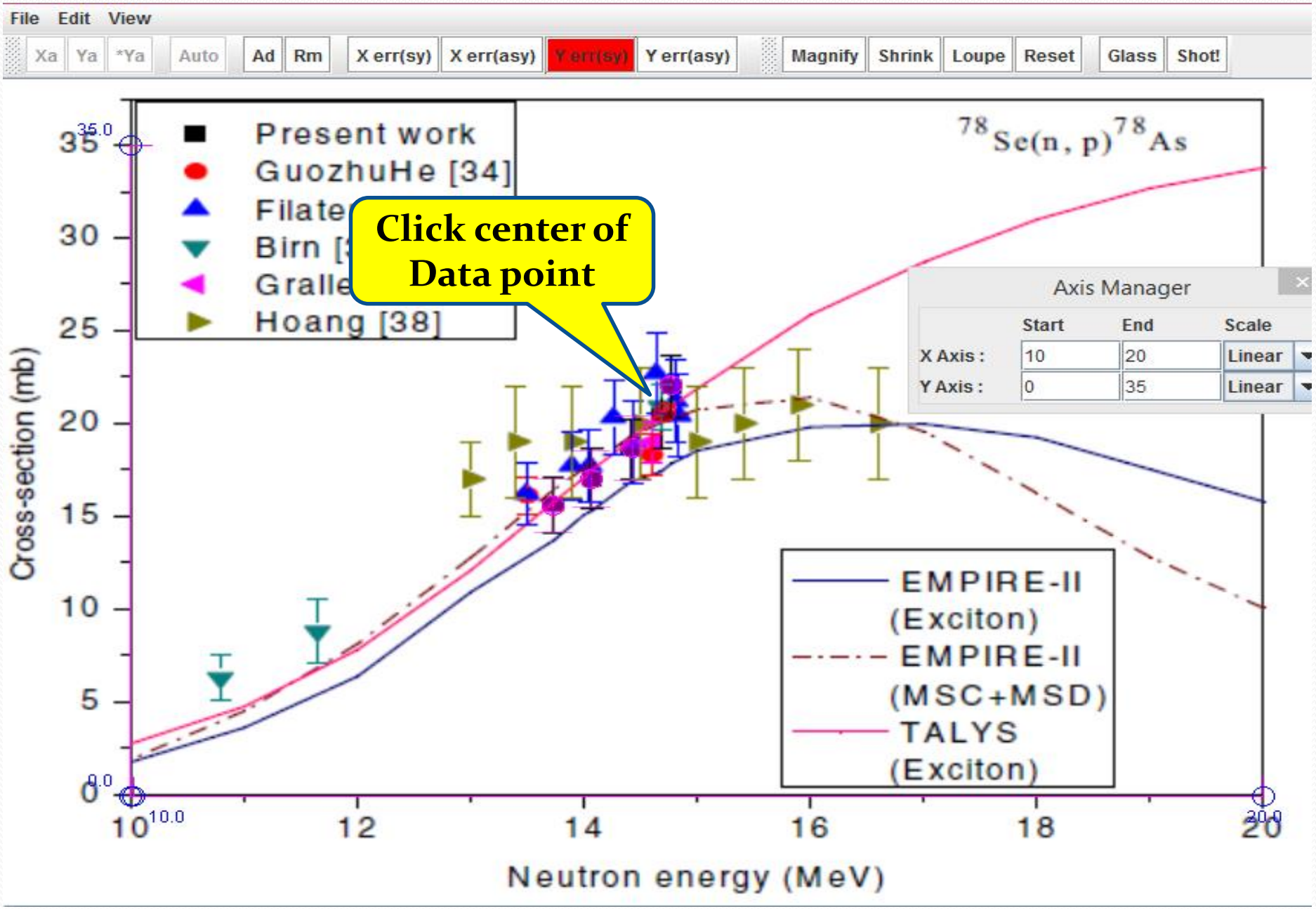

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Click one end of error bar to set y-symmetric error
Cross-section (mb)
Neutron energy (MeV)
0.0
10.0
20.0
35.0

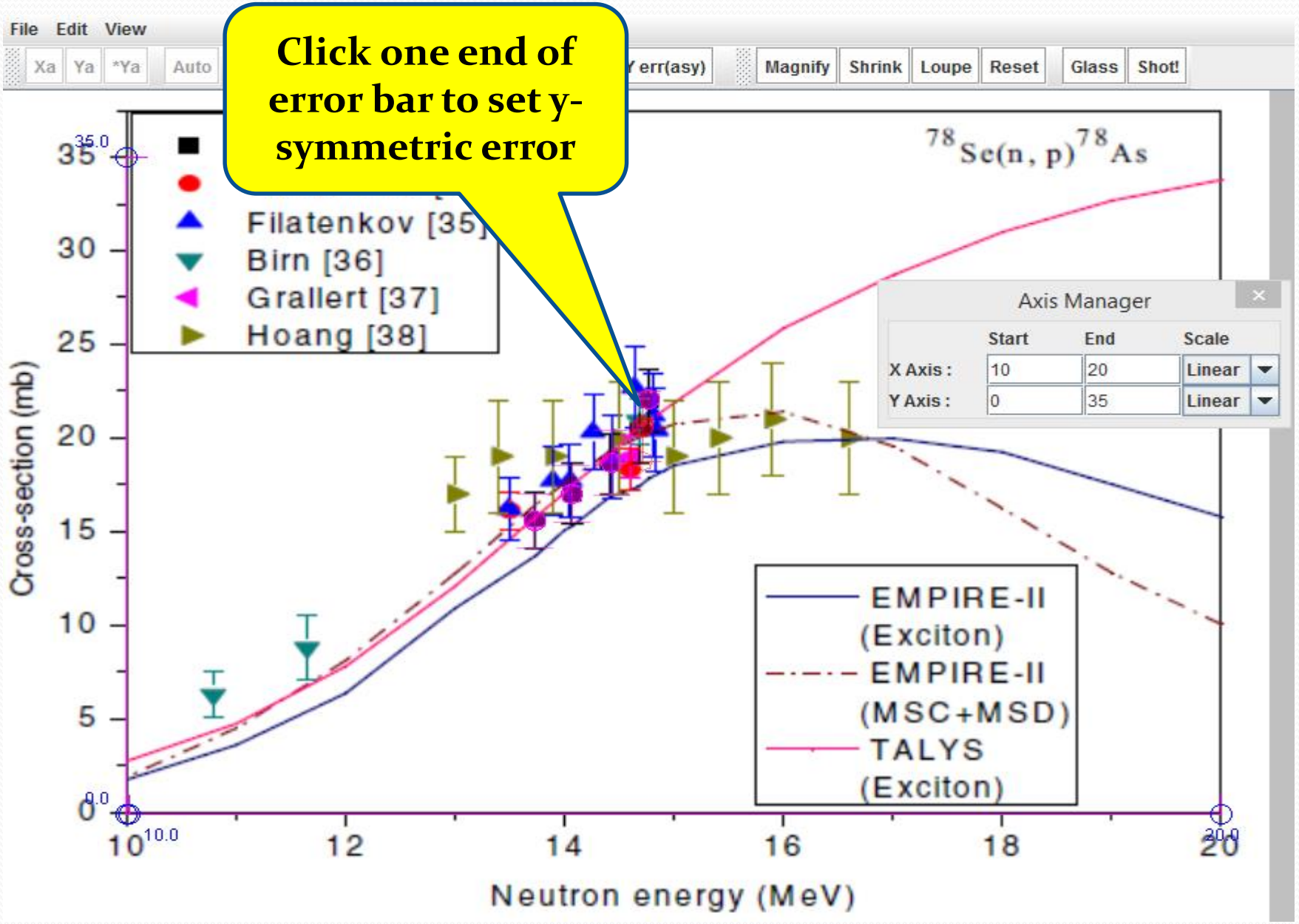

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Click center of Data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
35.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

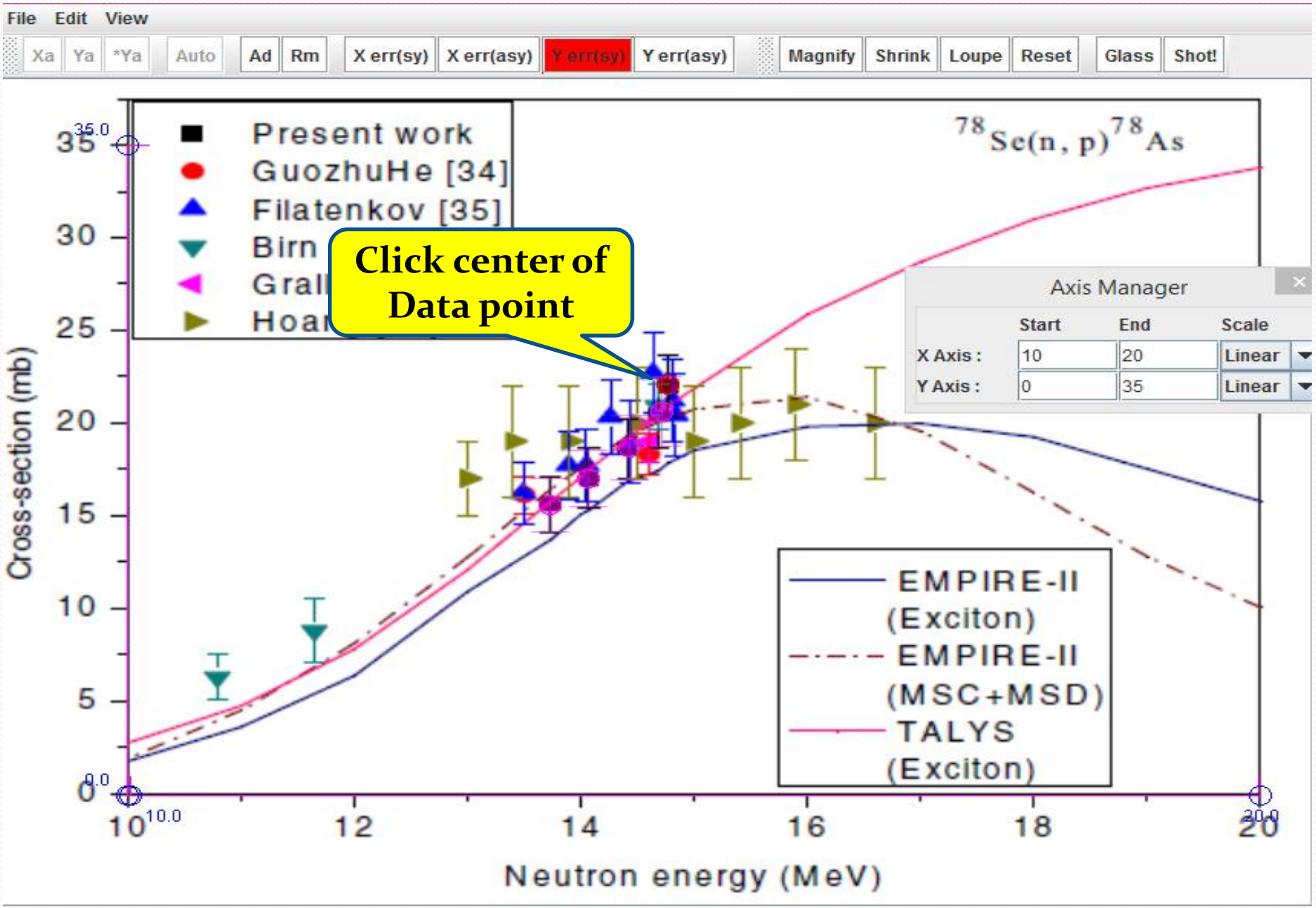

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Click one end of error bar to set y-symmetric error
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0

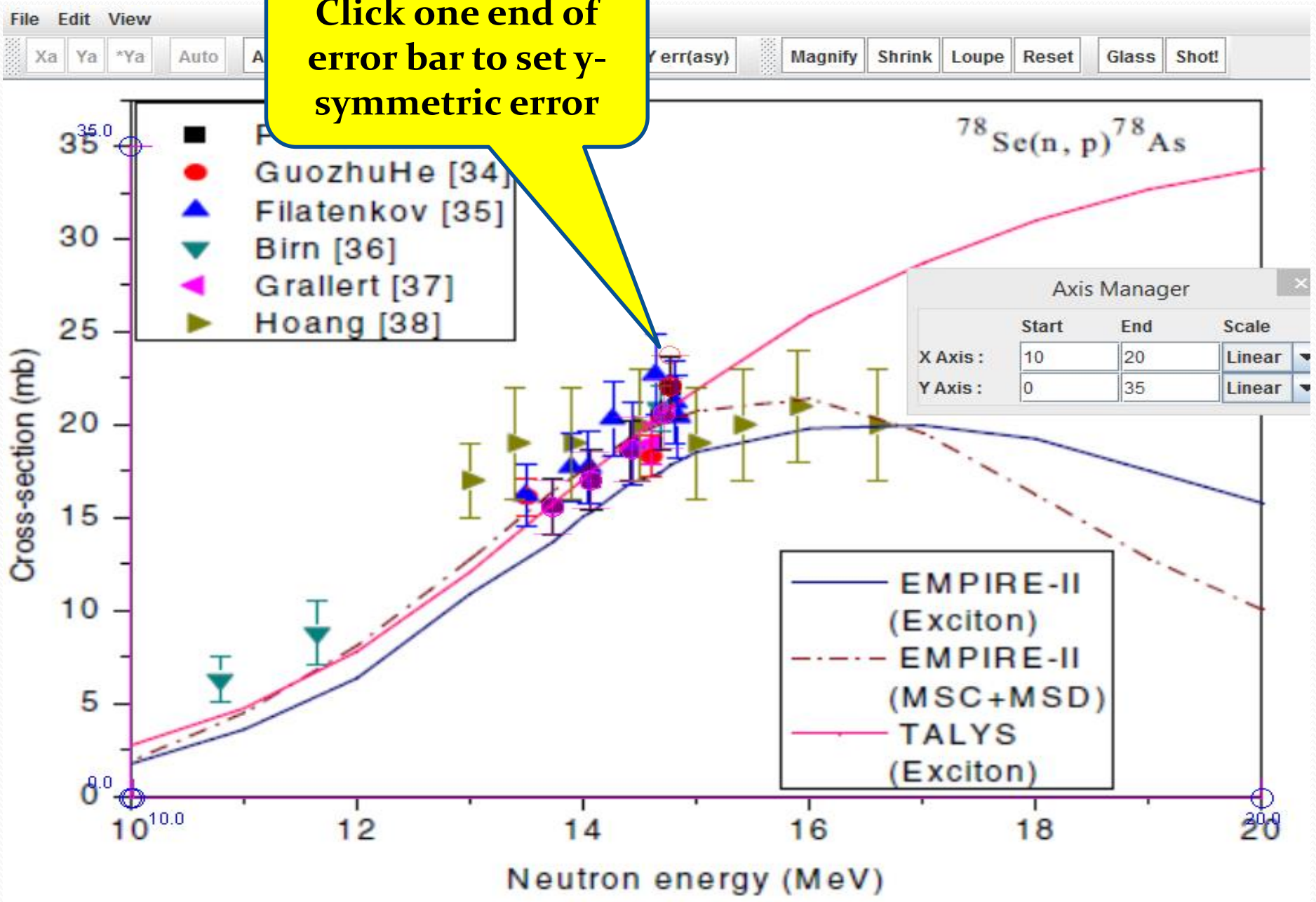

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Gra
Ho
Click center of Data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
35.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20


File Edit View
Xa Ya *Ya Auto
Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Click one end of error bar to set y-symmetric error
78Se(n, p)78As
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
10.0
20.0
35.0

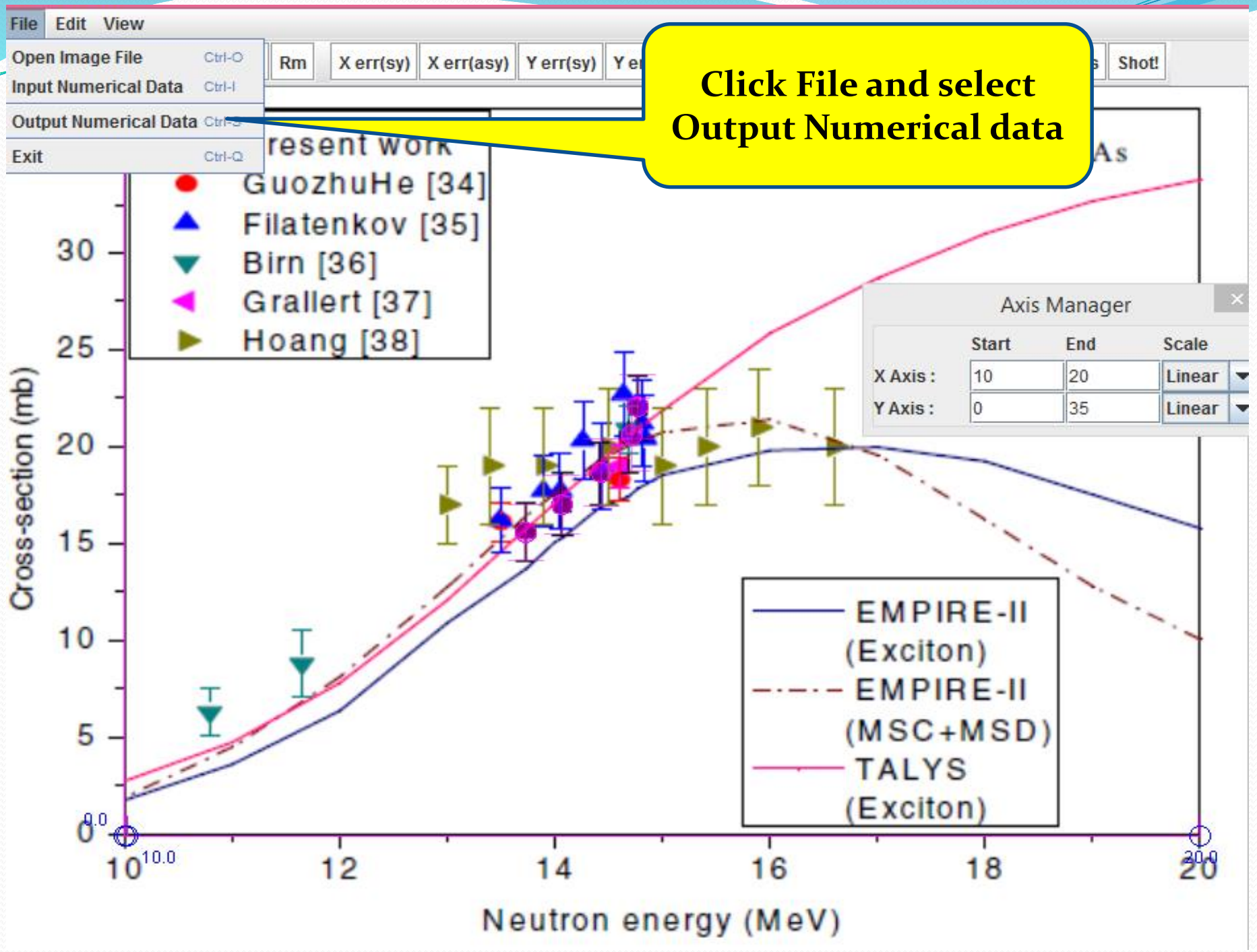

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filate
Birn [
Gralle
Hoang [38]
Click center of Data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
35.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

