BRANCH CENTER OF NUCLEAR PHYSICS DATA (CNPD)

**EXFOR-Editor**

**Software Package for Inputting and Editing Experimental Data in the EXFOR Format**

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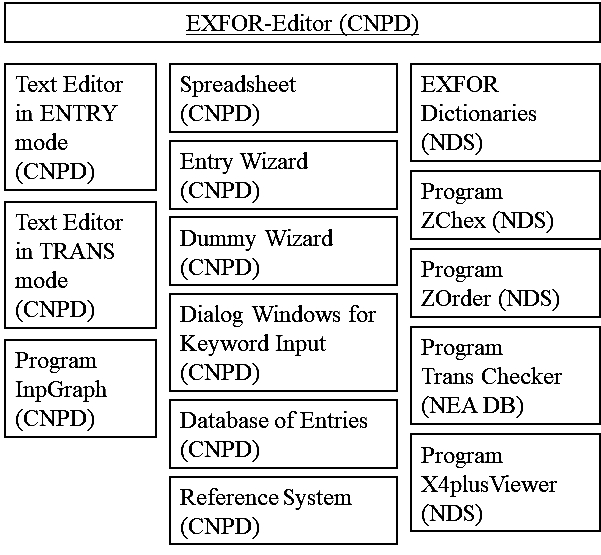
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Introduction

The CNPD-developed EXFOR-Editor software is specialized software for the input and editing of nuclear data in the EXFOR library format. It takes into account strict requirements and limitations of the EXFOR format and simplifies the entering of structured information.

The program interface is easy to learn and use. Its operation requires no special training. The program is intended for different categories of users, including beginners.

In addition to the CNPD-developed components, the EXFOR-Editor, which block diagram is presented оn Figure 1, includes libraries and programs developed by the Nuclear Data Section (NDS) and the Data Bank of the Nuclear Energy Agency (NEA DB).



**Figure 1** – EXFOR-Editor block diagram

1. Technical Requirements

The EXFOR-Editor works under the control of the Microsoft Windows. It requires 1 Gb of free space on a hard disk.

1. EXFOR-Editor Setup

For the EXFOR-Editor installing copy two directories EXFOREditor and InpGraph from CD to a hard disk. Cancel the “Read only” attribute for all files and folders.

To setup downloaded versions copy all parts of packed distributives of ExfData or InpGraph to an individual directory and start unpacking with the main files that have ZIP extension.

It is recommended installing program codes to the folder in the main hard disk directory to avoid soft errors when running ZChex and ZOrder programs included into the EXFOR-Editor.

To launch the ExfData run ExfData.EXE, and to launch the digitizing program launch InpGraph.EXE.

1. EXFOR-Editor Main Functions

The EXFOR-Editor has the following capabilities:

* creating a new file in the EXFOR format with the help of a pattern or Wizard;
* editing the EXFOR file with specialized editor;
* entering numerical data obtained by scanning original papers or from files of PDF format;
* processing and sorting the numerical data;
* visualizing the numerical data in a graph form;
* creating a new TRANS file with the help of special dialog window;
* editing the TRANS file with specialized editor;
* checking ENTRY and TRANS files for their correspondence to the EXFOR format.

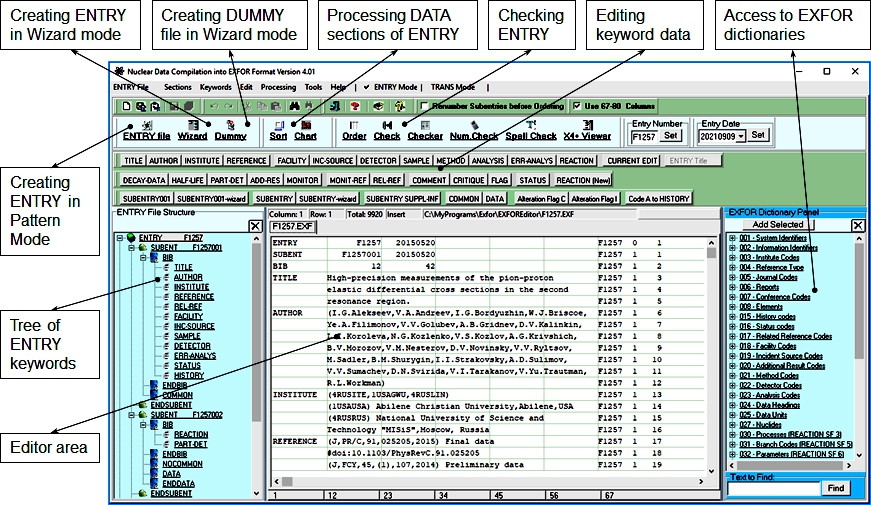
1. EXFOR-Editor User Guide

ExfData User Guide

ExfData Main Window in ENTRY Mode

The ExfData main window in the ENTRY mode is shown on Figure 2. The central part of the window contains the editor area divided into columns for convenient data entering into the required EXFOR format positions. At the bottom of the editor window there is a special rule with reference column numbers for data entering and a current cursor position. The ExfData editor has all standard functions of editors operating under Microsoft Windows (opening, closing, saving, clipboard coping and pasting, searching and replacing strings, etc.).

At the top of the main window, there is a tool panel with a menu bar and tool buttons for creating, processing and editing the ENTRY file and its components. The adjustment of the tool panel context is provided.



**Figure 2** − ExfData main window in the ENTRY mode

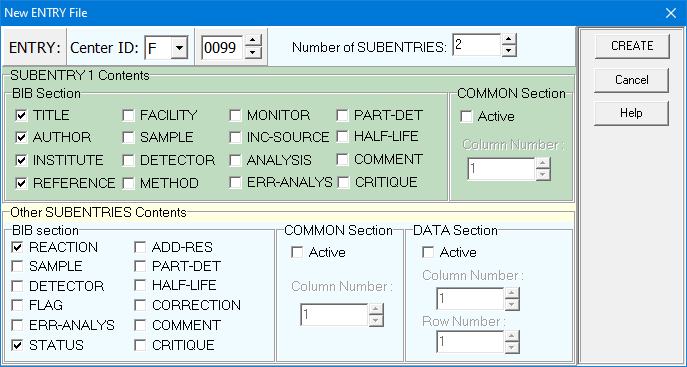
To the left of the editor area there is a panel with a keyword tree structure of an opened ENTRY. This simplifies the ENTRY navigation. To the right of the editor area there is the EXFOR dictionaries browser in the form of a tree for searching a code word and inserting it into the ENTRY.

The **Entry Number** and **Entry Date** group boxes on the tool panel are used to change the ENTRY number and its date for all SUBENTRIES.

Creation of ENTRY

* + - 1. Creation of ENTRY in Pattern Mode

To create a new ENTRY in a pattern mode use the **ENTRY File** button on the tool panel or menu item **ENTRY File/New/ENTRY File**. In the window «New ENTRY file» (Fig. 3) input the centre-identification character and the ENTRY number into the **ENTRY** field and the number of subentries into the **Number of SUBENTRIES** field. Then set the flags for the keywords that will be used in the main BIB section and in BIB sections of each Subentry. There also can be set a number of columns and rows in COMMON and DATA sections. Press **Create** button to create the new Entry with set parameters.

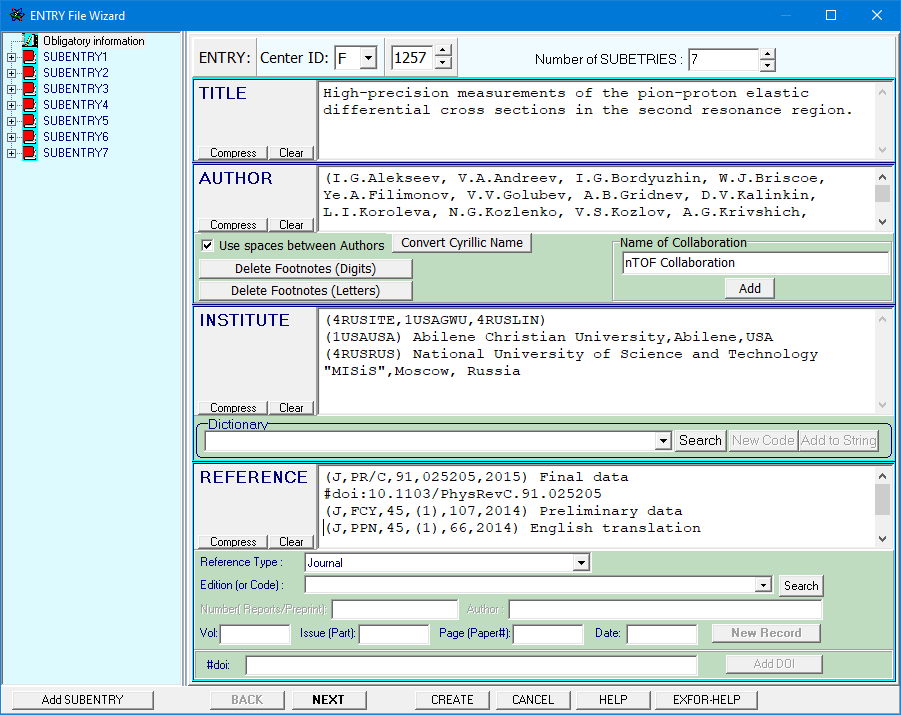


**Figure 3** – Pattern for creation of a new ENTRY

There is a possibility to create separate subentries in the pattern mode for inserting them into the ENTRY (use the **SUBENTRY001** or **SUBENTRY** buttonson the tool panel).SUBENTRY1 is always entered at the ENTRY beginning.

* + - 1. Creation of ENTRY in Wizard Mode

To create a new ENTRY in a Wizard mode use the **Wizard** button on the tool panel or menu item **ENTRY File/New/Wizard** in the main window (Fig. 2). Put information into BIB section of Subentry 1 in the window «EXFOR File Wizard» (Fig. 4): fill in the Title, Authors, Institute and Reference fields.



**Figure 4** – Wizard window page for input of the bibliographic information

Wizard window is a set of pages with tabs. Buttons **NEXT** and **BACK** provide navigation between pages. Use Wizard pages to input sequentially the ENTRY fields context. The ENTRY Wizard contains pages of the following functions:

* selection of Keywords for a subentry;
* input of information for the selected Keywords (Fig.5);
* input of reaction code;
* input of data in a COMMON section.

There is a possibility to create separate Subentries in the Wizard mode (use the **SUBENTRY001-Wizard** and **SUBENTRY-Wizard** buttonson the tool panel, Fig.2).