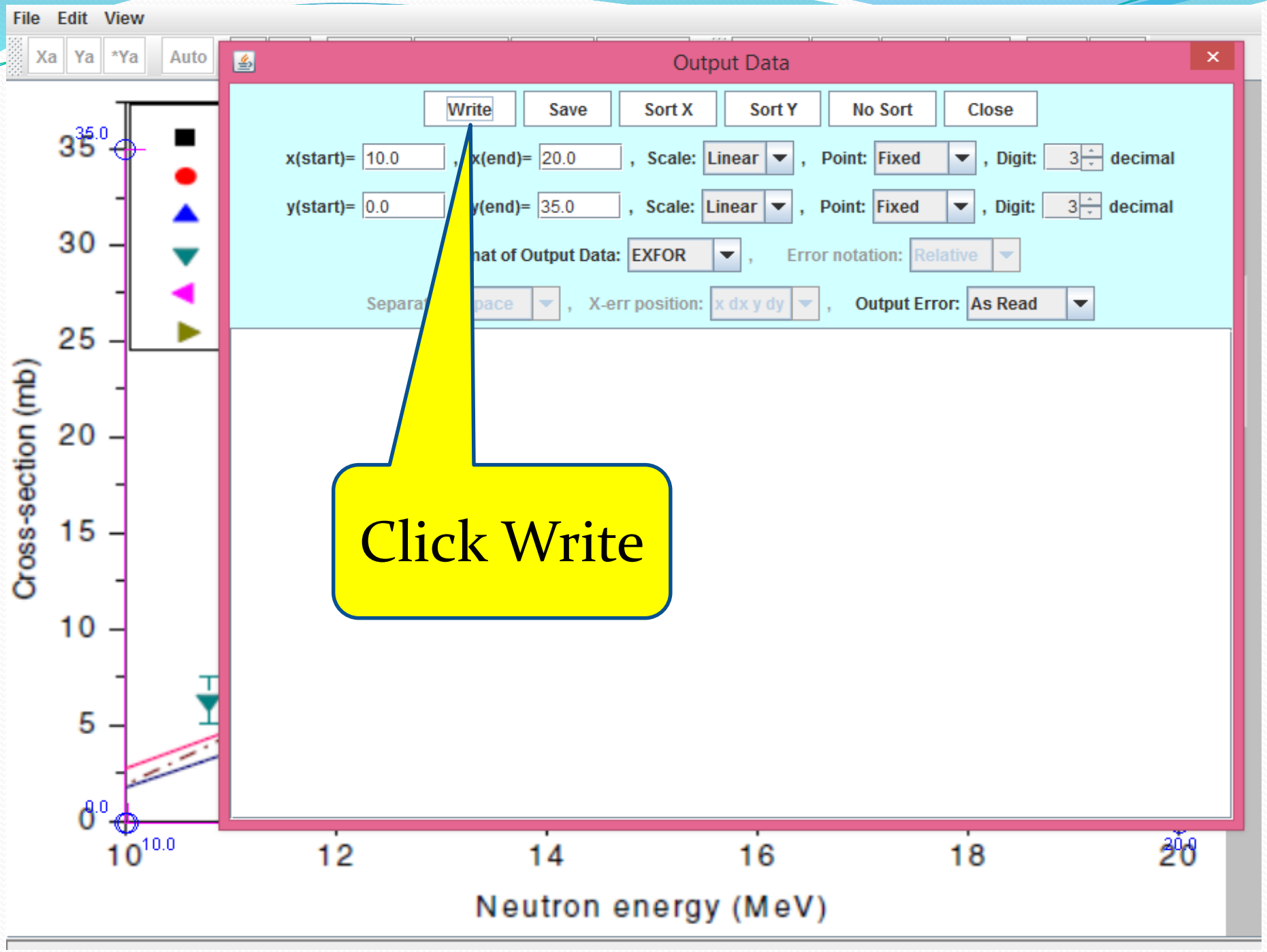

File Edit View
Xa Ya *Ya Auto
Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Click one end of error bar to set y-symmetric error
78Sc(n, p)78As
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

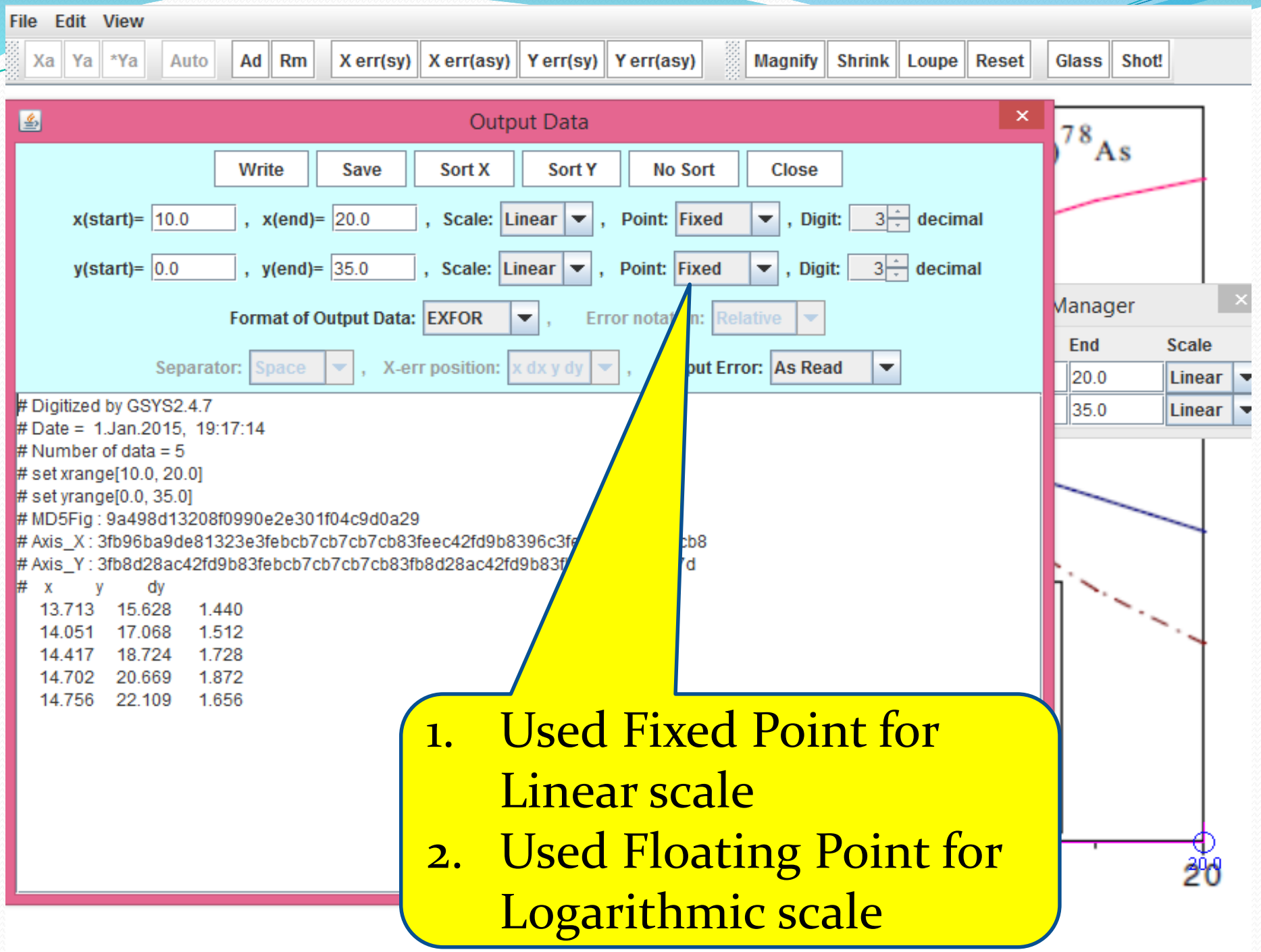

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
GuozhuHe [34]
Filatenkov [35]
Birn
Grall
Hoar
Click center of Data point
78Se(n, p)78As
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0.0
10.0
20.0
35.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20


Click one end of error bar to set y-symmetric error
File Edit View
Xa Ya *Ya Auto
Magnify Shrink Loupe Reset Glass Shot!
^{78}Se(n, p)^{78}As
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start End Scale
X Axis : 10 20 Linear
Y Axis : 0 35 Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20

4. Output Numerical Data


File
Edit
View
Open Image File Ctrl-O
Input Numerical Data Ctrl-I
Output Numerical Data Ctrl-S
Exit Ctrl-Q
Rm
X err(sy)
X err(asy)
Y err(sy)
Shot!
Click File and select Output Numerical data
GuozhuHe [34]
Filatenkov [35]
Birn [36]
Grallert [37]
Hoang [38]
Axis Manager
Start
End
Scale
X Axis :
10
20
Linear
Y Axis :
0
35
Linear
EMPIRE-II (Exciton)
EMPIRE-II (MSC+MSD)
TALYS (Exciton)
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
10
12
14
16
18
20
0.0
10.0
20.0


File Edit View
Xa Ya *Ya Auto
Output Data
Write Save Sort X Sort Y No Sort Close
x(start)= 10.0 , x(end)= 20.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
y(start)= 0.0 , y(end)= 35.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
Format of Output Data: EXFOR , Error notation: Relative
Separator: space , X-err position: x dx y dy , Output Error: As Read
Click Write
Cross-section (mb)
Neutron energy (MeV)
35.0
0.0
10.0
20.0
0
5
10
15
20
25
30
35
10
12
14
16
18
20


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Output Data
Write Save Sort X Sort Y No Sort Close
x(start)= 10.0 , x(end)= 20.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
y(start)= 0.0 , y(end)= 35.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
Format of Output Data: EXFOR , Error notation: Relative
Separator: Space , X-err position: x dx y dy , Output Error: As Read
Digitized by GSYS2.4.7
Date = 1.Jan.2015, 19:17:14
Number of data = 5
set xrange[10.0, 20.0]
set yrange[0.0, 35.0]
MD5Fig : 9a498d13208f0990e2e301f04c9d0a29
x y dy
13.713 15.628 1.440
14.051 17.068 1.512
14.417 18.724 1.728
14.702 20.669 1.872
14.756 22.109 1.656
Manager
End Scale
20.0 Linear
35.0 Linear
78 As
20.0
20
1. Used Fixed Point for Linear scale
2. Used Floating Point for Logarithmic scale

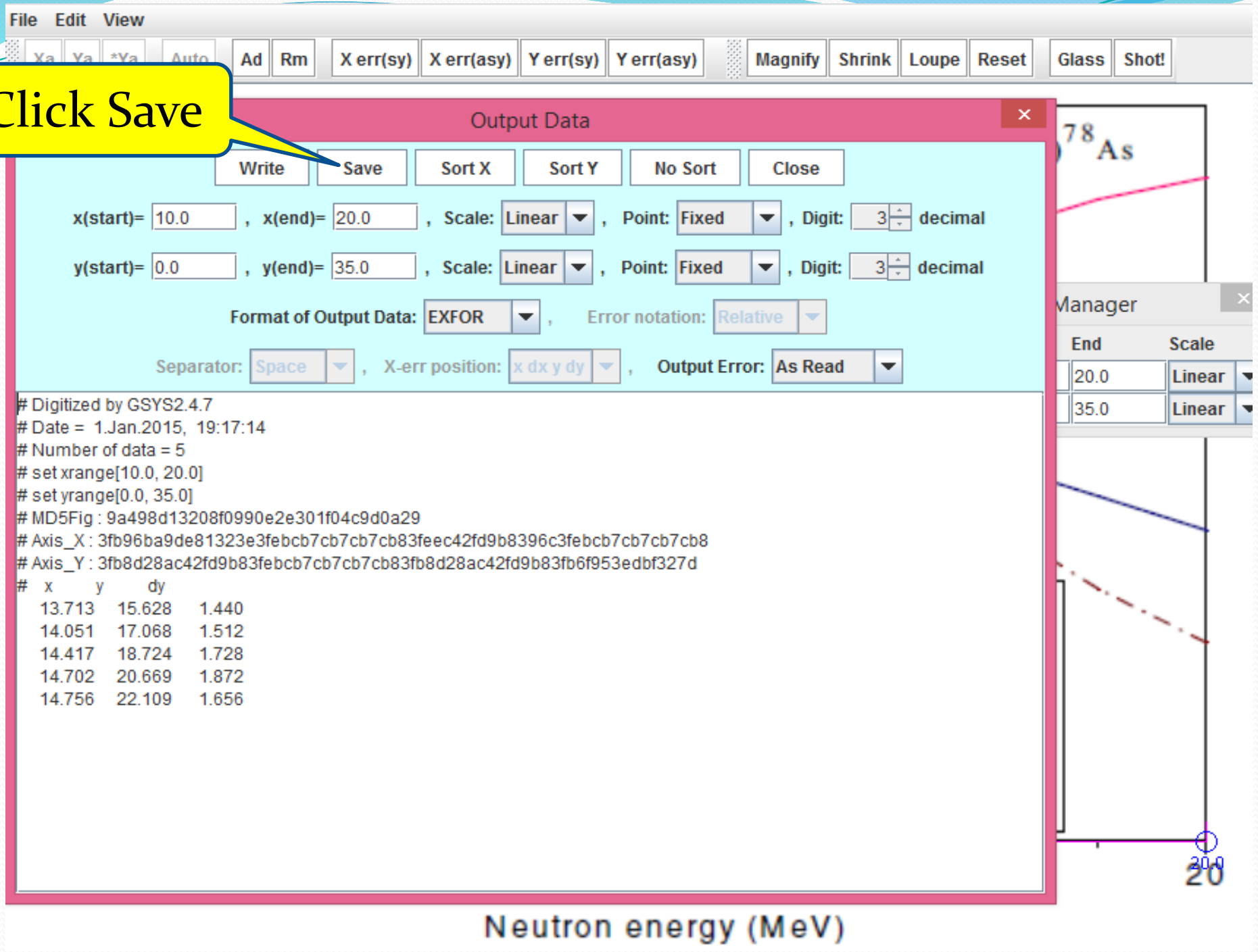
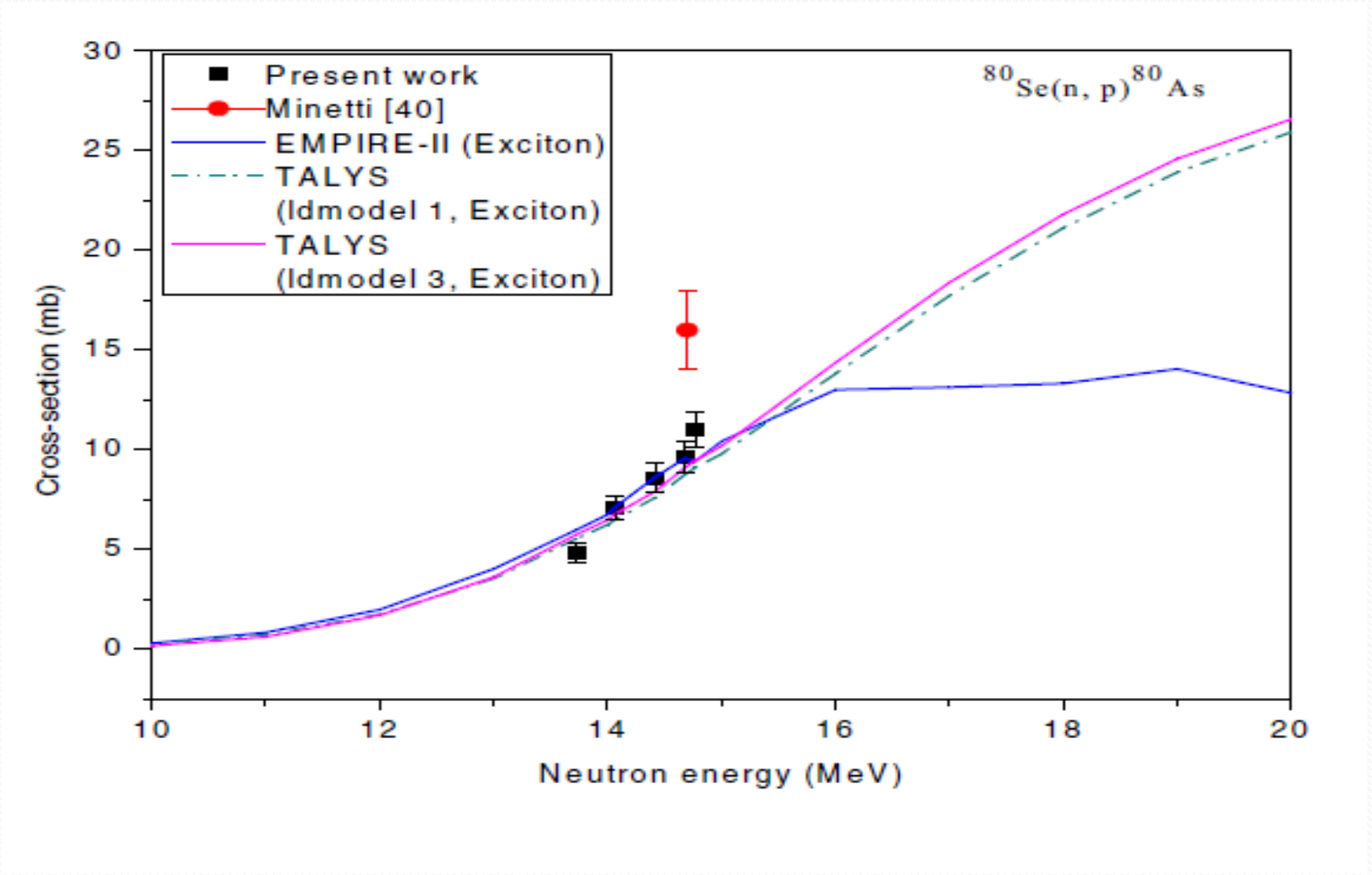
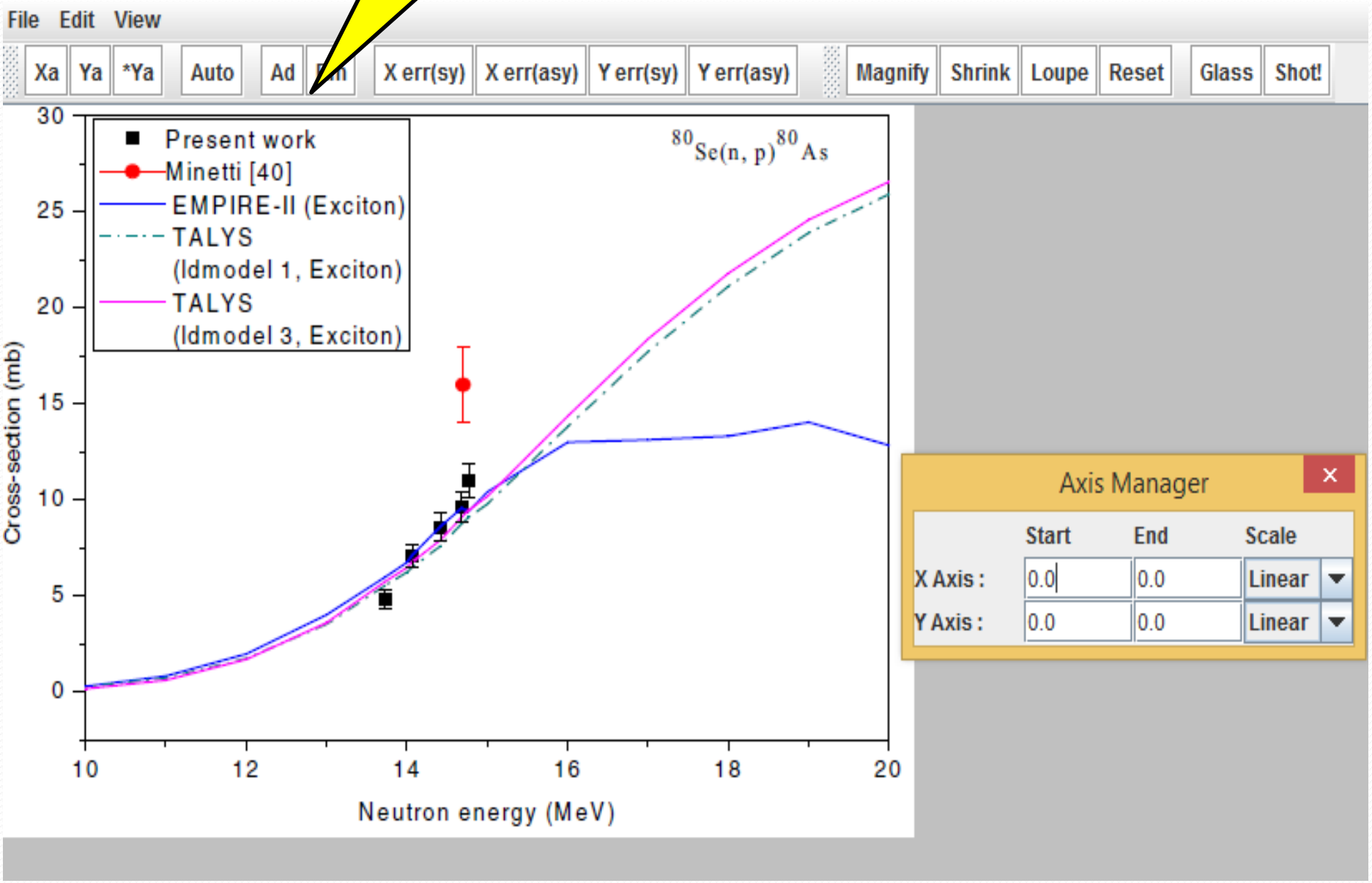

Click Save
File Edit View
Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Output Data
Write Save Sort X Sort Y No Sort Close
x(start)= 10.0 , x(end)= 20.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
y(start)= 0.0 , y(end)= 35.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
Format of Output Data: EXFOR , Error notation: Relative
Separator: Space , X-err position: x dx y dy , Output Error: As Read
Digitized by GSYS2.4.7
Date = 1.Jan.2015, 19:17:14
Number of data = 5
set xrange[10.0, 20.0]
set yrange[0.0, 35.0]
MD5Fig : 9a498d13208f0990e2e301f04c9d0a29
Axis_X : 3fb96ba9de81323e3febcb7cb7cb7cb83feec42fd9b8396c3febcb7cb7cb7cb8
Axis_Y : 3fb8d28ac42fd9b83febcb7cb7cb7cb83fb8d28ac42fd9b83fb6f953edbf327d
x y dy
13.713 15.628 1.440
14.051 17.068 1.512
14.417 18.724 1.728
14.702 20.669 1.872
14.756 22.109 1.656
78 As
Manager
End Scale
20.0 Linear
35.0 Linear
20.0
20
Neutron energy (MeV)