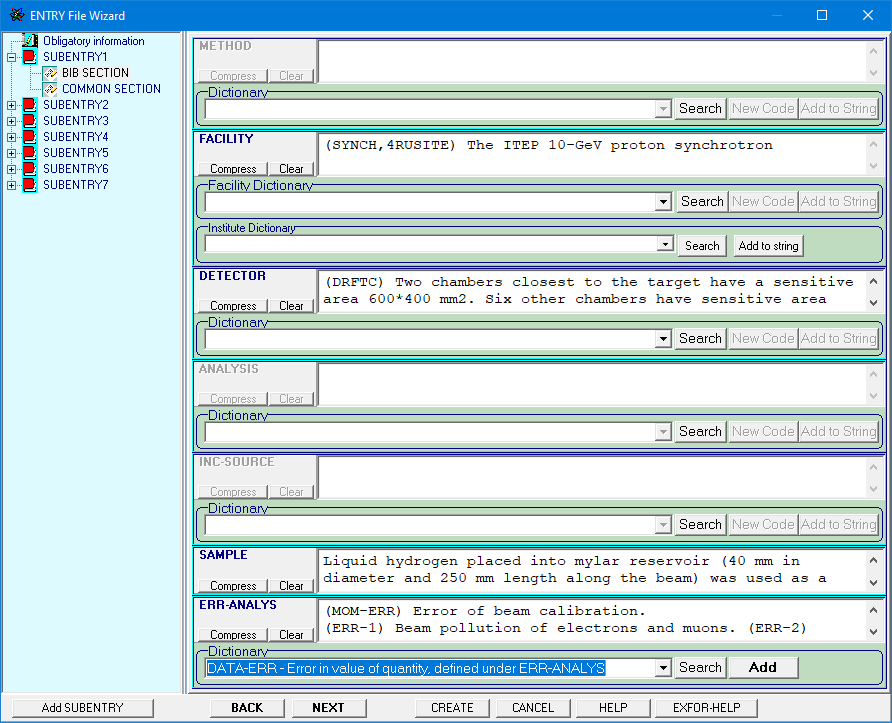


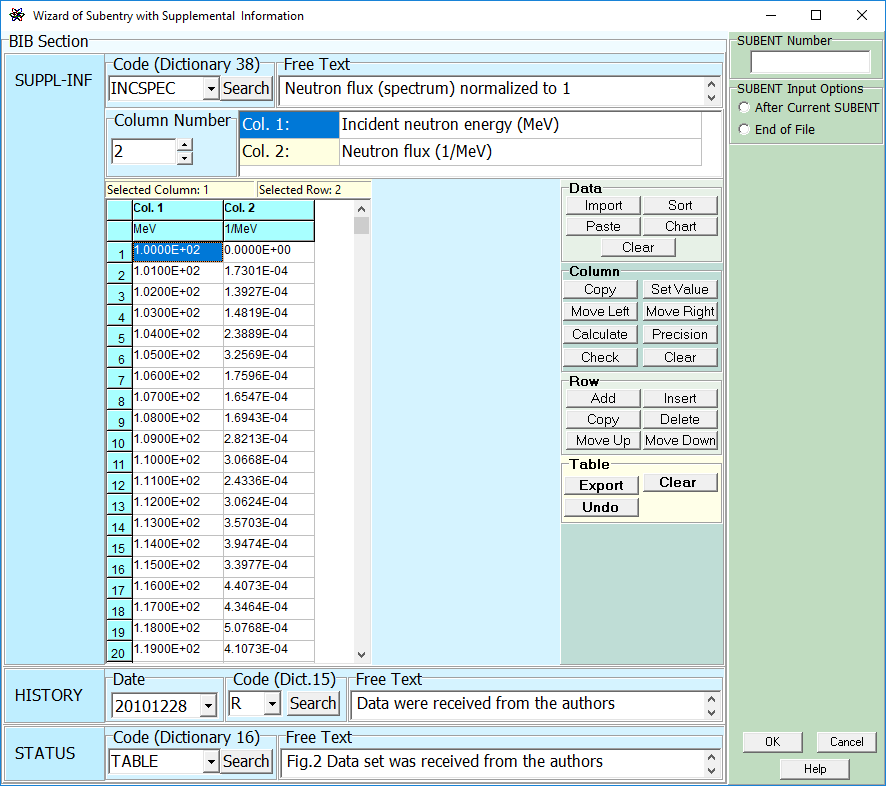
Figure 5 – Wizard window for input of Keyword information

* + - 1. Creation of Subentry with Supplemental Information in Wizard Mode

To create a subentry with the Keyword SUPPL-INF in the Wizard modeuse the **SUBENTRY SUPPL-INF** button on the tool panel or menu item **Sections/SUBENTRY SUPPL-INF Wizard** of the main window (Fig. 2).

In the dialog window (Fig. 6) input the Code word in the field **Code (Dictionary 38)** and its explanation in the field **Free Text**. Below set the number of columns with numerical values, their headings and units. Numerical values should be entered using the DataTable mode. Manual of the DataTable mode is presented in 4.1.3.5.

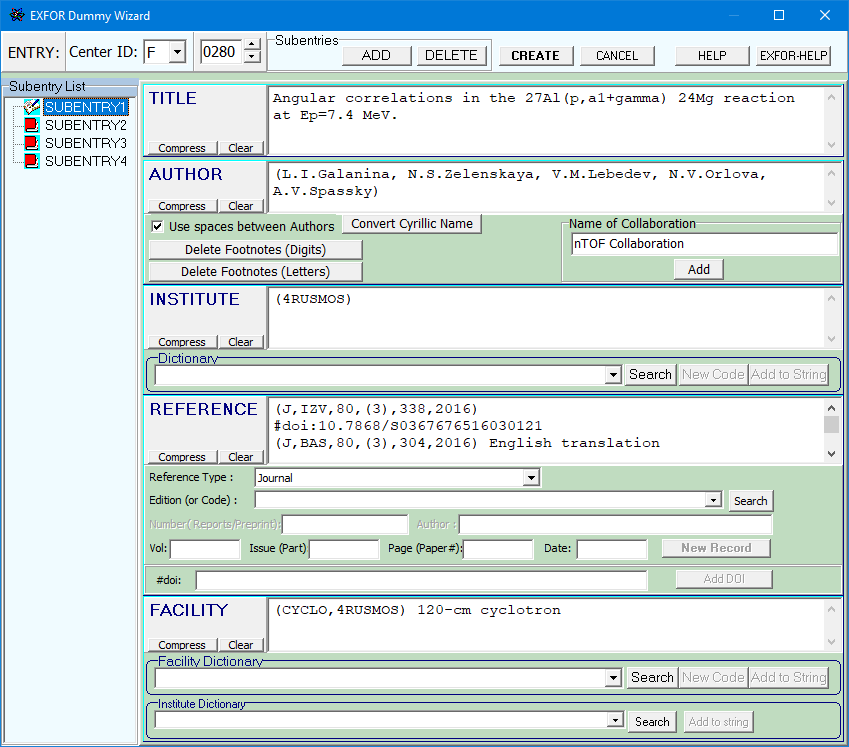
Then input the Code words for the **HISTORY** and **STATUS** Keywords and comments for them as a free text.