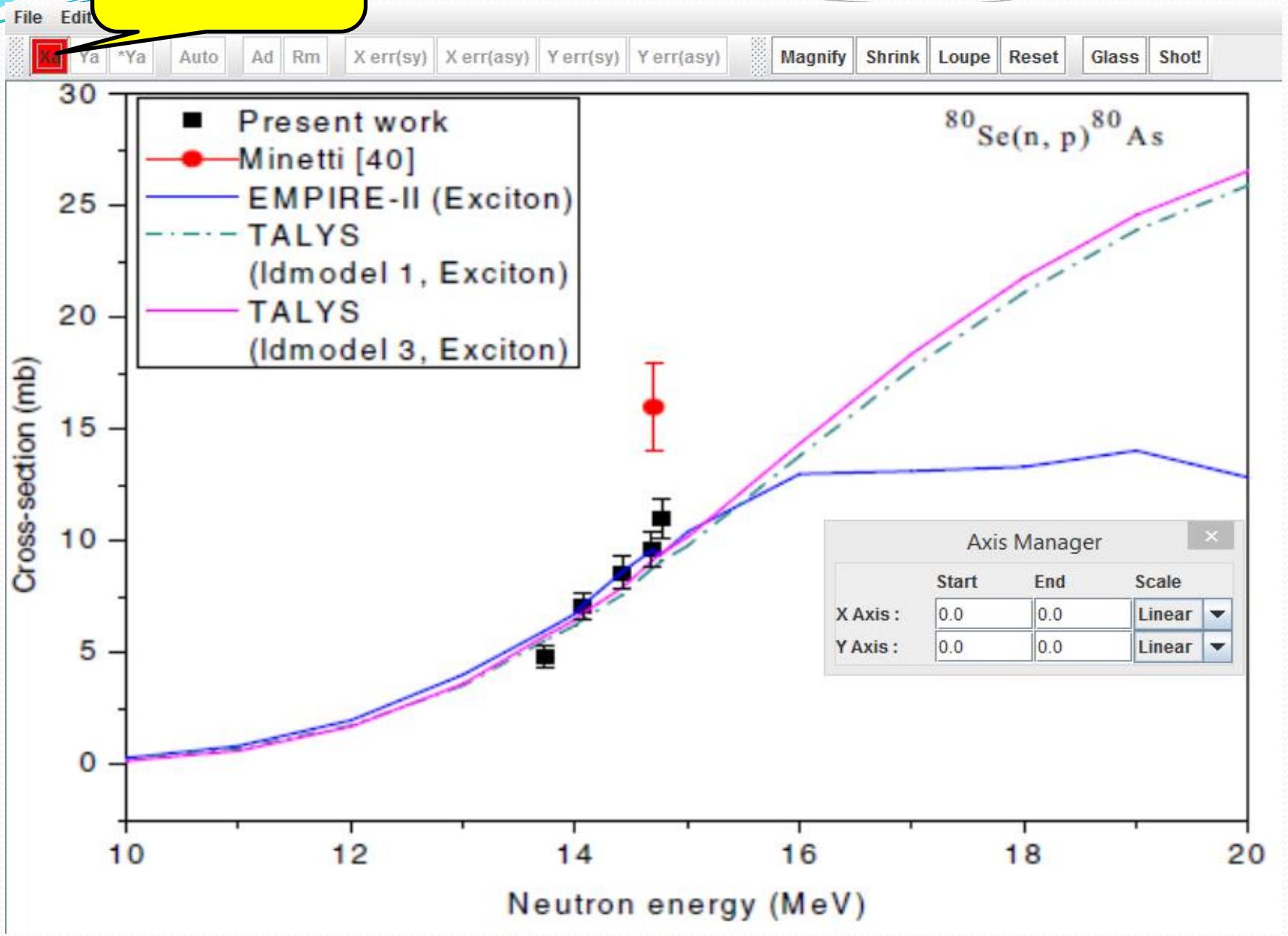
Fig.4 (PRC 90, 064609, 2014)

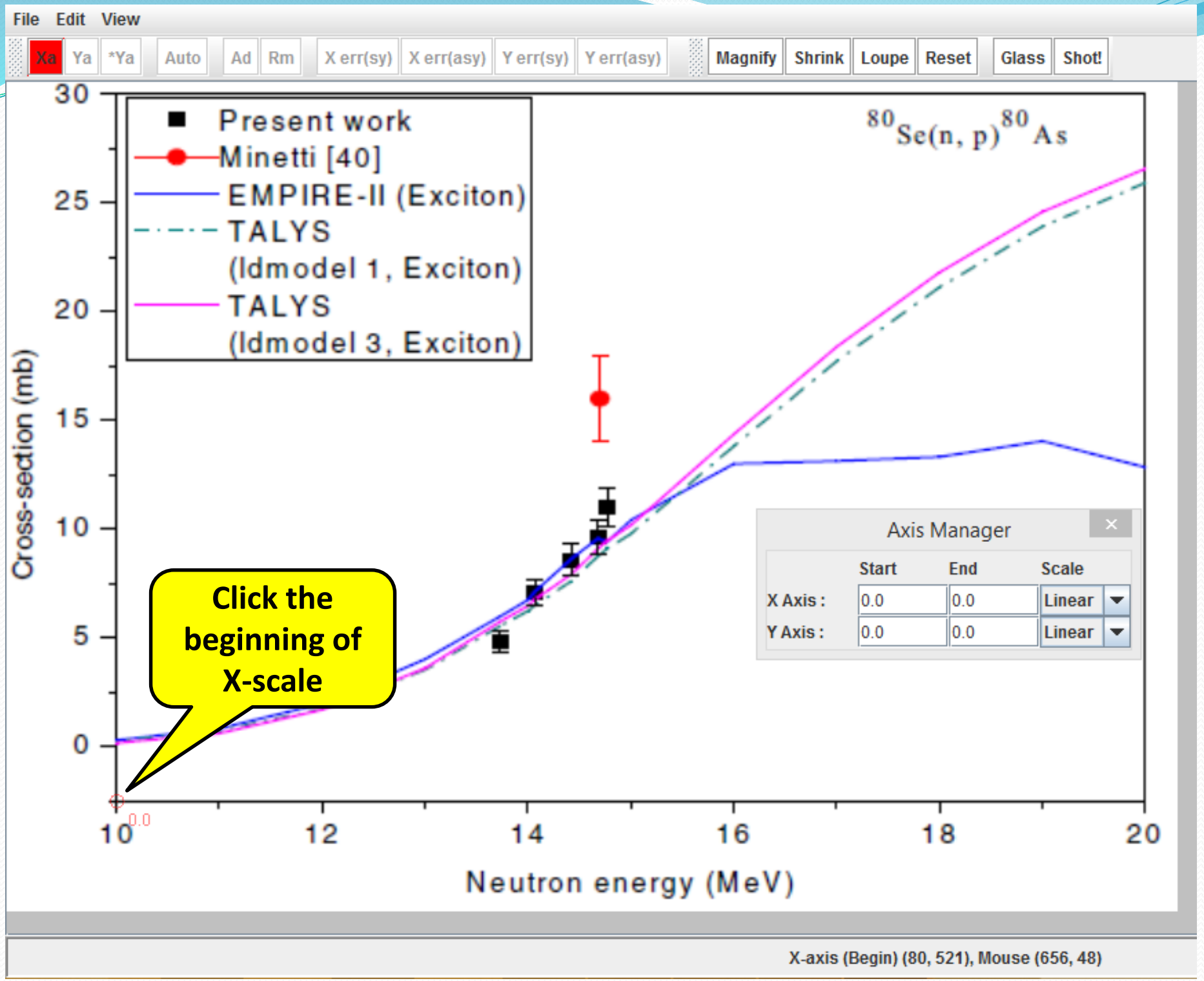


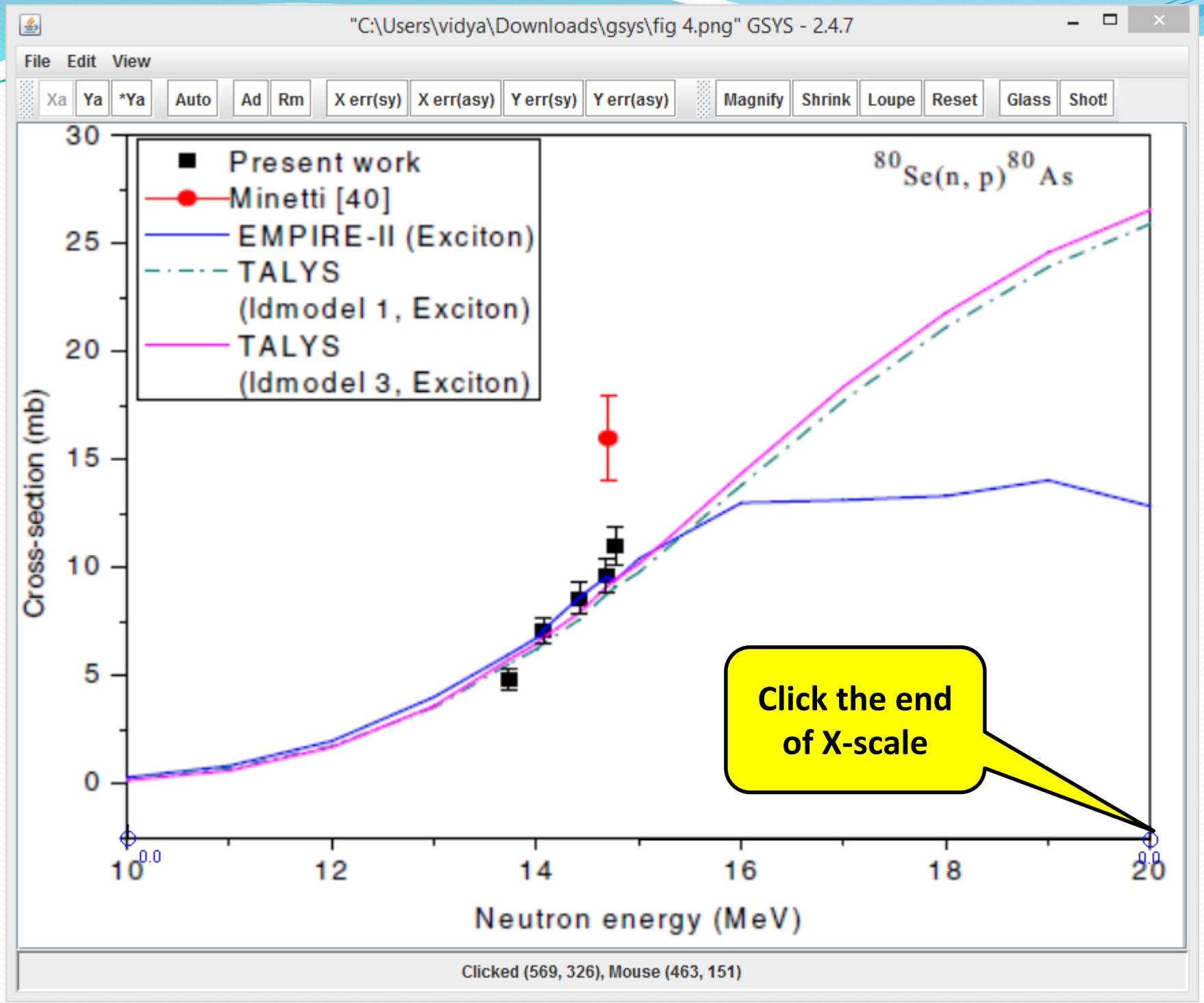
Drag and drop image

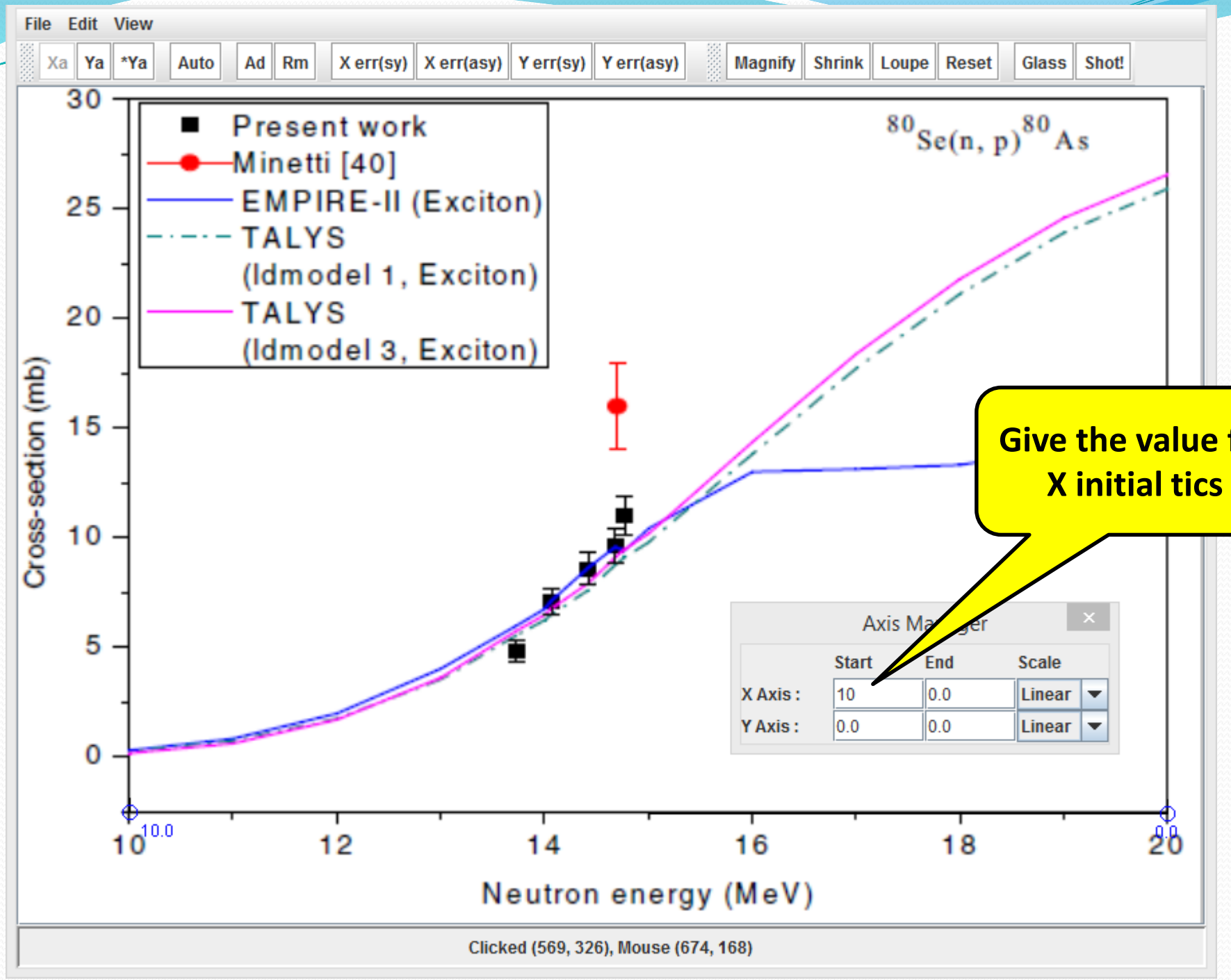


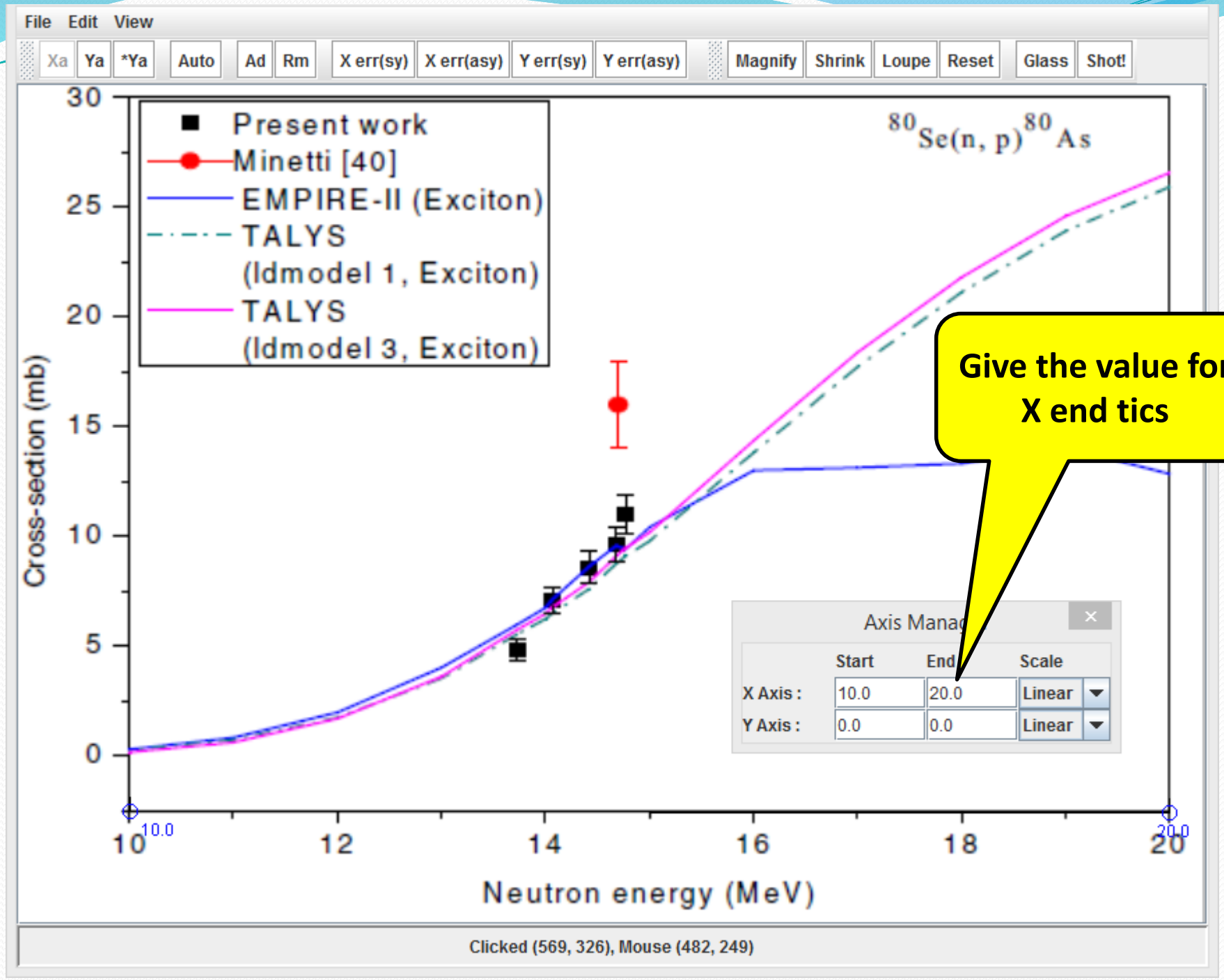
Click Xa

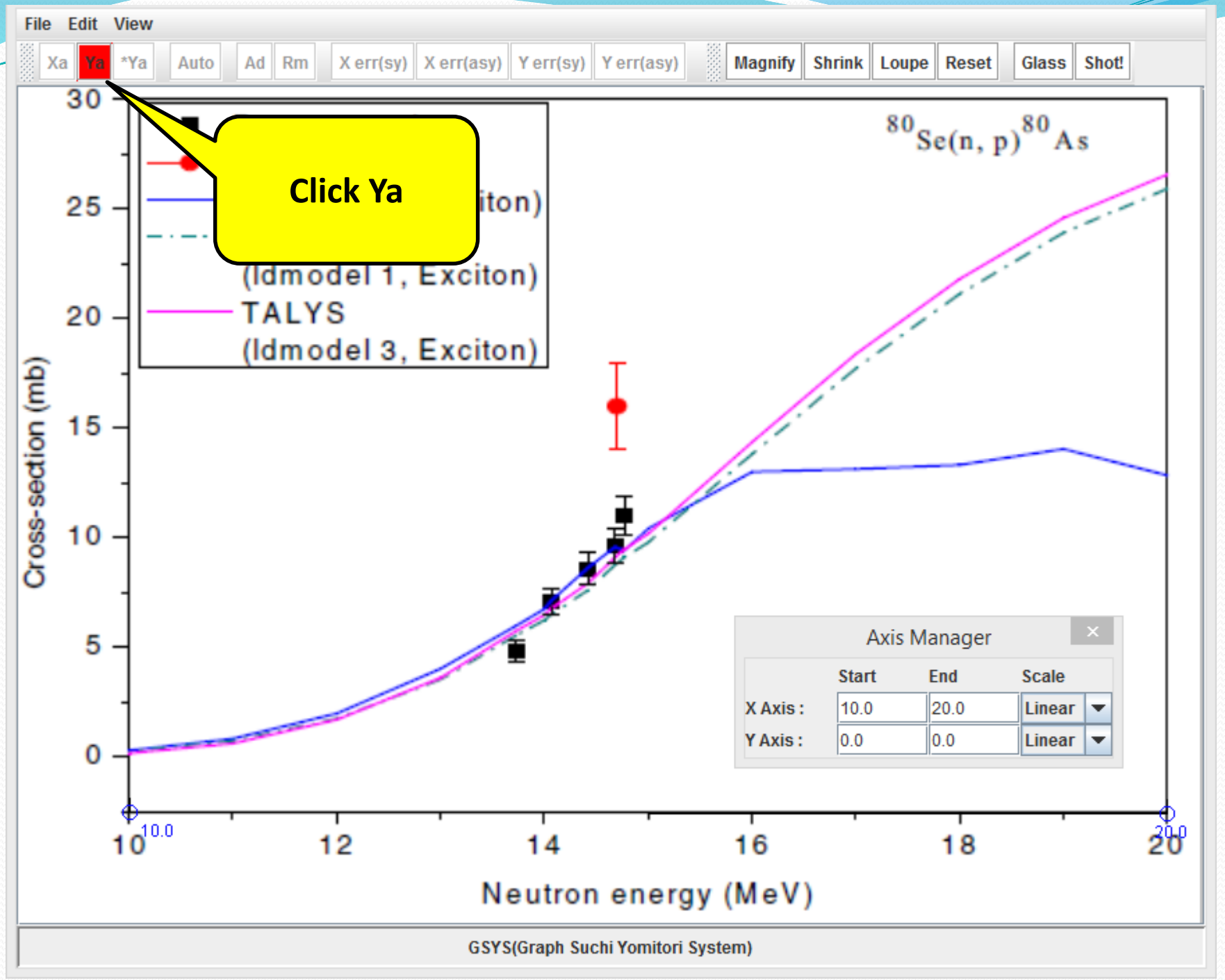

File
Edit
Xa
Ya
*Ya
Auto
Ad
Rm
X err(sy)
X err(asy)
Y err(sy)
Y err(asy)
Magnify
Shrink
Loupe
Reset
Glass
Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Axis Manager
Start
End
Scale
X Axis :
Y Axis :
0.0
Linear

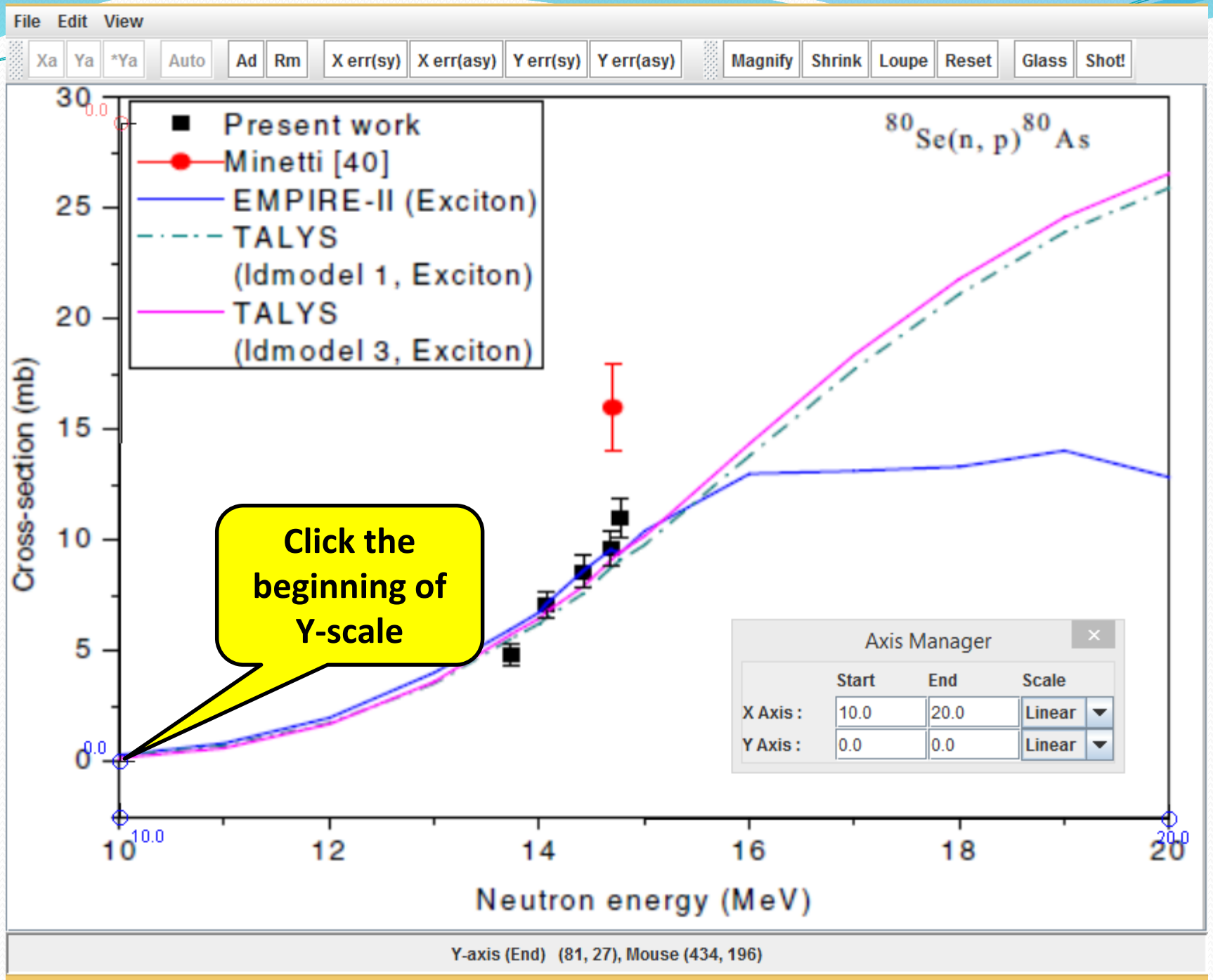

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS (ldmodel 1, Exciton)
TALYS (ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Click the beginning of X-scale
Axis Manager
Start End Scale
X Axis : 0.0 0.0 Linear
Y Axis : 0.0 0.0 Linear
X-axis (Begin) (80, 521), Mouse (656, 48)

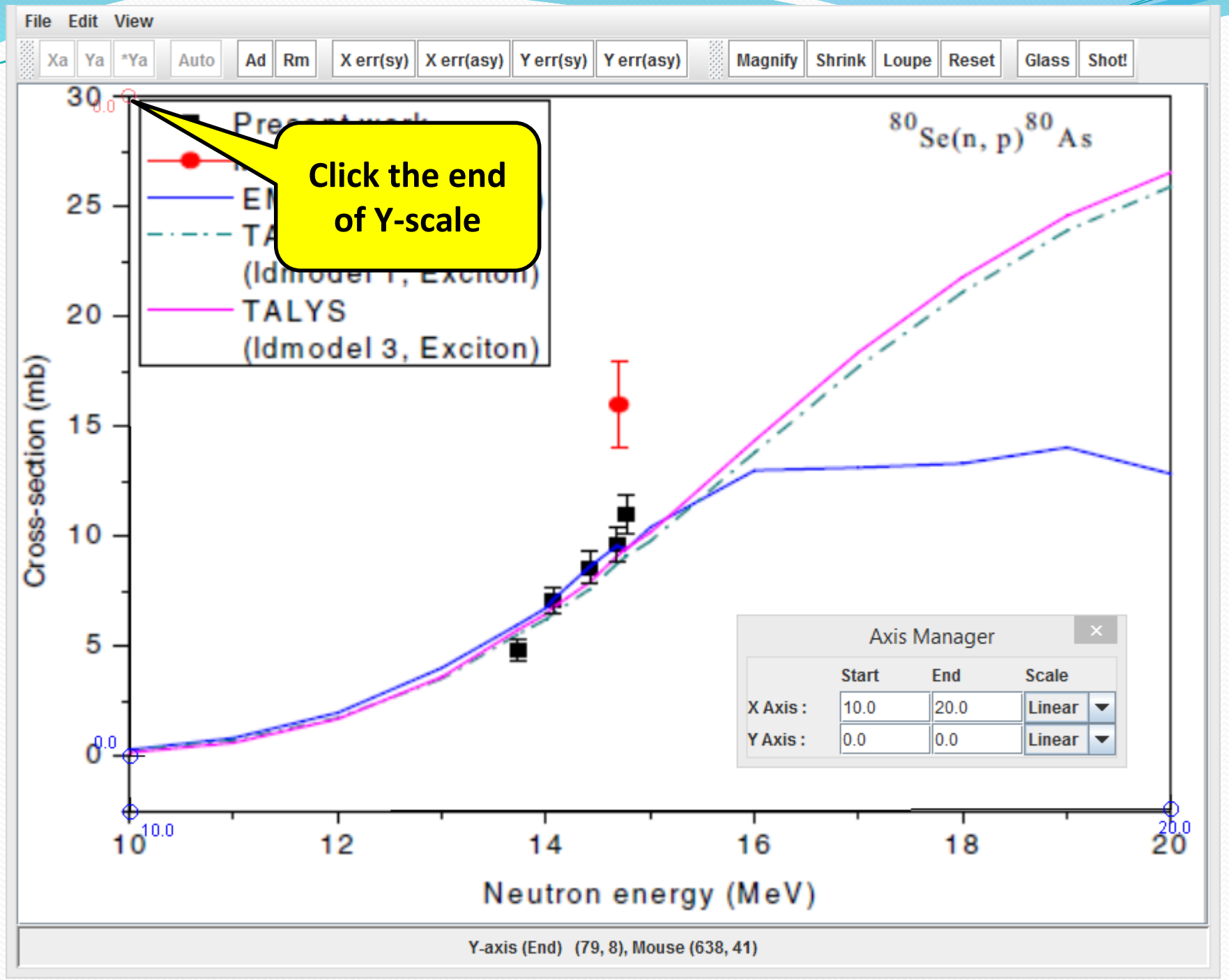

"C:\Users\vidya\Downloads\gsys\fig 4.png" GSYS - 2.4.7
File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS (ldmodel 1, Exciton)
TALYS (ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Click the end of X-scale
Clicked (569, 326), Mouse (463, 151)

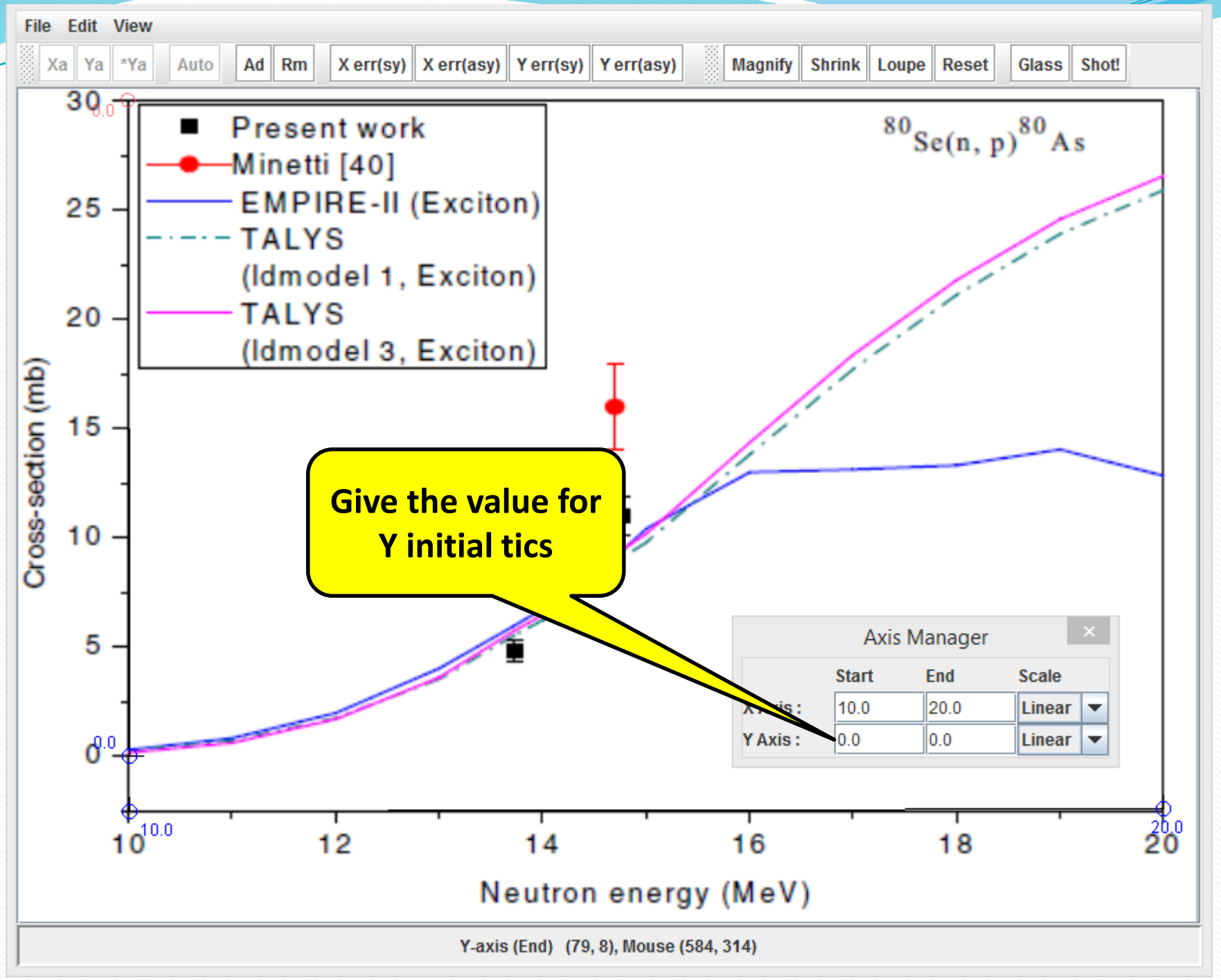

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
0
5
10
15
20
25
30
10
12
14
16
18
20
10.0
0.0
Axis Manager
Start
End
Scale
X Axis :
10
0.0
Linear
Y Axis :
0.0
0.0
Linear
Give the value for X initial tics
Clicked (569, 326), Mouse (674, 168)

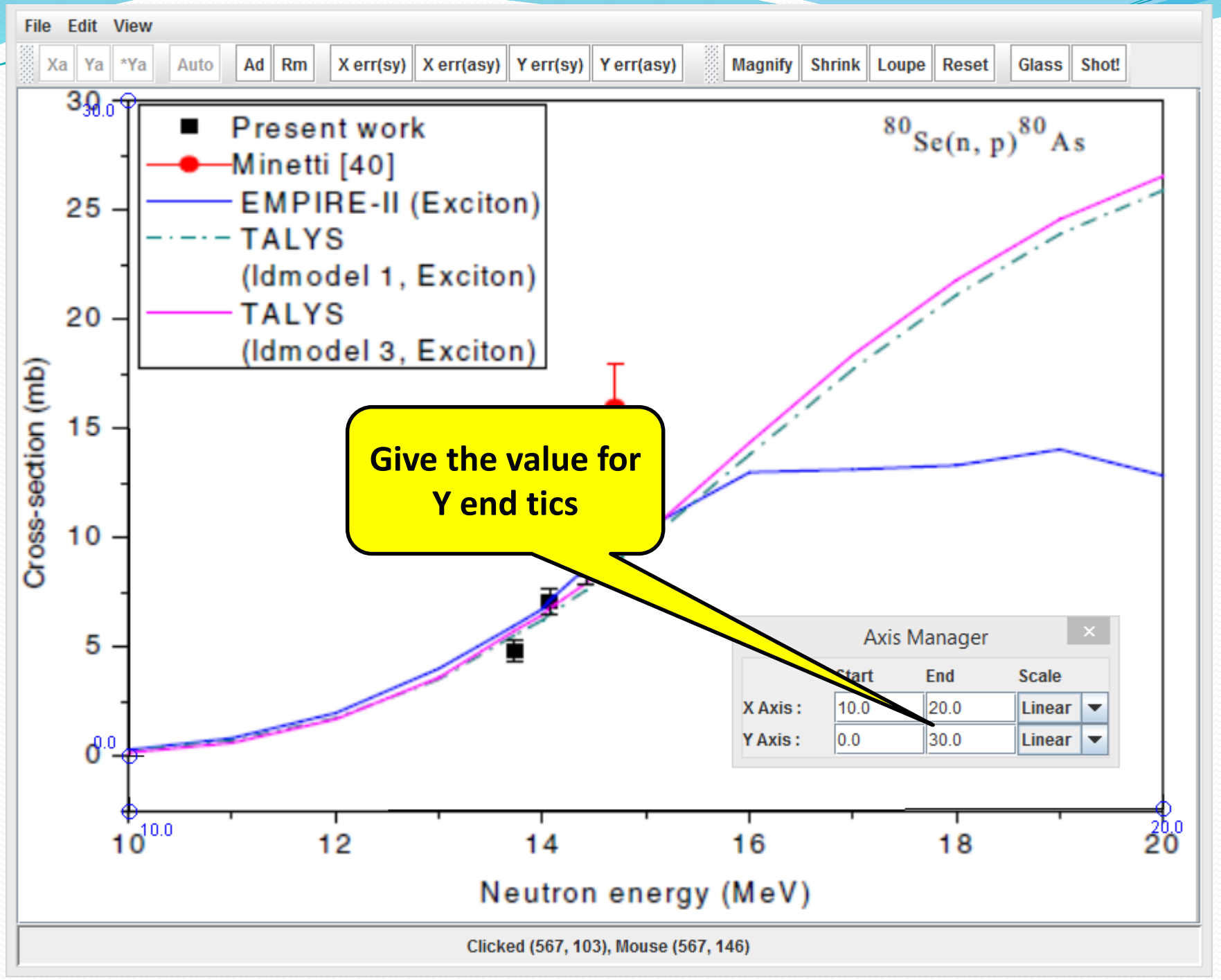

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Give the value for
X end tics
Axis Manag
Start
End
Scale
X Axis :
10.0
20.0
Linear
Y Axis :
0.0
0.0
Linear
Clicked (569, 326), Mouse (482, 249)


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy)
Magnify Shrink Loupe Reset Glass Shot!
Click Ya
80Se(n, p)80As
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
Cross-section (mb)
Neutron energy (MeV)
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 0.0 Linear
GSYS(Graph Suchi Yomitori System)

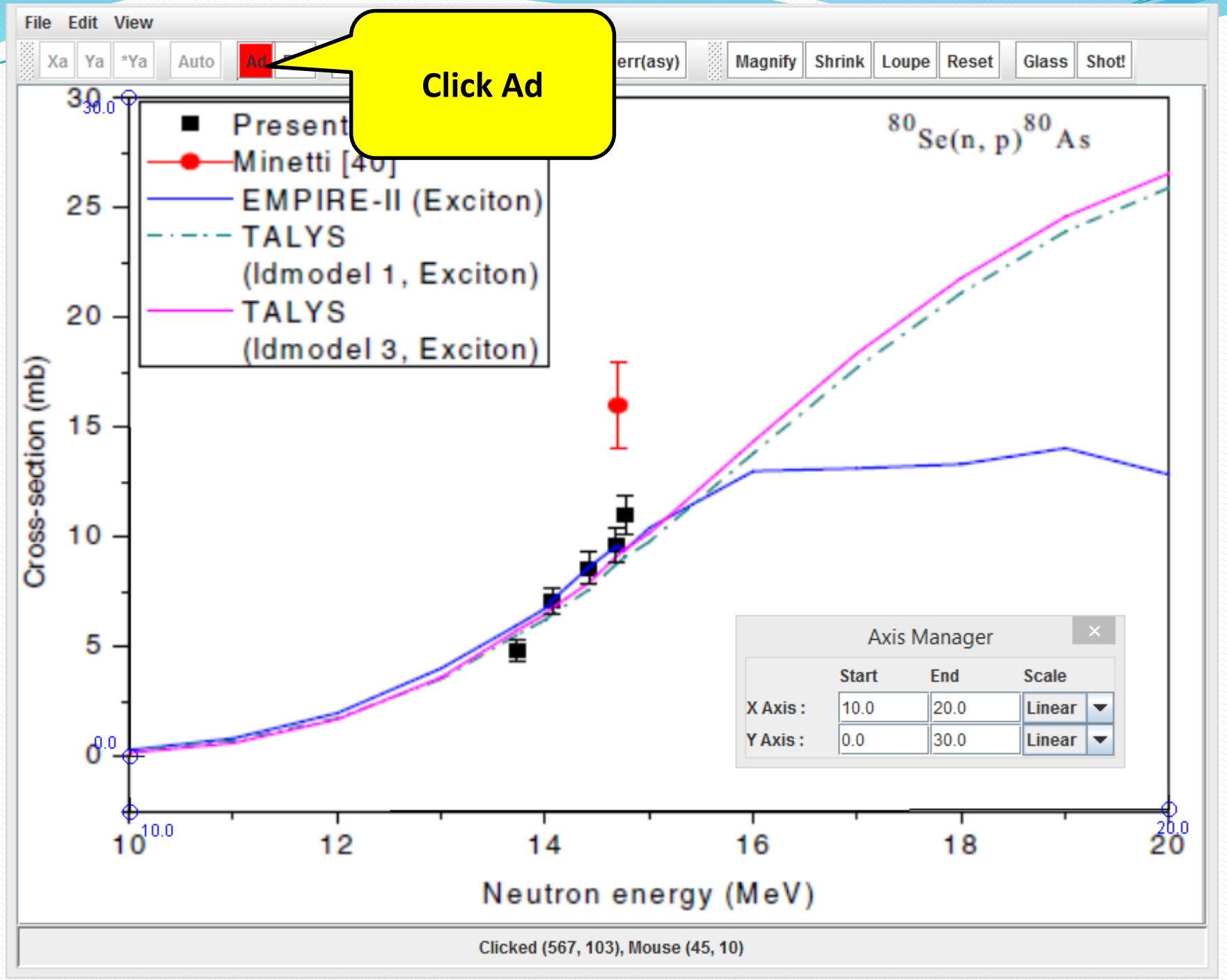

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Click the beginning of Y-scale
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 0.0 Linear
Y-axis (End) (81, 27), Mouse (434, 196)