**Figure 6** – Data input for SUBENTRY with supplemental information in the Wizard mode

* + - 1. DUMMY-File Creation

To create a new ENTRY without experimental numerical data, use the **Dummy** button on the tool panel or menu item **File/New/EXFOR Dummy** of the main window (Fig. 2). Then input the context of the fields obligatory for the Dummy-file in the **Dummy-Wizard** (window **EXFOR Dummy Wizard**, Fig.7). Dummy-files in Exfor format are to be created when there is no possibility to obtain experimental data from authors at that very moment but it is necessary to hold them in the EXFOR Data Base. After creation Dummy-file can be edited in the main window (Fig.2).



**Figure 7** – DUMMY-wizard

Data Input and Editing in the EXFOR format

* + - 1. Data Input and Editing in Special Windows

To input information on the Keywords use the corresponding buttons in the lower part of the tool panel or menu items of the **Keywords** menu of the main window (Fig. 2). The keywords available for editing through specialized windows are listed in the Table 1.

To edit information on the Keywords click the right mouse button on a text and choose the **EDIT** command from the pop-up menu. The second way is to put cursor on a text to be edited and press the **CURRENT EDIT** button on the tool panel.

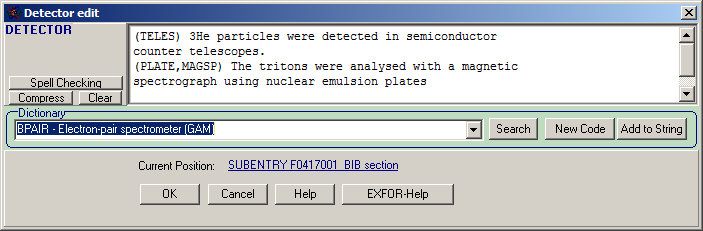
Table 1 – The **Keywords** menu context

|  |  |
| --- | --- |
| The **Keywords** menu section | Keywords |
| Bibliography | TITLE  AUTHOR  INSTITUTE  EXP-YEAR |
| Data Specification | REACTION  RESULT |
| Related Data | MONITOR  ASSUMED |
| DECAY-DATA  DECAY-MON  PART-DET  RAD-DET  HALF-LIFE |
| ANG-SEC  EN-SEC  LEVEL-PROP  MOM-SEC  MISC-COL |
| Physics | INC-SOURCE  INC-SPECT  SAMPLE |
| METHOD  FACILITY  ANALYSIS  DETECTOR |
| SUPPL-INF |
| CORRECTION  ERR-ANALYS |
| Other | ADD-RES  COMMENT  CRITIQUE  FLAG |
| Bookkeeping | STATUS  HISTORY |

* + - 1. Data Input and Editing on Keywords

An example of inputting/editing information on the DETECTOR Keyword is presented on Fig. 8.

Use the **Dictionary** drop-down list or **Search** button to find a Code word in the EXFOR dictionaries. Use the **Spell Checking** button to check spelling of the Code word field context and the **Compress** button to delete unwanted blanks and service characters. Click the right mouse button and select the **Paste** item from the pop-up menu to insert information from a clipboard.

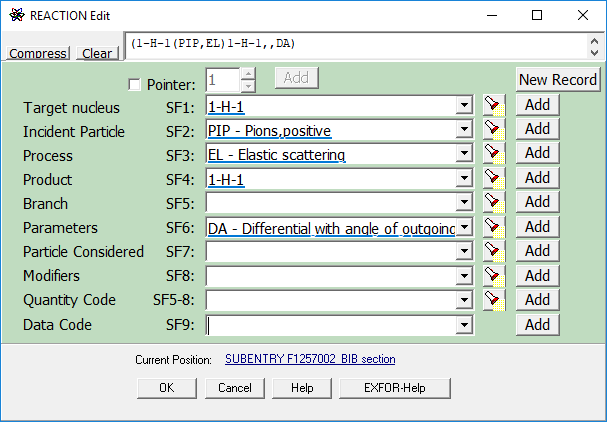


**Figure 8** – Editing information window for the DETECTOR Keyword

Dialog widows of inputting/editing information for a particular Keyword have their own specific features according to the EXFOR rules.

* + - 1. Input and Editing of Information on the Reaction Code

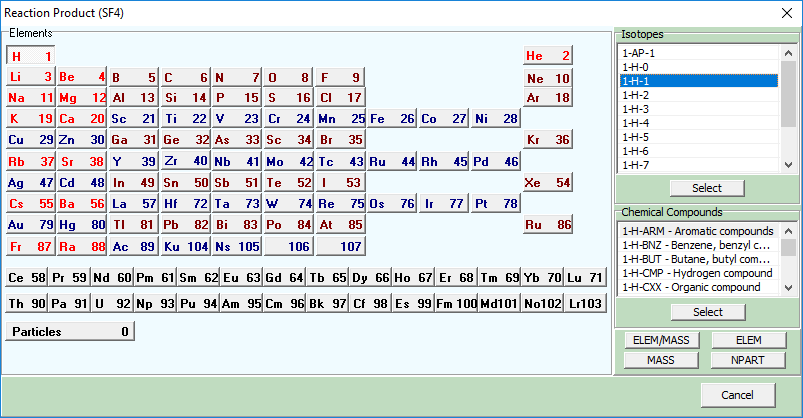
An example of input/editing information on the Reaction Code is presented on Figure 9.



**Figure 9**– Window for inputting/editing the Reaction code

To select a code for a SF-field use the drop down list containing the values of the corresponding EXFOR dictionary. To search the required Code use a button  to the right of the corresponding drop-down list.

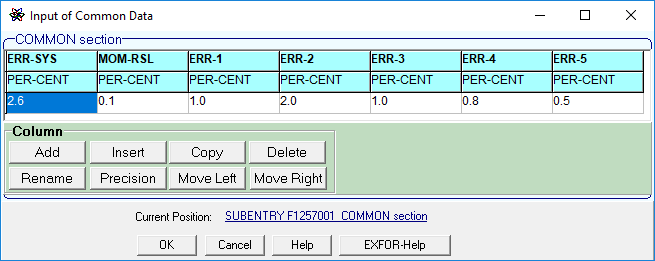
On Figure 10 the window of searching the Reaction product (SF-4) Code is shown. Choose the required element from the **Elements** panel and then select the Reaction product from the **Isotopes** or **Chemical Compounds** list.