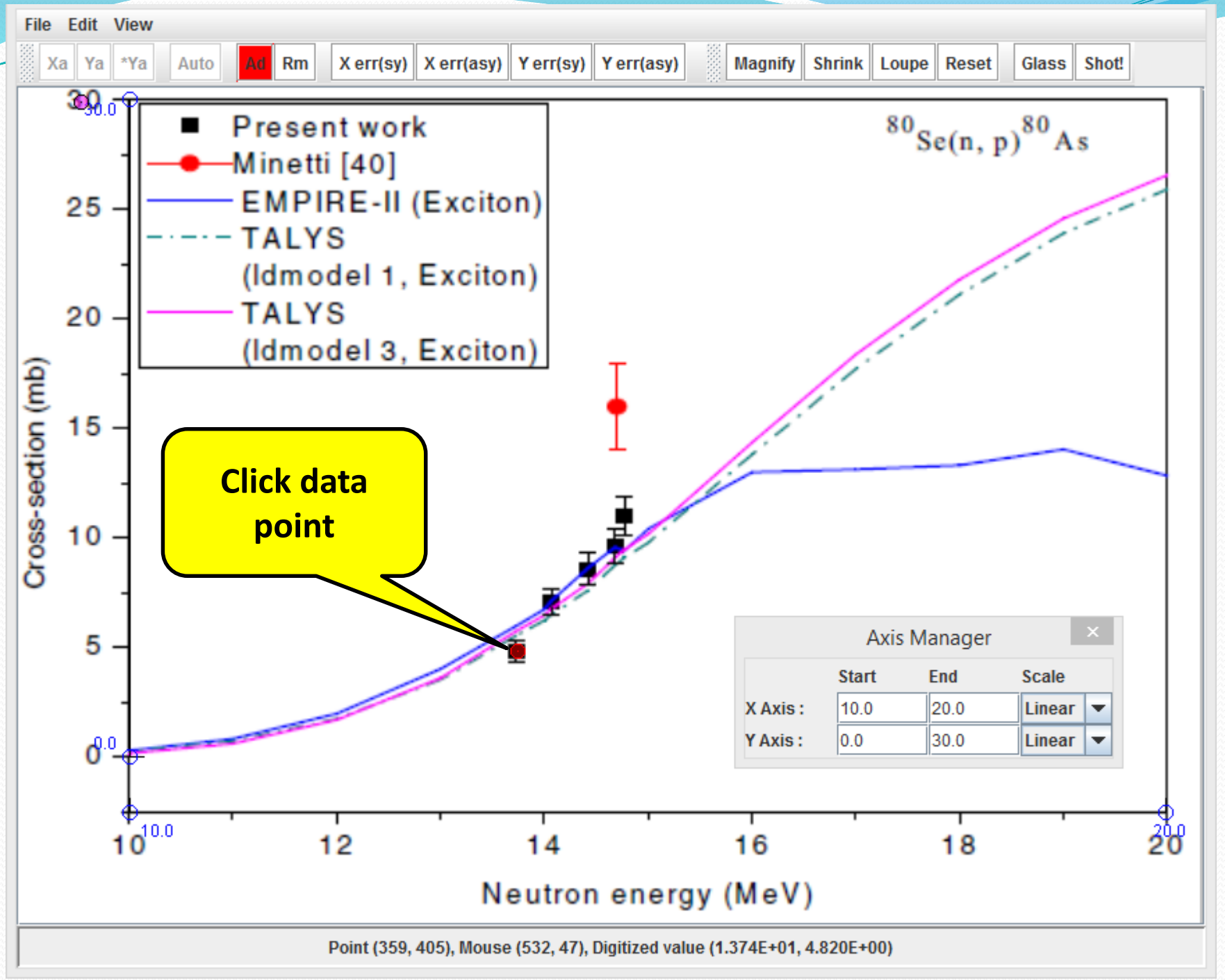

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Click the end of Y-scale
80Se(n, p)80As
TALYS
(ldmodel 3, Exciton)
Cross-section (mb)
Neutron energy (MeV)
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 0.0 Linear
Y-axis (End) (79, 8), Mouse (638, 41)

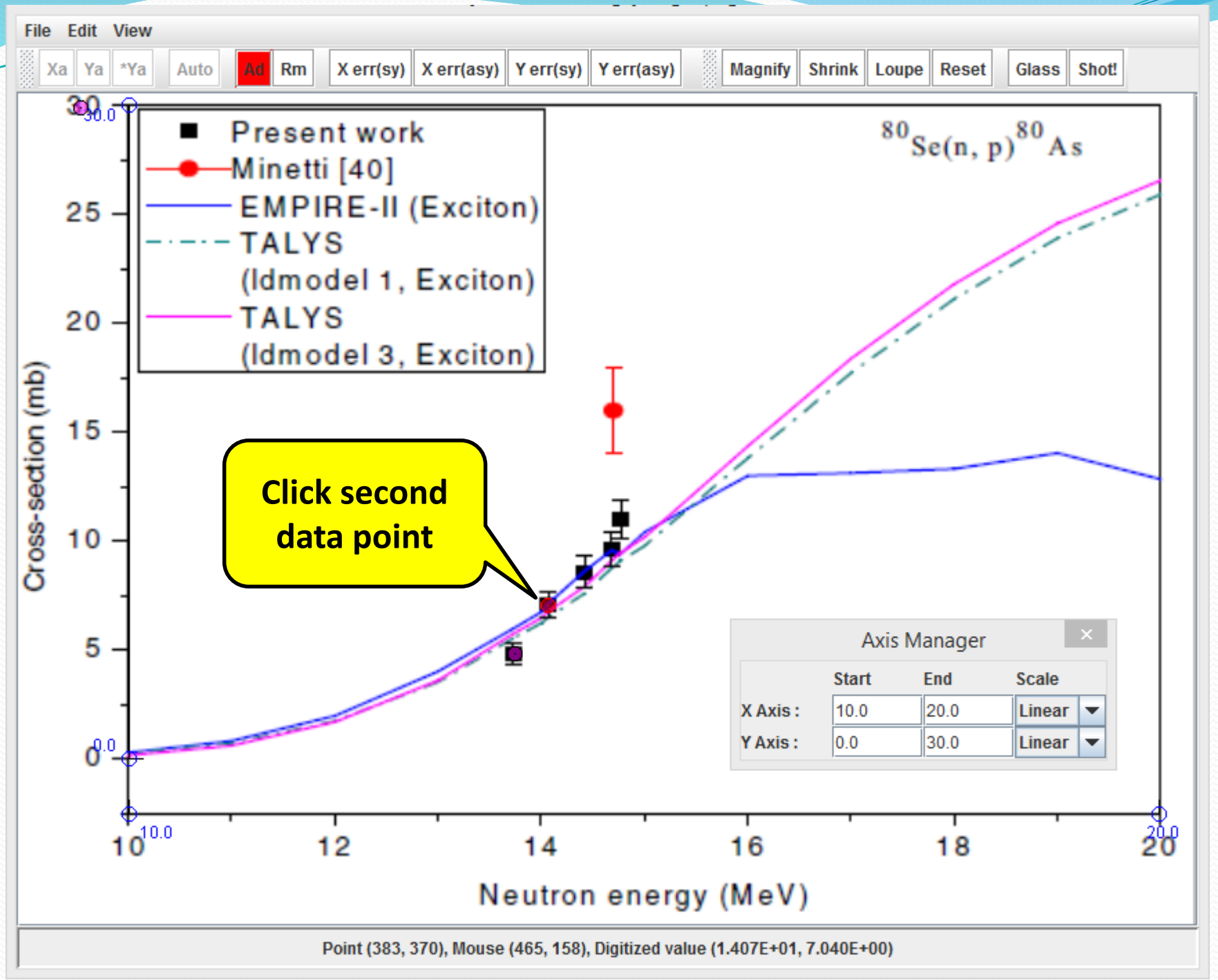

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Give the value for
Y initial tics
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 0.0 Linear
Y-axis (End) (79, 8), Mouse (584, 314)

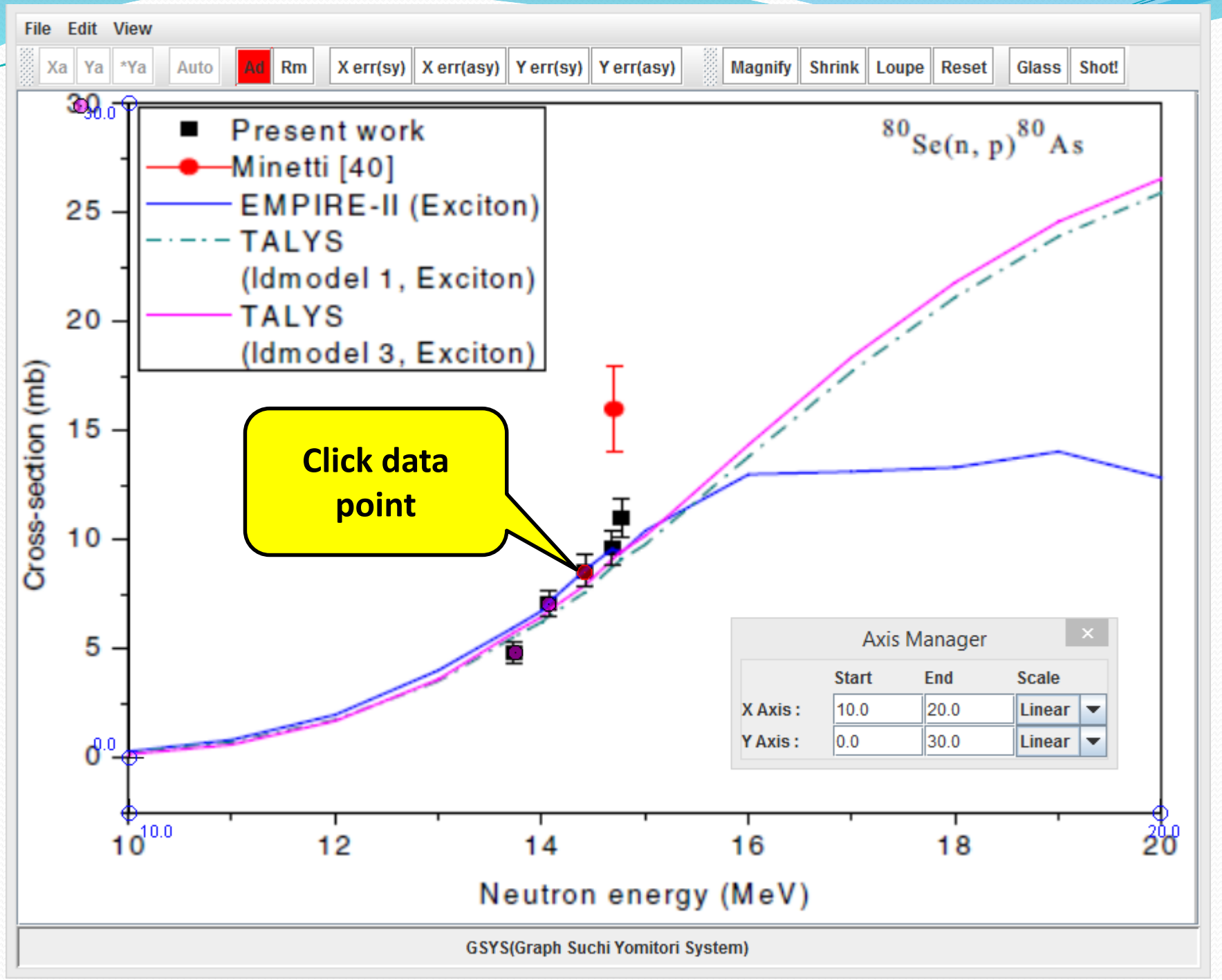

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Give the value for
Y end tics
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Clicked (567, 103), Mouse (567, 146)

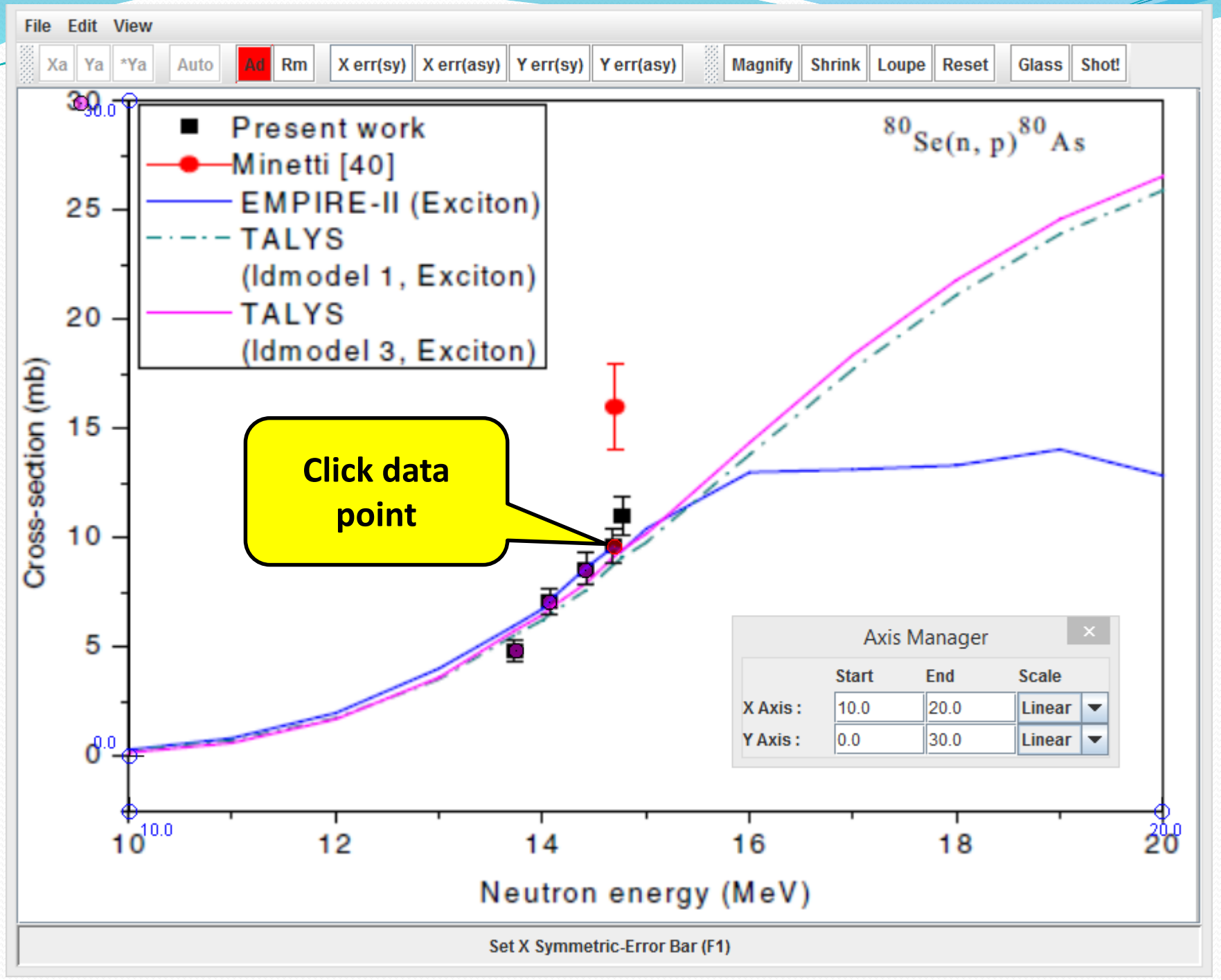
2. Digitize Centre of Data Points

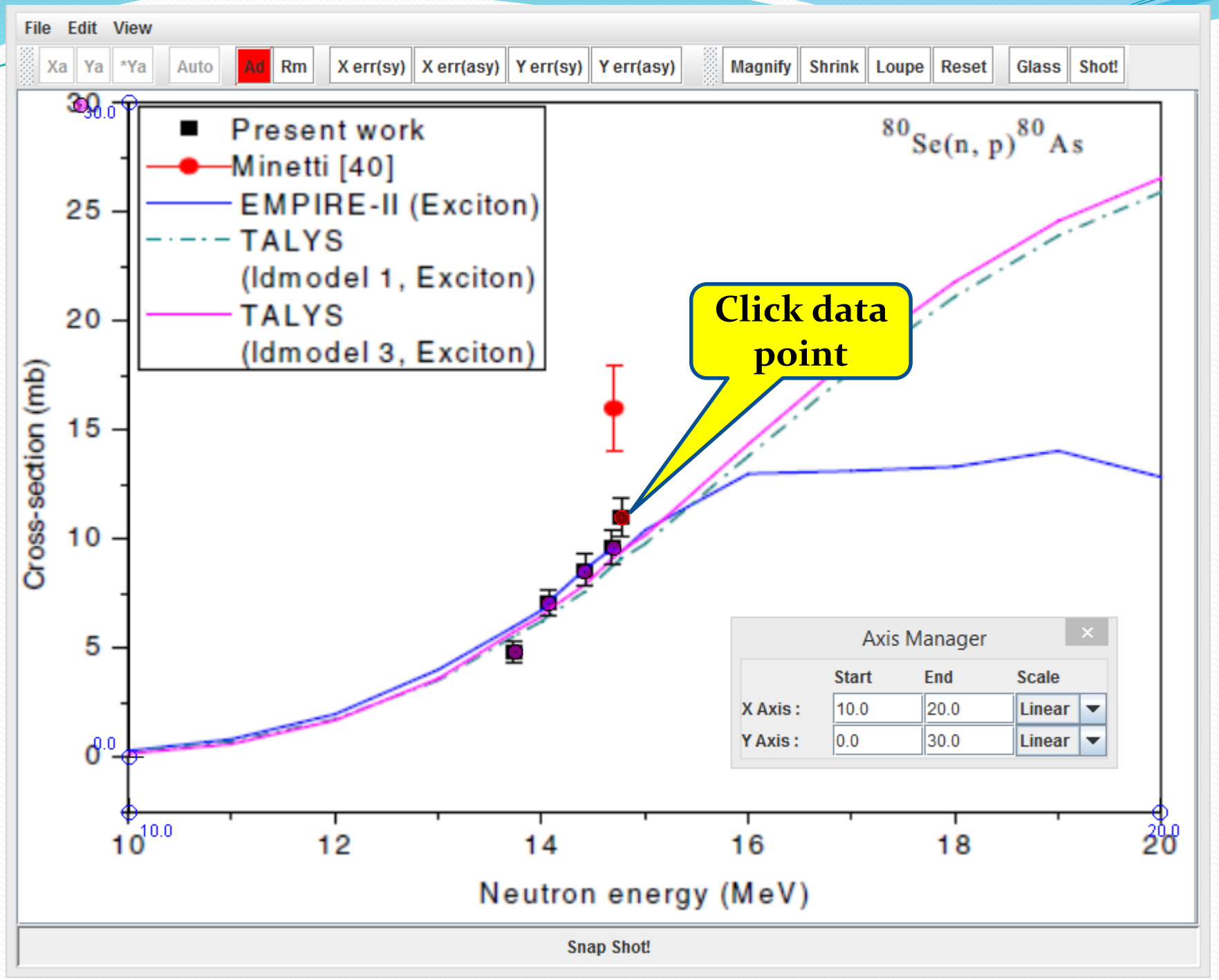

File Edit View
Xa Ya *Ya Auto Ad
Magnify Shrink Loupe Reset Glass Shot!
Click Ad
Present
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
Neutron energy (MeV)
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Clicked (567, 103), Mouse (45, 10)


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
0.0
5
10
15
20
25
30.0
10.0
12
14
16
18
20.0
Point (359, 405), Mouse (532, 47), Digitized value (1.374E+01, 4.820E+00)

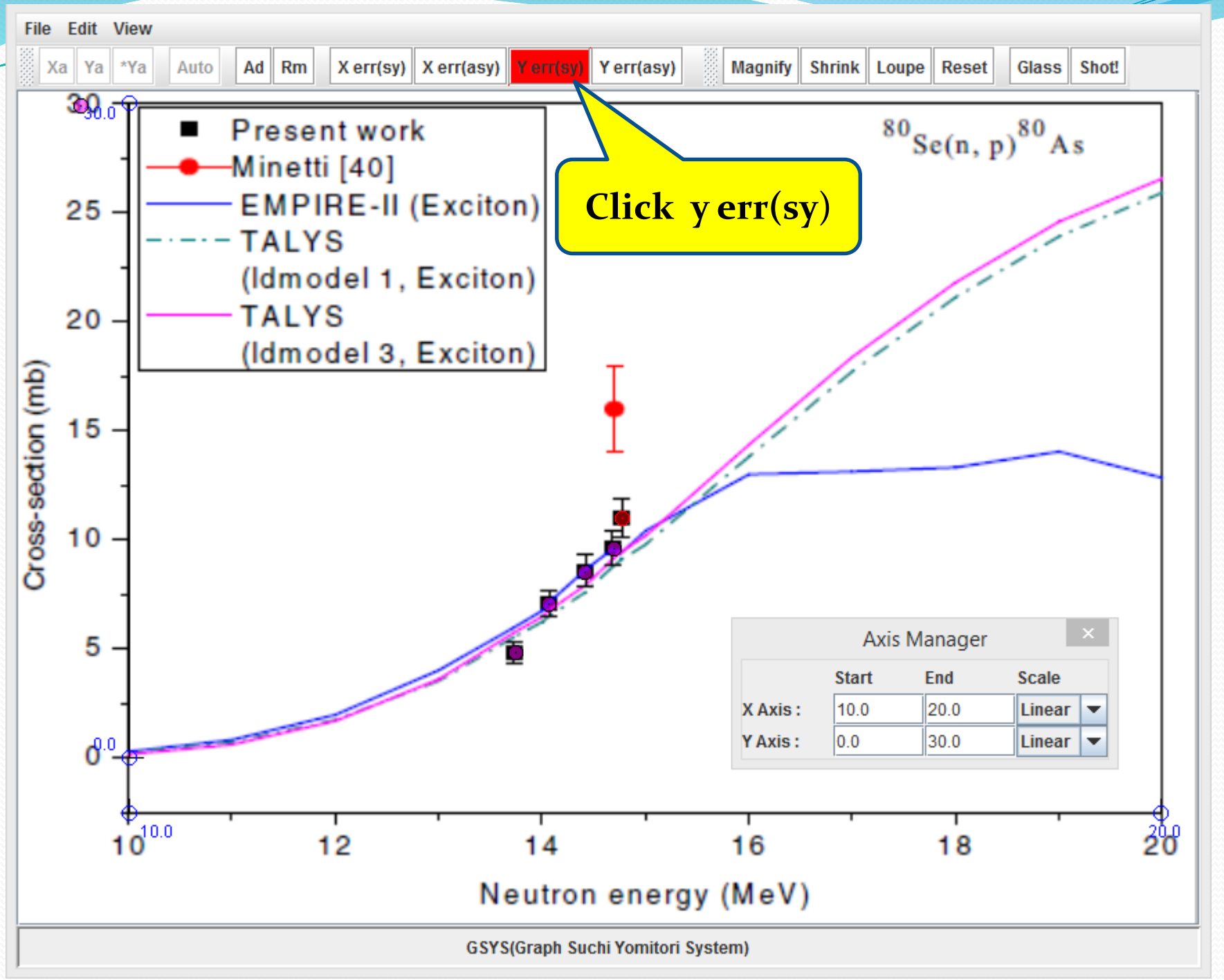

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click second data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
0.0
5
10
15
20
25
30.0
10.0
12
14
16
18
20.0
Point (383, 370), Mouse (465, 158), Digitized value (1.407E+01, 7.040E+00)

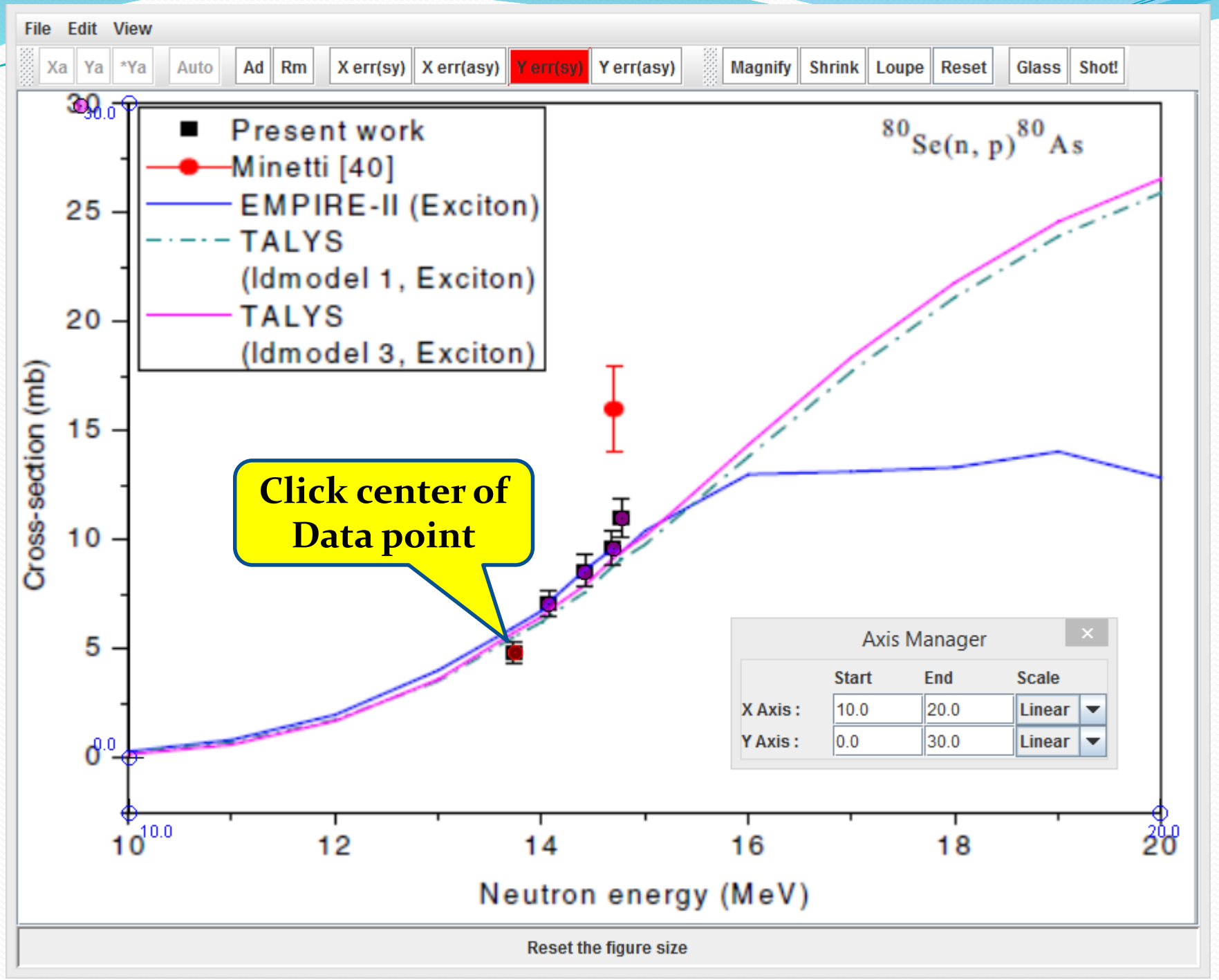

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
GSYS(Graph Suchi Yomitori System)

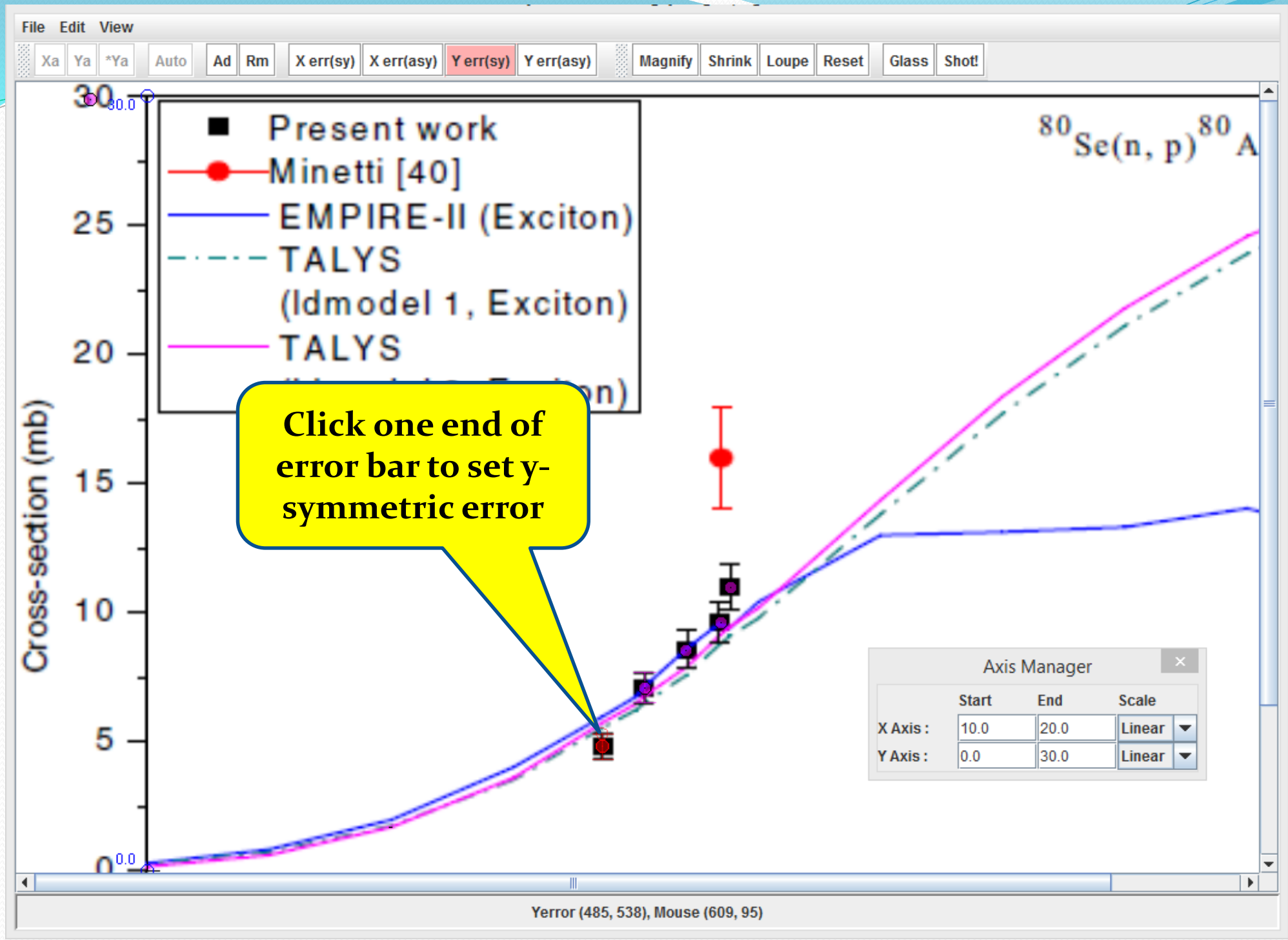

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
Set X Symmetric-Error Bar (F1)

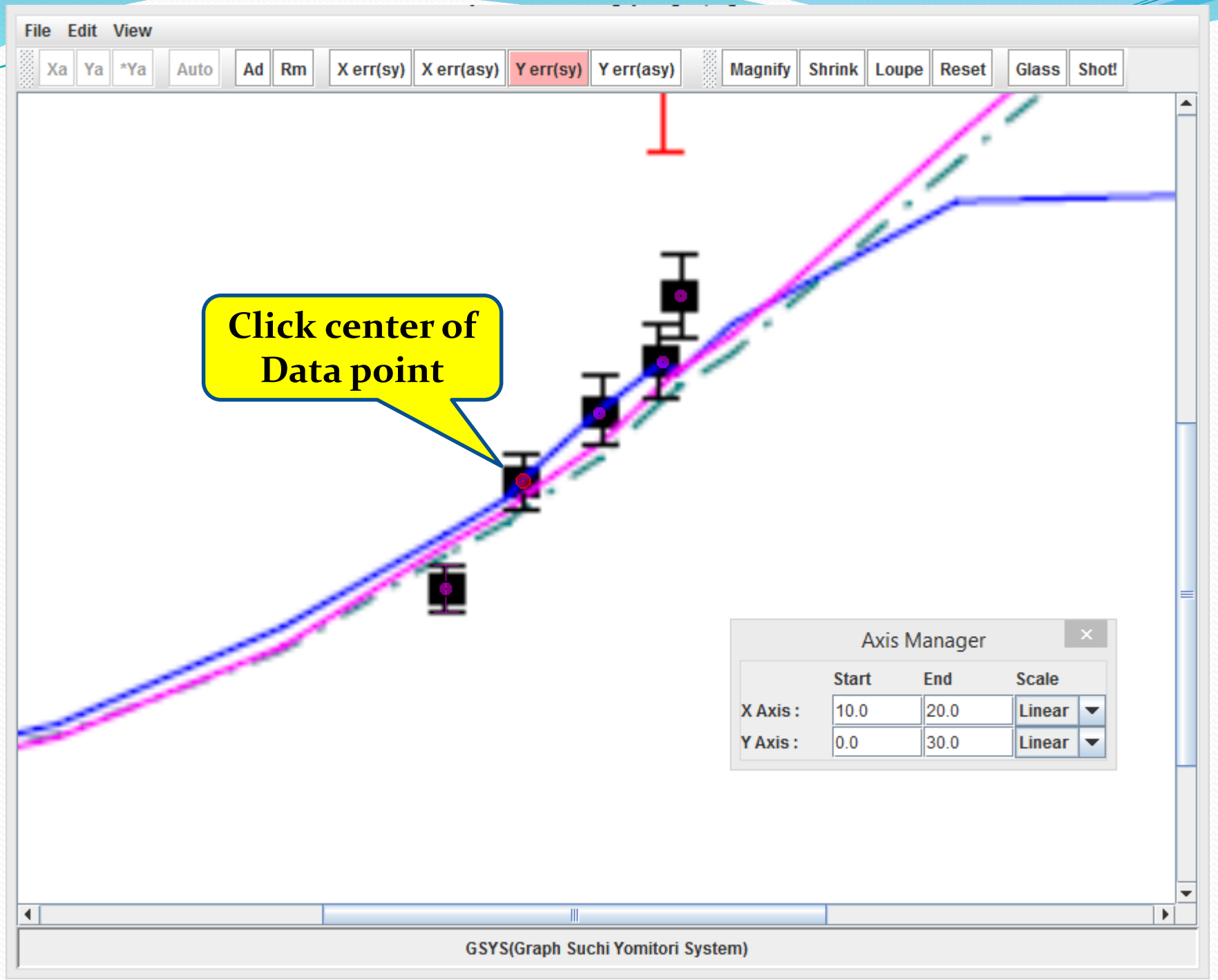

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
0.0
30.0
10.0
20.0
0 5 10 15 20 25 30
10 12 14 16 18 20
Snap Shot!

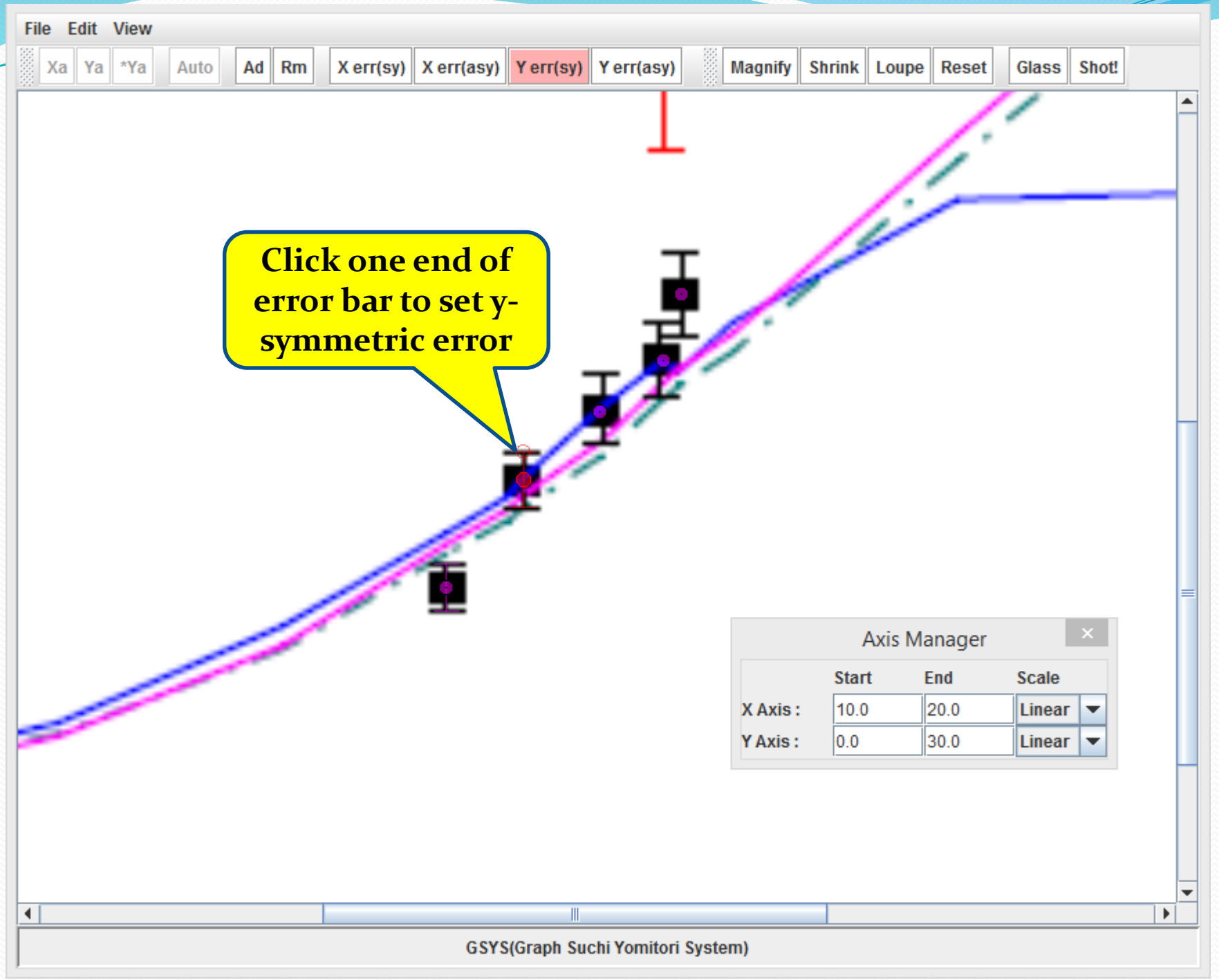
3. Digitize y-symmetric Error Bar

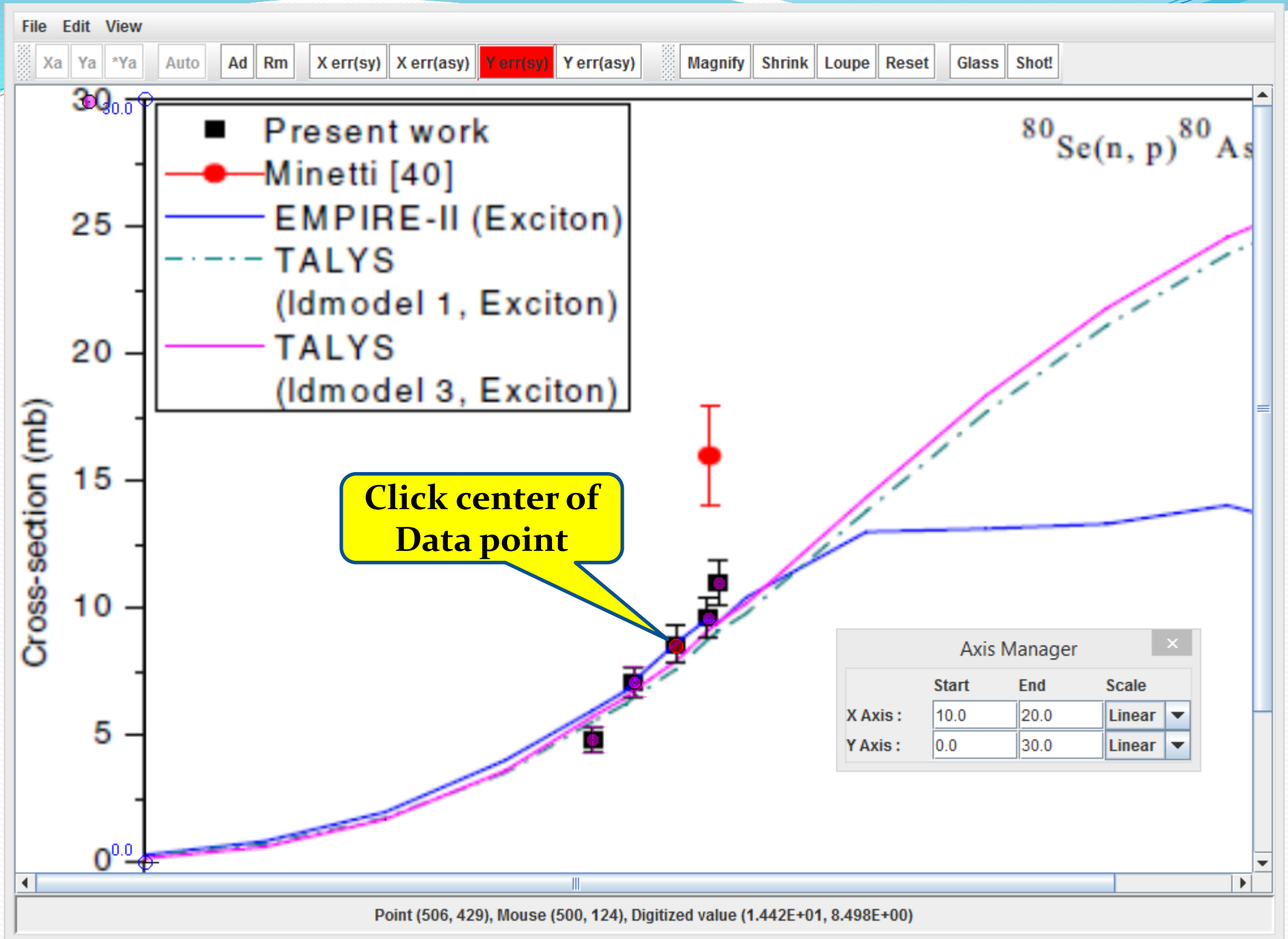

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click y err(sy)
Cross-section (mb)
Neutron energy (MeV)
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