**Figure 10** – Window for searching the Reaction product

* + - 1. Input and Editing of COMMON Data

A window for input/editing of Common section (COMMON DATA) data is shown on Figure 11.



**Figure 11** − Window for COMMON DATA editing

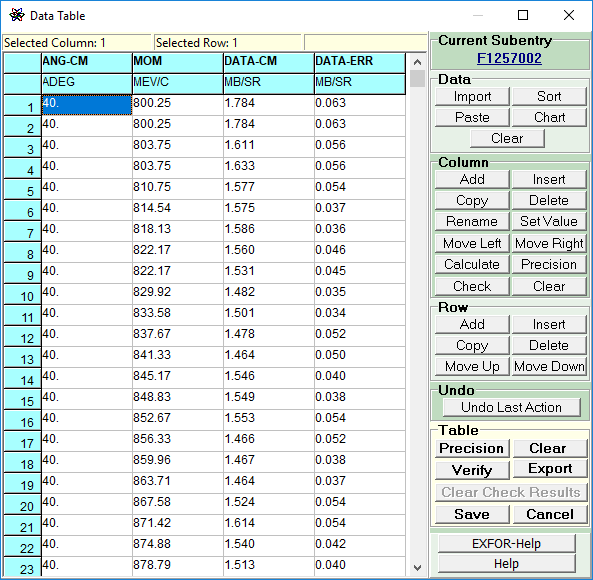
Table 2 contains a list of buttons of the COMMON section window and their functions.

**Table 2** – Functions of buttons used to work with COMMON section

| Button | Function |
| --- | --- |
|  | Addition of an empty column to the end of the table |
|  | Insertion of an empty column before the selected one |
|  | Insertion of an empty column after the selected one and copying of its content to the new column |
|  | Deletion of the selected column |
|  | Renaming of the selected column |
|  | Setting of data precision of the selected column |
|  | Shift left of the selected column |
|  | Shift right of the selected column |

* + - 1. Input and Editing of Numerical Data

A window for input/editing of numerical data (DATA section) is presented on Figure 12.



**Figure 12** − Window of numerical data editing

Table 3 contains a list of buttons of the **Data Table** window and their functions.

**Table 3** – Functions of buttons used to work with the DataTable mode

| Button | Function |
| --- | --- |
| DATA Panel | |
|  | Import of data table from text, Microsoft Word or Microsoft Excel files |
|  | Import of data table from clipboard |
|  | Deletion of all numerical data |
|  | Sort of data by columns with independent variables |
|  | Graphic presentation of numerical data |
|  | Check of numerical data correctness |
| Column Panel | |
|  | Addition of an empty column to the end of the table |
|  | Insertion of an empty column after the selected one and copying of its content to a new column |
|  | Insertion of an empty column before the selected one |
|  | Deletion of the selected column |
|  | Renaming of the selected column |
|  | Left shift of the selected column |
|  | Right shift of the selected column |
|  | Arithmetical operations with columns |
|  | Filling in a column with a specified numerical value |
|  | Setting of data precision of the selected column |
| Row Panel | |
|  | Addition of an empty row to the end of the table |
|  | Insertion of an empty row after the selected one and copying of its content to the new row |
|  | Insertion of an empty row before the selected one |
|  | Deletion of the selected row |
|  | Shift up of the selected row |
|  | Shift down of the selected row |

Continuation of **Table 3**

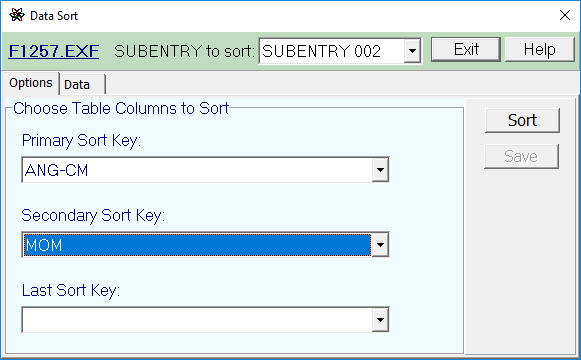
| Button | Function |
| --- | --- |
| Undo Panel | |
|  | Cancel of the last procedure on editing of the data table |
| Table Panel | |
|  | Setting of data precision for all columns |
|  | Export of data table into a text, Microsoft Word or Microsoft Excel file |
|  | Total clearing of a table |
|  | Check of the table numerical values on independent variable duplication |
|  | Deletion of the check results on independent variable duplication |
|  | Saving of data table into the ENTRY file |
|  | Exit from the DataTable mode without saving the changes |
| *Service buttons* | |
|  | Getting of help information about the EXFOR format |
|  | Getting of help information about the DataTable mode |

ENTRY Preparation for Inclusion into TRANS

* + - 1. Sorting of Numerical Data

To prepare the ENTRY for inclusion into TRANS sort numerical data of the DATA sections by columns with independent variables. Use the **Sort** button on the tool panel or the **Processing/Sort** menu item of the main window (Fig. 2). Numerical data can be also sorted in the DataTable mode with the help of the **Sort** buttonon the **Data** panel (Fig. 12).