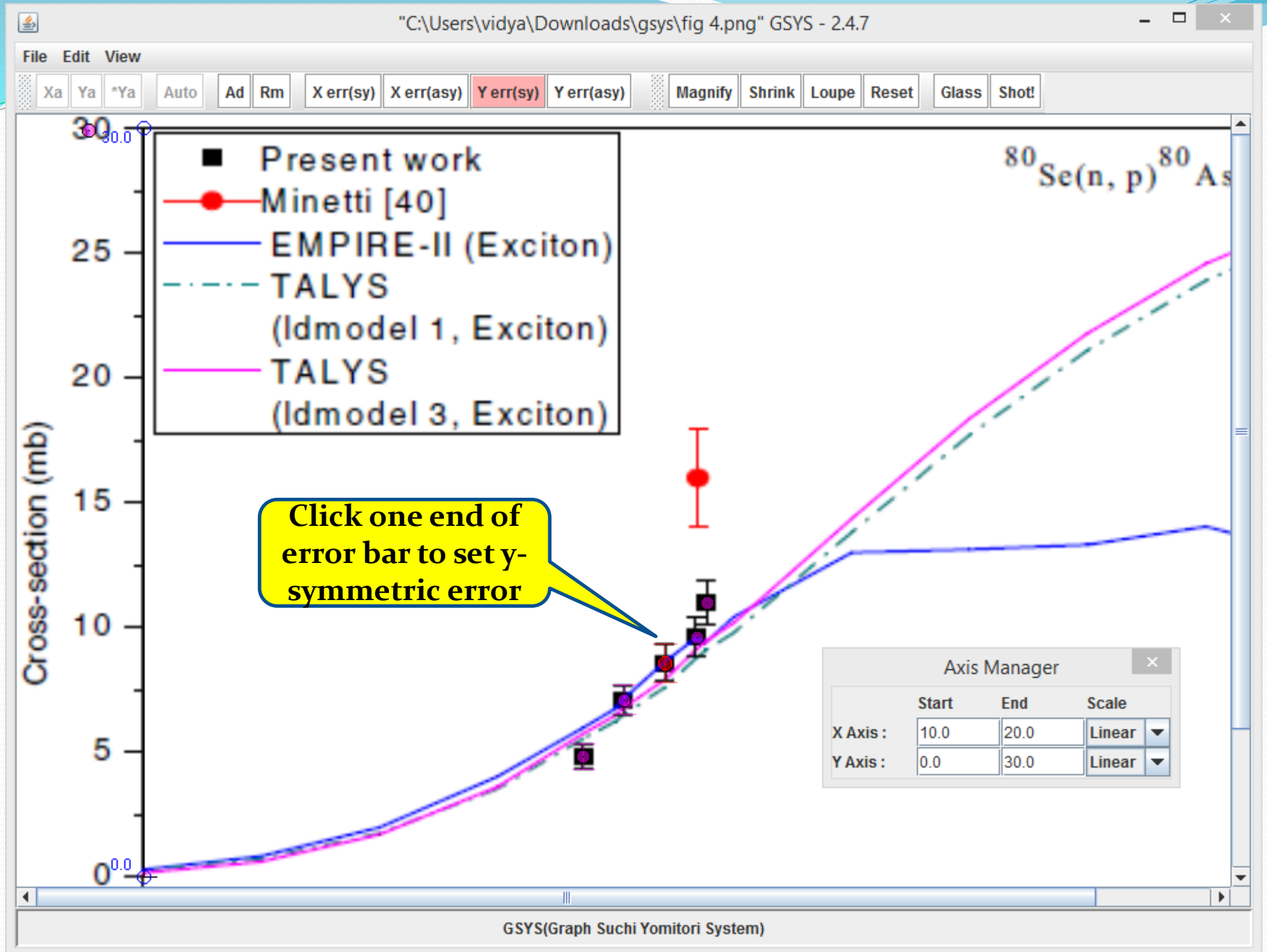

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click center of Data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Cross-section (mb)
Neutron energy (MeV)
Reset the figure size

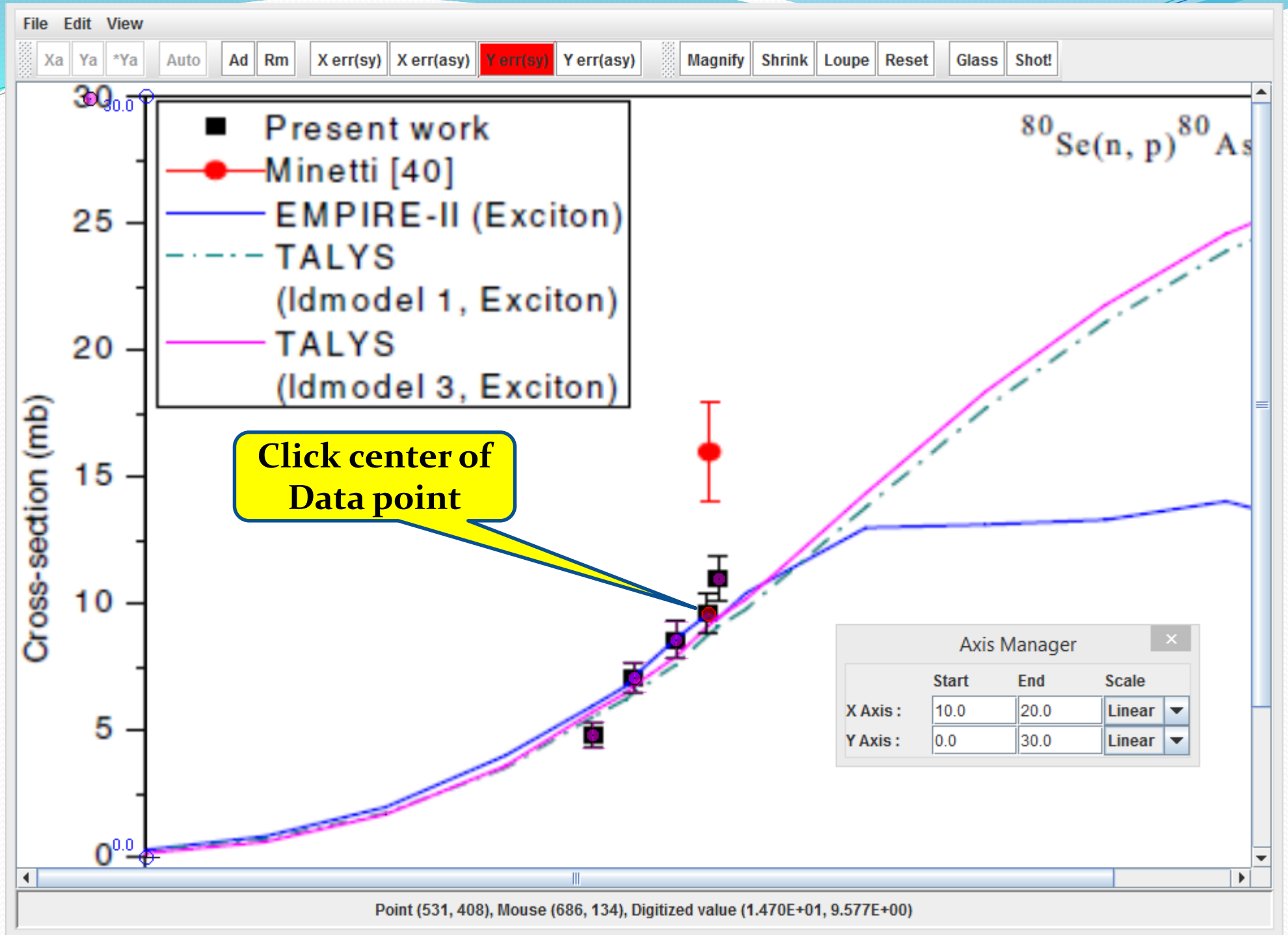

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
80Se(n, p)80A
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Click one end of error bar to set y-symmetric error
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Yerror (485, 538), Mouse (609, 95)

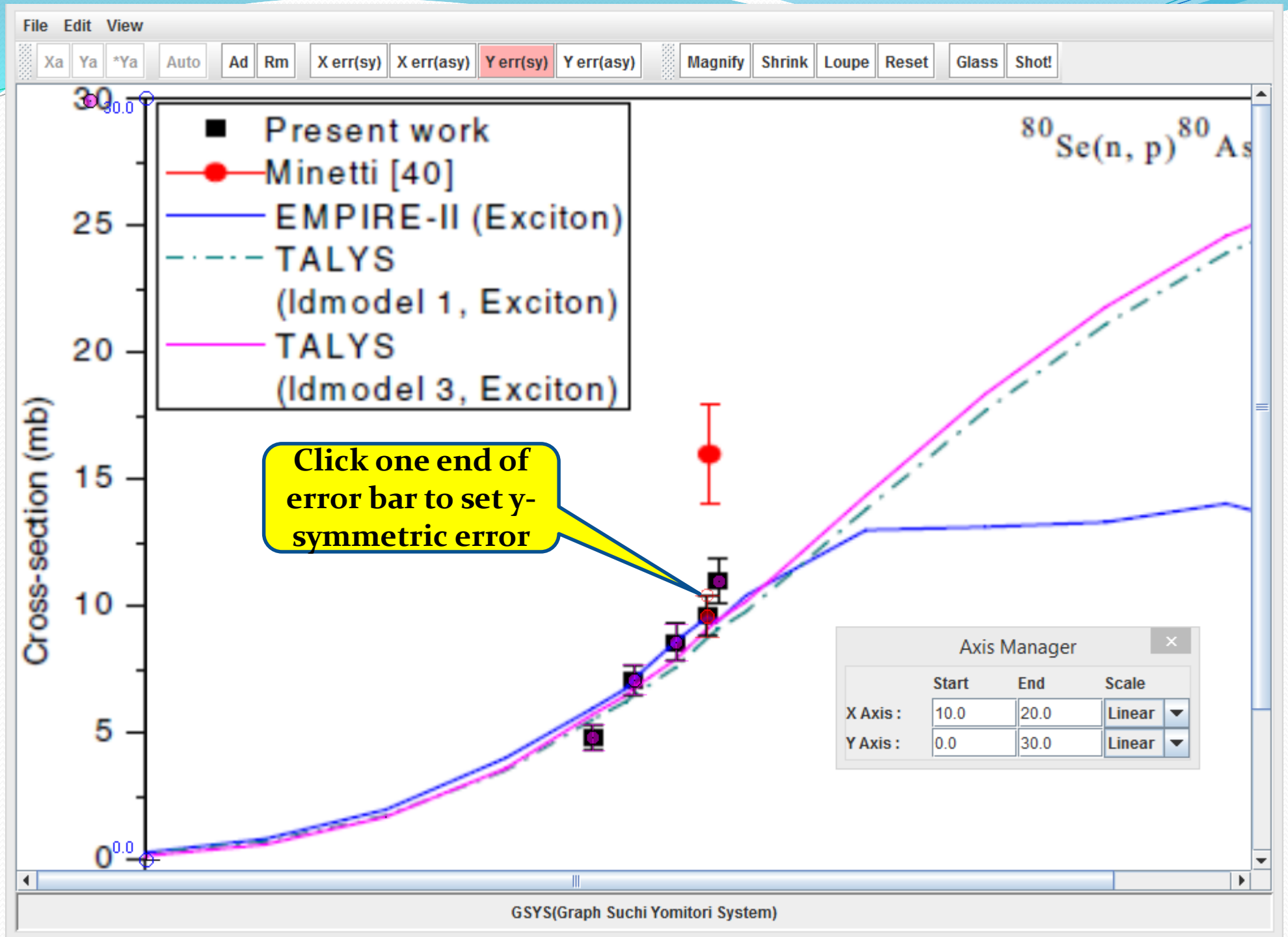

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Click center of Data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

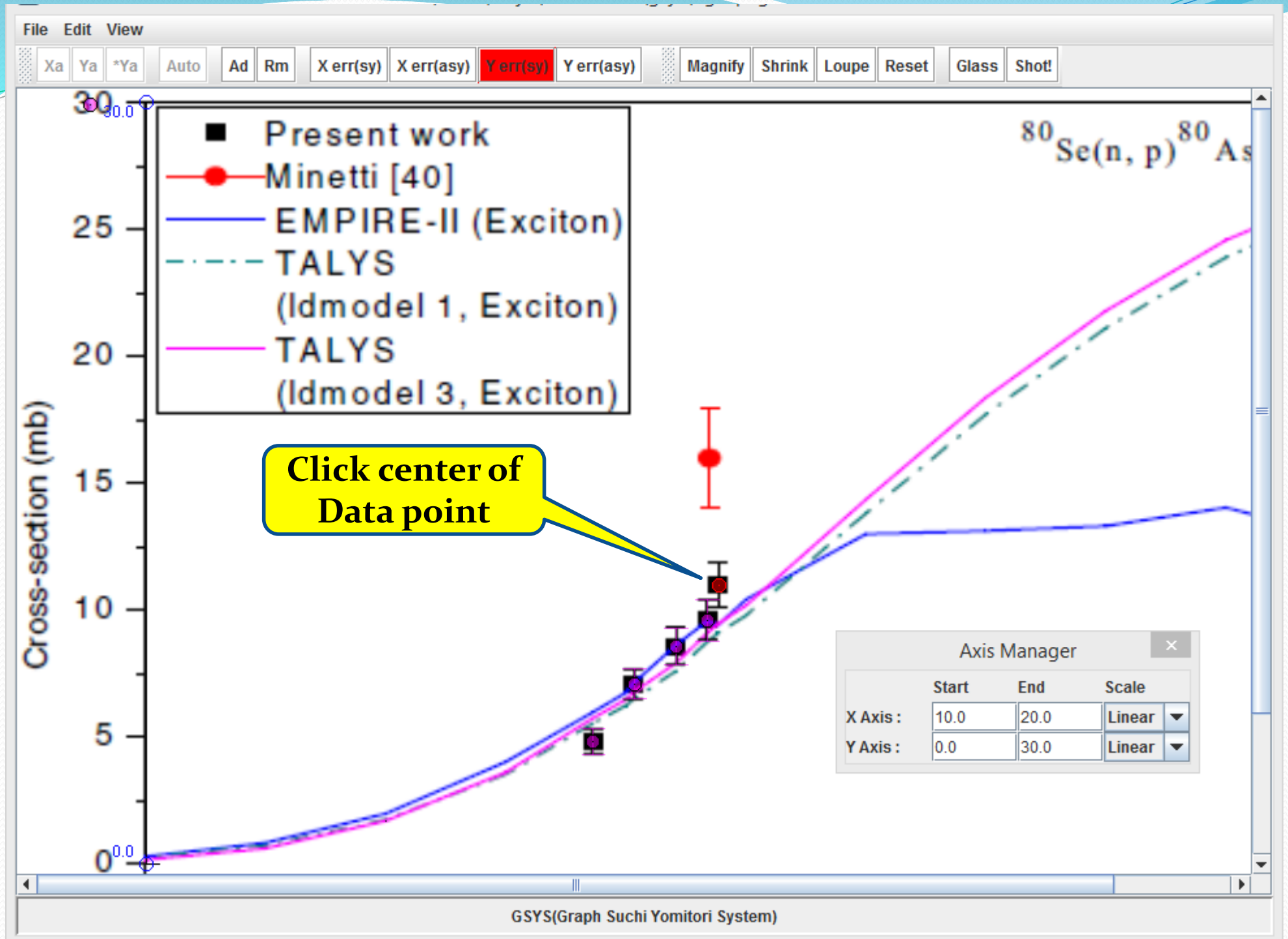

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Click one end of error bar to set y-symmetric error
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

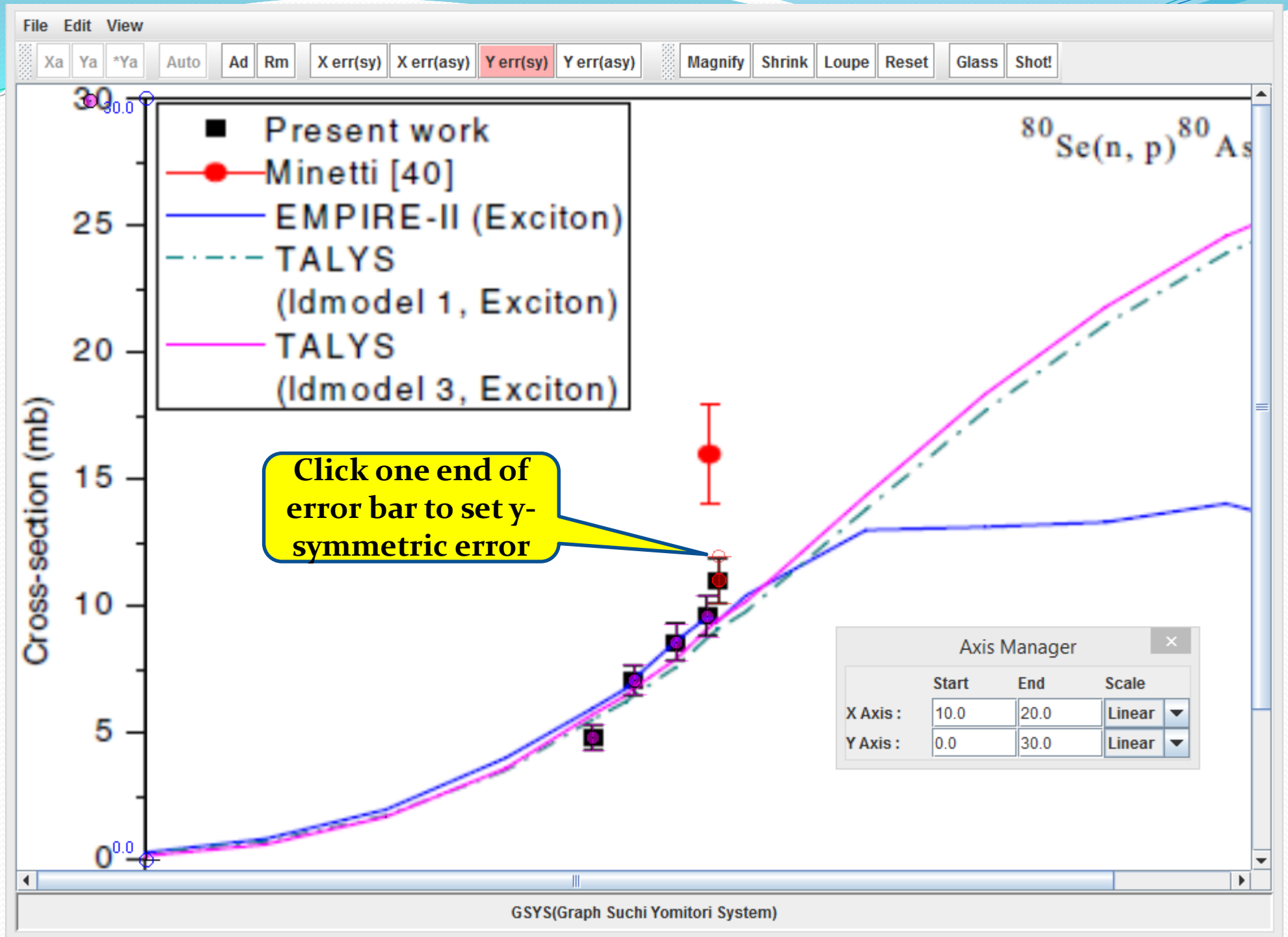

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Click center of Data point
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Point (506, 429), Mouse (500, 124), Digitized value (1.442E+01, 8.498E+00)