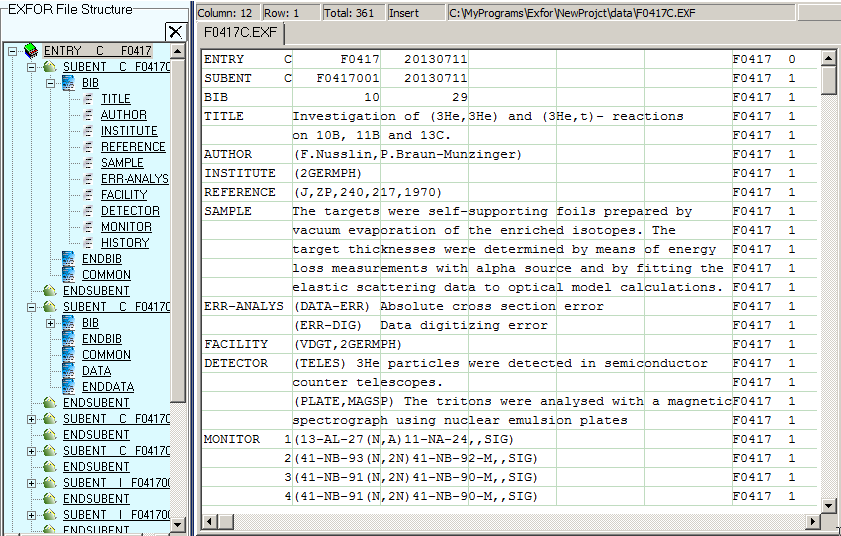
In the **Data Sor**t window (Fig. 13) select the subentry for numerical data sorting and independent variables (data table columns) as sort keys. Then press the **Sort** button. The results of sorting are presented on the page with the **Data** tab. Use the **Save** button to save the results of sorting in the ENTRY.



**Figure 13** − Sorting window for numerical data

* + - 1. Ordering of ENTRY

Data ordering provides the creation of the ENTRY file in its final form according to the EXFOR rules. At this stage the service information containing a number of lines in the appropriate sections and end-to-end numeration of all lines in the ENTRY are added. Use the **Order** button on the tool panel or the **Processing/Order** menu item in the main window (Fig. 2). A result of ENTRY ordering is presented on Figure 14.



**Figure 14** – ENTRY as a result of ordering

* + 1. Checking of ENTRY

Control of ENTRY according to the EXFOR format rules in the ExfData program includes the following procedures:

* control of numerical data input: data validation and setting of numerical data precision;
* verification of numerical data: control of numerical data duplication on independent variables, checking with the help of numerical data graphic presentation;
* common checking according to the EXFOR format rules: spell-checking, Zchex and Trans Checker checking and converting ENTRY into the X4+ format and presenting it with the help of X4+ Converter.

Control of numerical data input in the DataTable mode

* + - 1. Numerical Data Validation

The ExfData program provides two types of numerical data validation: the first one is an automatic validationwhen inputting, importing, pasting numerical data, the second one is provided after using the **Check** button on the panel **Column** (Fig. 12) and arranging the check options.

When inputting, importing, pasting numerical data the following check for every column is performed:

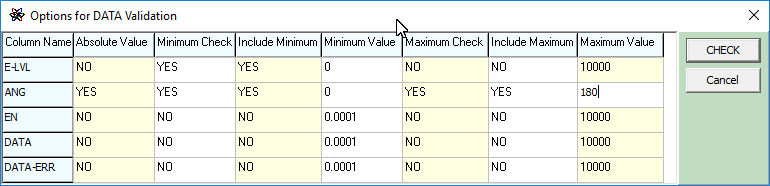
* control of true numerical format (control of prohibited and service chars, for example);
* numerical value range check (angle range check (0°..180°) and energy range check (> 0), for example).

Make the necessary corrections in wrong numerical values according to error messages.

Under the second type control define a criterion for validation of every data column in the window presented on Figure 15. Select the following checking options:

* true range of numerical value;
* boundaries of criterion application.

Then press the **CHECK** button and make the necessary corrections.

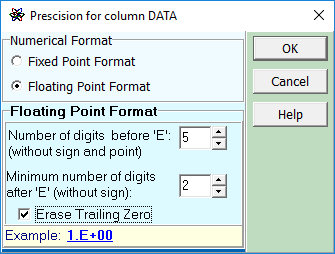


**Figure 15** – Checking criteria for numerical data validation

* + - 1. Numerical Data Precision

For precision assignment of numerical data use the **Precision** button on the **Column** panel or on the **Table** panel in the **Data Table** window (Fig. 12). In the window presented on Figure 16 set the following options for every column:

* number of digits after decimal point for the values with the fixed point;
* flag **Erase Trailing Zero**;
* total number of digits in fixed point part and number of digits for an exponent for the values with the floating point.



**Figure** **16** – Precision assignment of numerical data

If data precision decreases (significant digits number reduces), avoid duplication of numerical data on independent variables.

Verification of Numerical Data

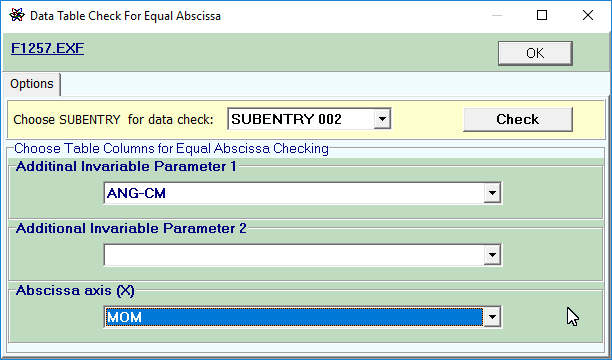
* + - 1. Control of Numerical Data Duplication by Independent Variables

To control numerical data duplication by independent variables use the **Num.Check** button on the tool panel or the **Processing/Numeric Check** menu item in the main window (Fig. 2). Another way is to use the **Verify** button on the **Table** panel of the **Data Table** window (Fig. 12).

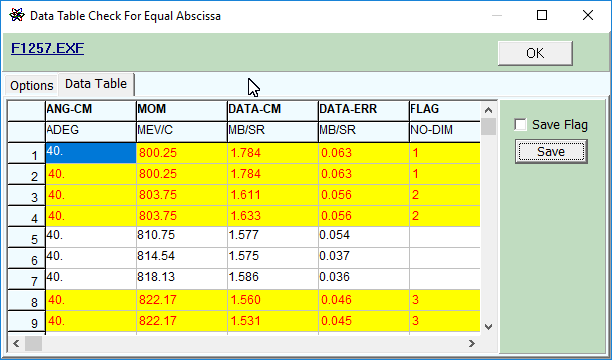
Set the following parameters in the window shown on Figure 17:

* select SUBENTRY;
* select column names of independent variables.

Press the Check button. The example of duplication checking results on the **Data Table** page is presented on Figure 18.



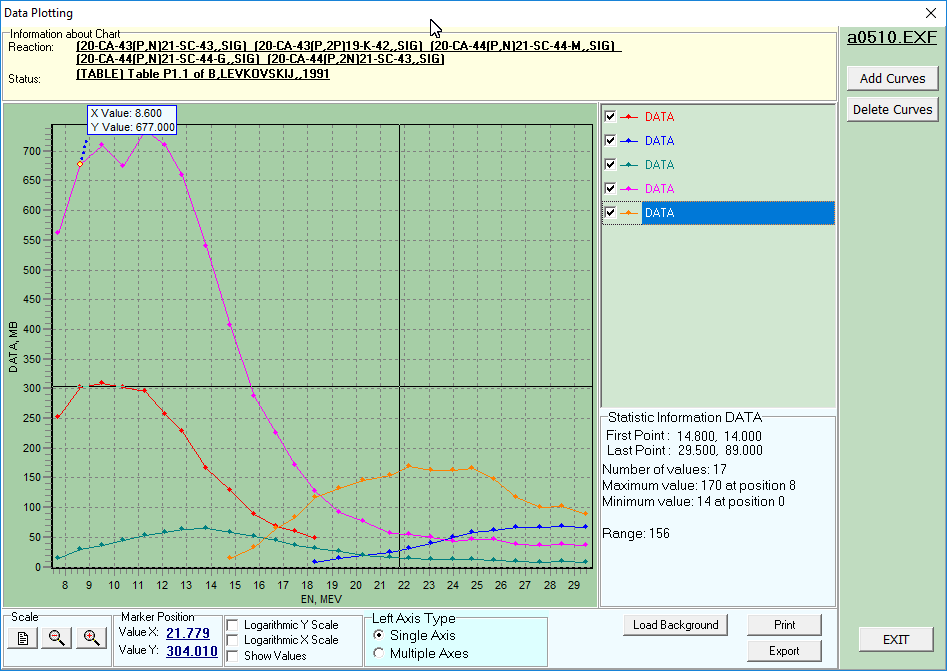
**Figure 17** – Parameters to control numerical data duplication



**Figure 18** – Results of numerical data duplication checking

* + - 1. Graphic Presentation of Numerical Data

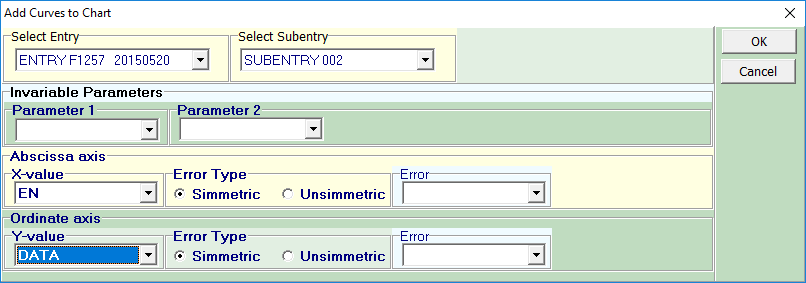
Use the **Chart** mode for additional control of numerical data. Use the **Chart** button on the tool panel or the **Processing/ Chart** menu item in the main window (Fig. 2). Data presentation from different Subentries of all Entries opened in the ExfData program on one plot is available. The window of numerical data graphic presentation is shown on Figure 19.



**Figure 19** – Graphic presentation of numerical data

To add a data curve to the Chart use the **Add Curves** button. In the window (Fig. 20) select the following options:

* Entry and Subentry for the data curve;
* columns with independent variables;
* columns for X and Y axis;
* columns for X and Y axis errors and type (symmetric or unsymmetric one) of these errors (if they are present).



**Figure 20** – Selection of curves for plotting

For convenient control of numerical data adjust the plot view close to the original image. Use the following procedures:

* select linear or logarithmic scale (use the **Logarithmic Y Scale**, **Logarithmic X Scale** flags, Fig. 19);
* select maximum, minimum, labels of axes (Click a left mouth button on any chart axis);
* assign for every curve its own Y-axis, if it is necessary (Select in the **Left Axis Type** group box the **Single Axis** or **Multiple Axes** option).

Pay attention to the presented statistic information (Fig. 19). It helps to assess correctness of numerical data. The following values are presented:

* coordinates of start and end points of a curve;
* data points number of a curve;
* range of Y-values of a curve;
* minimum and maximum Y-values and their position on a curve.

If any point of a curve looks suspicious, click on it and check corresponding numerical value.

In the DataTable mode use the **Chart** button on the **Data** panel for numerical data graphic presentation (Fig. 12).