"C:\Users\vidya\Downloads\gsys\fig 4.png" GSYS - 2.4.7
File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS (ldmodel 1, Exciton)
TALYS (ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Click one end of error bar to set y-symmetric error
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

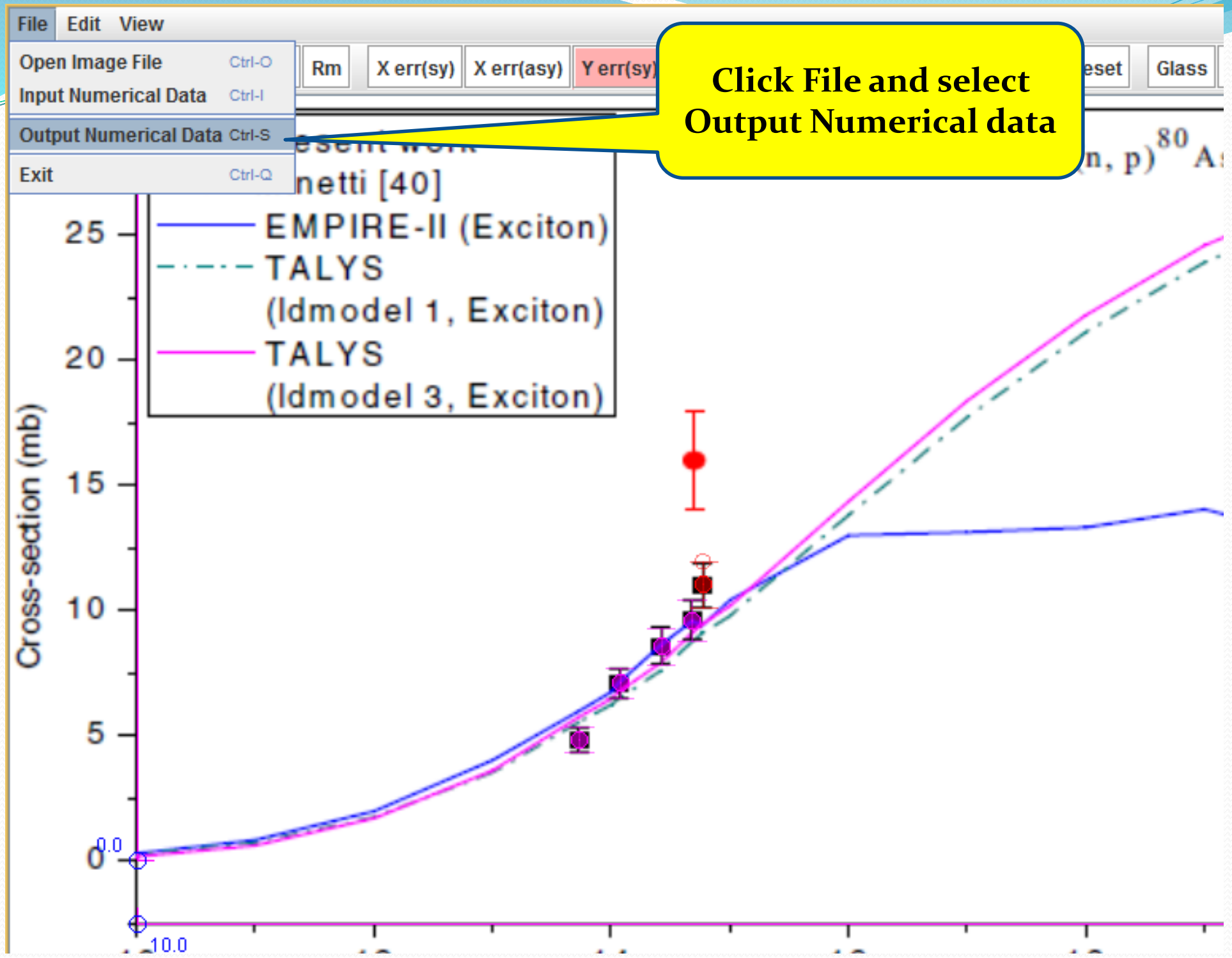

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click center of Data point
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
Point (531, 408), Mouse (686, 134), Digitized value (1.470E+01, 9.577E+00)

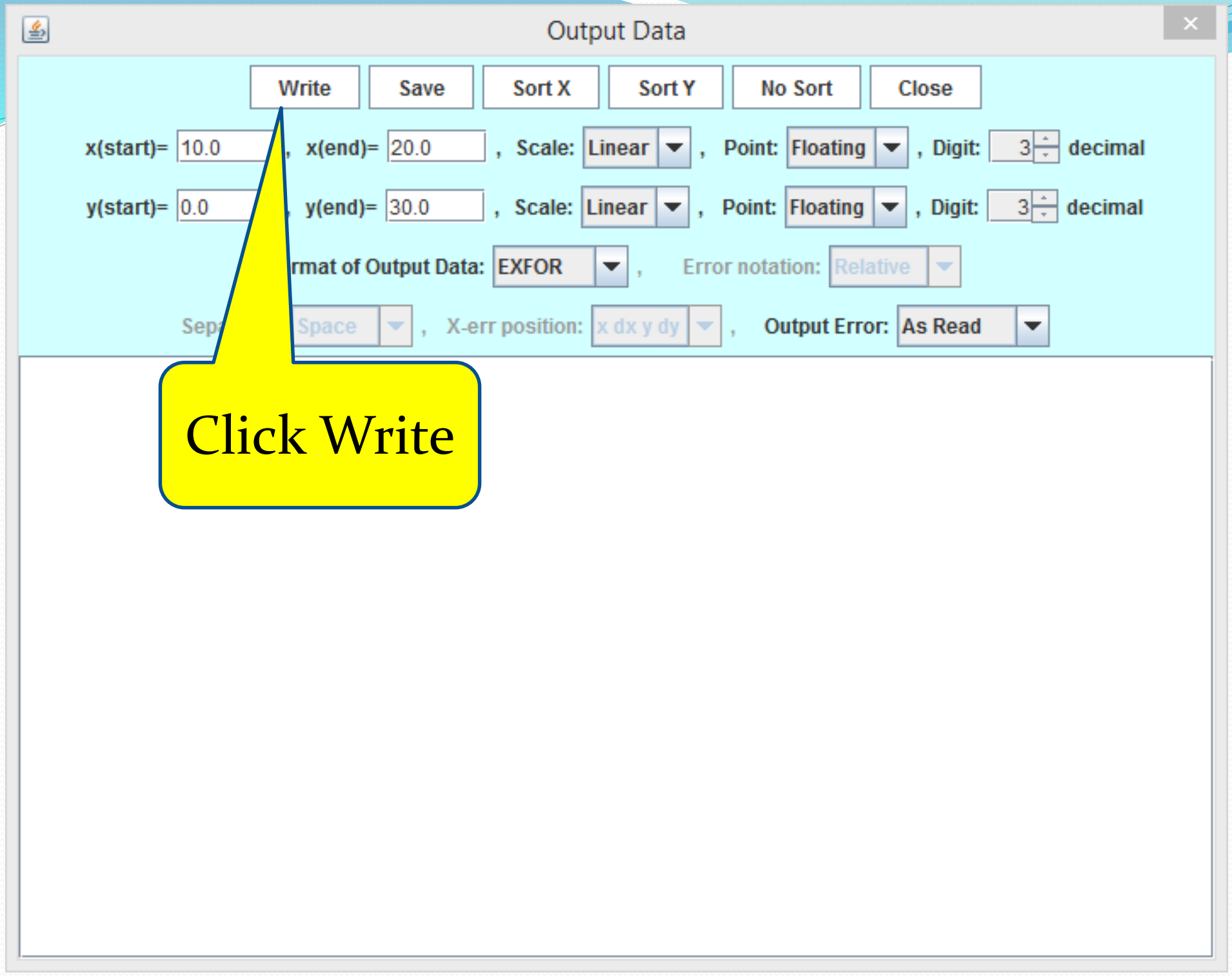

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Click one end of error bar to set y-symmetric error
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

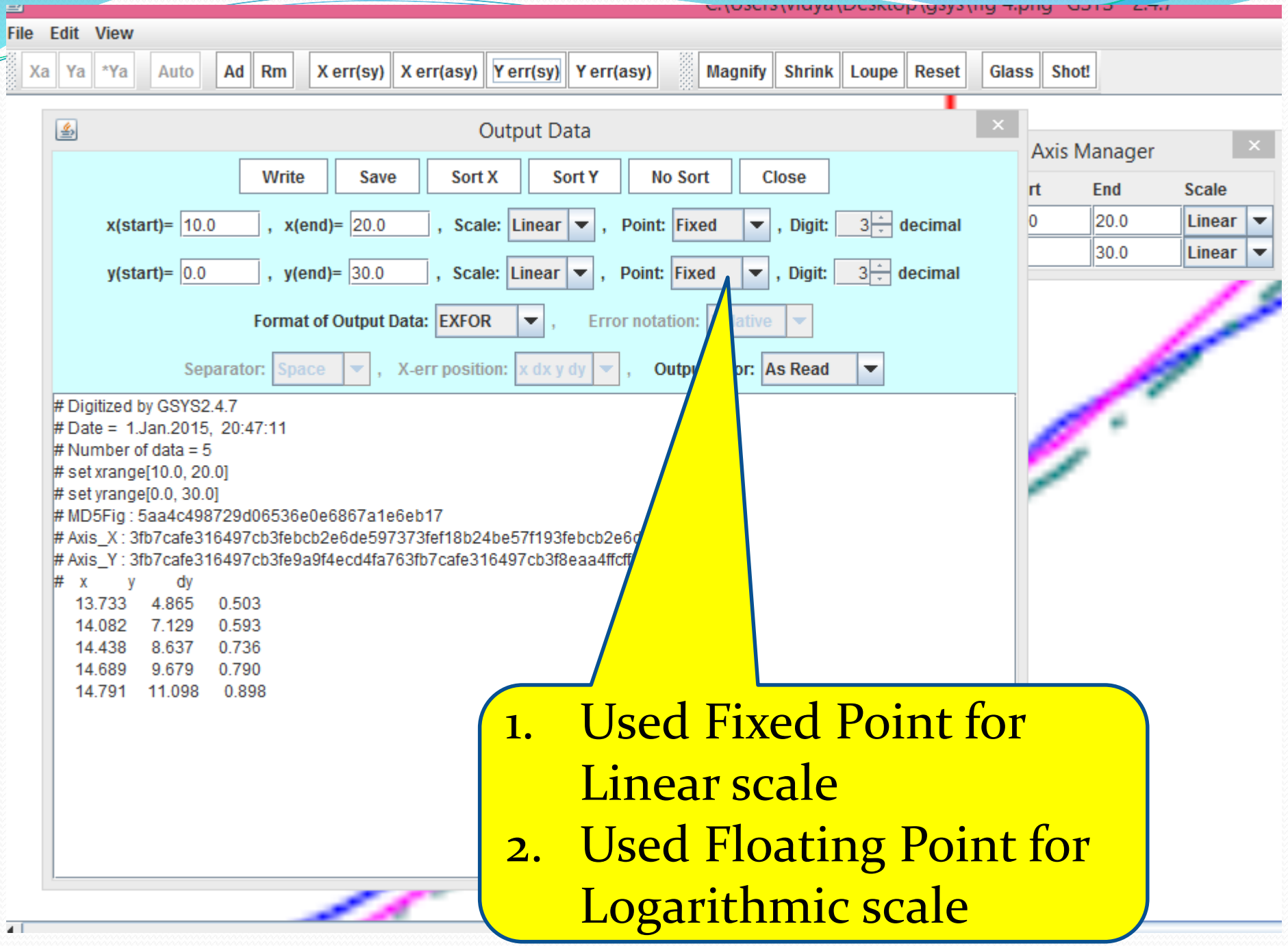

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Click center of Data point
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

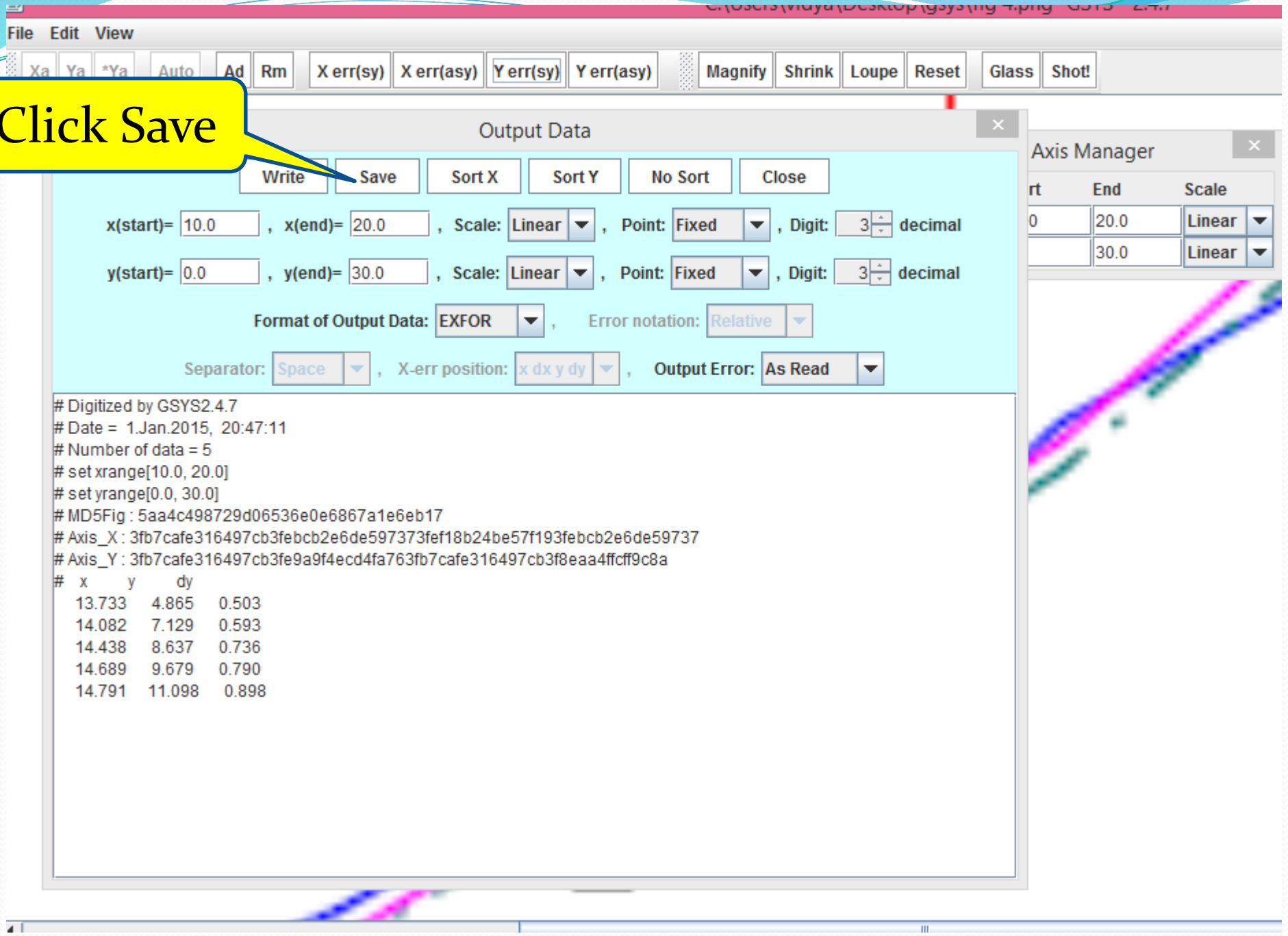

File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Present work
Minetti [40]
EMPIRE-II (Exciton)
TALYS
(ldmodel 1, Exciton)
TALYS
(ldmodel 3, Exciton)
80Se(n, p)80As
Cross-section (mb)
30.0
25
20
15
10
5
0.0
Click one end of error bar to set y-symmetric error
Axis Manager
Start End Scale
X Axis : 10.0 20.0 Linear
Y Axis : 0.0 30.0 Linear
GSYS(Graph Suchi Yomitori System)

4. Output Numerical Data


File
Edit
View
Open Image File Ctrl-O
Input Numerical Data Ctrl-I
Output Numerical Data Ctrl-S
Exit Ctrl-Q
Rm
X err(sy)
X err(asy)
Y err(sy)
eset
Glass
Click File and select Output Numerical data
netti [40]
EMPIRE-II (Exciton)
TALYS (ldmodel 1, Exciton)
TALYS (ldmodel 3, Exciton)
Cross-section (mb)
25
20
15
10
5
0
0.0
10.0


Output Data
Write
Save
Sort X
Sort Y
No Sort
Close
x(start)= 10.0
x(end)= 20.0
Scale: Linear
Point: Floating
Digit: 3
decimal
y(start)= 0.0
y(end)= 30.0
Scale: Linear
Point: Floating
Digit: 3
decimal
rmat of Output Data: EXFOR
Error notation: Relative
Sep
Space
X-err position: x dx y dy
Output Error: As Read
Click Write


File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Output Data
Write Save Sort X Sort Y No Sort Close
x(start)= 10.0 , x(end)= 20.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
y(start)= 0.0 , y(end)= 30.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
Format of Output Data: EXFOR , Error notation:
Separator: Space , X-err position: x dx y dy , Outp or: As Read
Digitized by GSYS2.4.7
Date = 1.Jan.2015, 20:47:11
Number of data = 5
set xrange[10.0, 20.0]
set yrange[0.0, 30.0]
MD5Fig : 5aa4c498729d06536e0e6867a1e6eb17
Axis_X : 3fb7cafe316497cb3febcb2e6de597373fef18b24be57f193febcb2e6
Axis_Y : 3fb7cafe316497cb3fe9a9f4ecd4fa763fb7cafe316497cb3f8eaa4ffcf
x y dy
13.733 4.865 0.503
14.082 7.129 0.593
14.438 8.637 0.736
14.689 9.679 0.790
14.791 11.098 0.898
Axis Manager
rt End Scale
0 20.0 Linear
30.0 Linear
1. Used Fixed Point for Linear scale
2. Used Floating Point for Logarithmic scale


Click Save
File Edit View
Xa Ya *Ya Auto Ad Rm X err(sy) X err(asy) Y err(sy) Y err(asy) Magnify Shrink Loupe Reset Glass Shot!
Output Data
Write Save Sort X Sort Y No Sort Close
x(start)= 10.0 , x(end)= 20.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
y(start)= 0.0 , y(end)= 30.0 , Scale: Linear , Point: Fixed , Digit: 3 decimal
Format of Output Data: EXFOR , Error notation: Relative
Separator: Space , X-err position: x dx y dy , Output Error: As Read
Digitized by GSYS2.4.7
Date = 1.Jan.2015, 20:47:11
Number of data = 5
set xrange[10.0, 20.0]
set yrange[0.0, 30.0]
MD5Fig : 5aa4c498729d06536e0e6867a1e6eb17
Axis_X : 3fb7cafe316497cb3febcb2e6de597373fef18b24be57f193febcb2e6de59737
Axis_Y : 3fb7cafe316497cb3fe9a9f4ecd4fa763fb7cafe316497cb3f8eaa4ffcff9c8a
x y dy
13.733 4.865 0.503
14.082 7.129 0.593
14.438 8.637 0.736
14.689 9.679 0.790
14.791 11.098 0.898
Axis Manager
rt End Scale
0 20.0 Linear
30.0 Linear

- Enlarge the image for better accuracy.
- Pay special attention when x- and y-axis positions are determined for better accuracy.
- Use the fixed and floating decimal point expression for the numbers digitized from linear and logarithmic scale, respectively. Example:

12.345 (a value digitized from linear scale)

1.2345E+02 (a value digitized from logarithmic scale)

- Consider rounding of digitized values to reflect digitization accuracy. Consider rounding of digitized values to integers if values are for atomic numbers, mass numbers etc., and digitized values are close to integers.

Digitization Exercise

- Open GSYS2.4.7_Quick.doc.

(available in the pen drive, or the IAEA website:

https://www-nds.iaea.org/nrdc/india/ws2019/

- Do digitization for Fig.3 and Fg.4.

- Put digitized values on the EXCEL sheet (dig-exc.xls) and check your performance by standard deviations.

- Do it for Fig.11, Fig.12 and Fig.13, too.

Thanks for your Attention