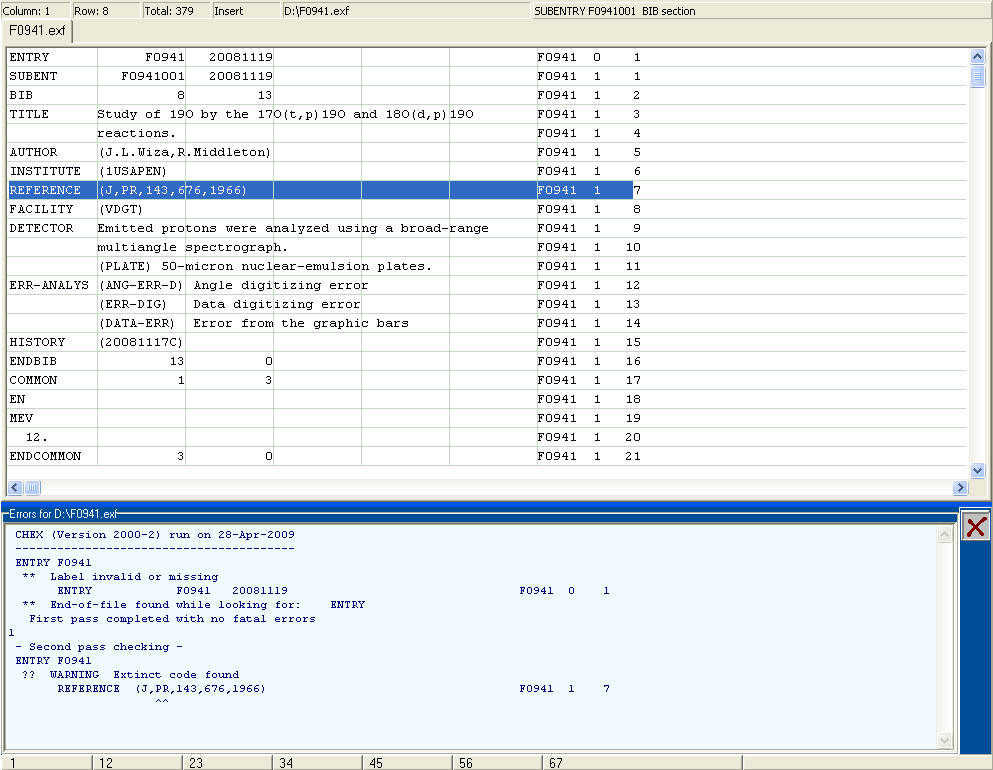
ENTRY Checking According to the EXFOR Format Rules

* + - 1. Spell-Checking

To check spelling of ENTRY text information use the **Spell Check** button on the tool panel or the **Processing/ Spell Check** menu item in the main window (Fig. 2). Spell-checking is carried out automatically with the help of the Microsoft WORD instruments. Correct errors in a special dialog window using proposed alternatives.

* + - 1. Checking with the Help of ZChex Program

To control the ENTRY according to the EXFOR format rules with the help of the ZChex program (developed by V.Zerkin, NDS, IAEA) use the **Check** button on the tool panel or the **Processing/Check** menu item in the main window (Fig. 2). Look through the results shown in the lower panel of the main window and make necessary corrections (Fig. 21). Clicking on the row containing an error description on the panel with checking results highlights the wrong line.



**Figure 21** – Panel for checking results output

* + - 1. Checking with the Help of Trans Checker Program

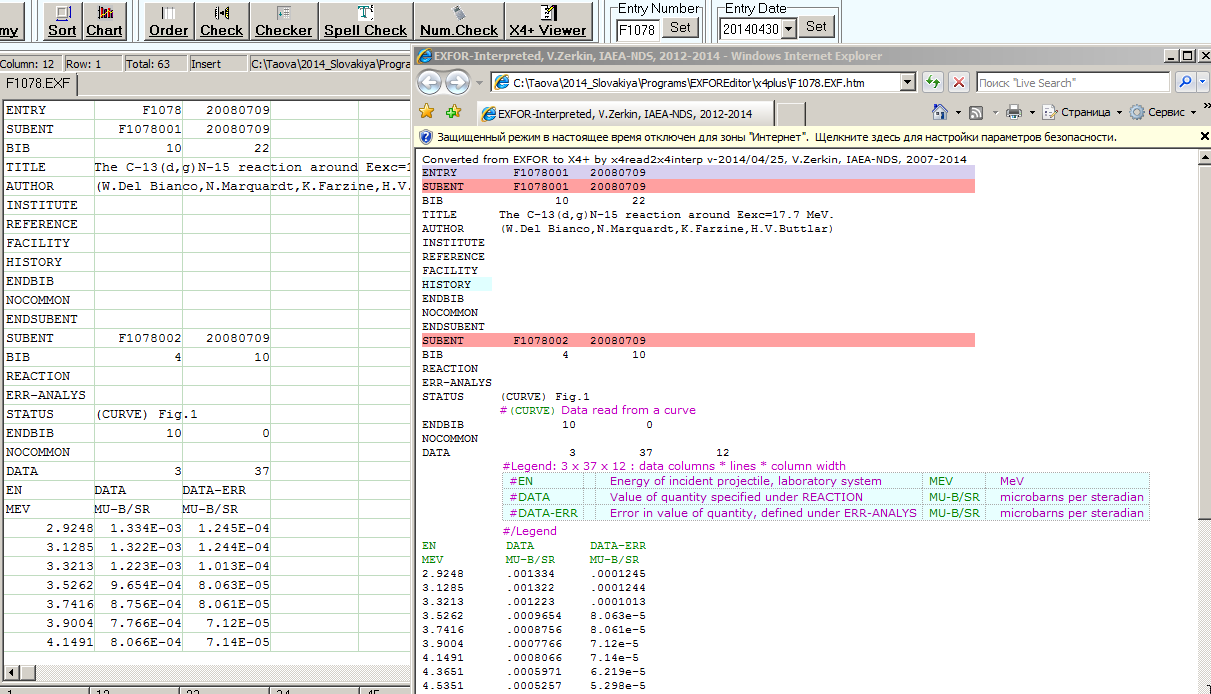
To control the ENTRY according to the EXFOR format rules with the help of the Trans Checker program (developed by N.Soppera, NEA Data Bank) use the **Checker** button on the tool panel or the **Processing/Checker** menu item in the main window (Fig. 2). The results are shown in the table on the lower panel of the main window. Clicking on the row containing an error or warning description on the panel with checking results highlights the wrong line.

If the modes CHEX and CHECKER process the Entry without errors, this Entry is ready to be included in a TRANS.

* + - 1. Conversion of ENTRY into EXFOR+ Format

Use X4+ Converter Code (developed by V.Zerkin, NDS, IAEA) as an additional tool for ENTRY validation. Use the **X4+Viewer** button on the tool panel or the **Processing/X4+Viewer** menu item in the main window (Fig. 2). The EXFOR+ format is an advanced version of the EXFOR format with interpretation of the used Code words and convenient presentation of numerical data.

An example of the converted ENTRY into the EXFOR+ format is shown on Figure 22.

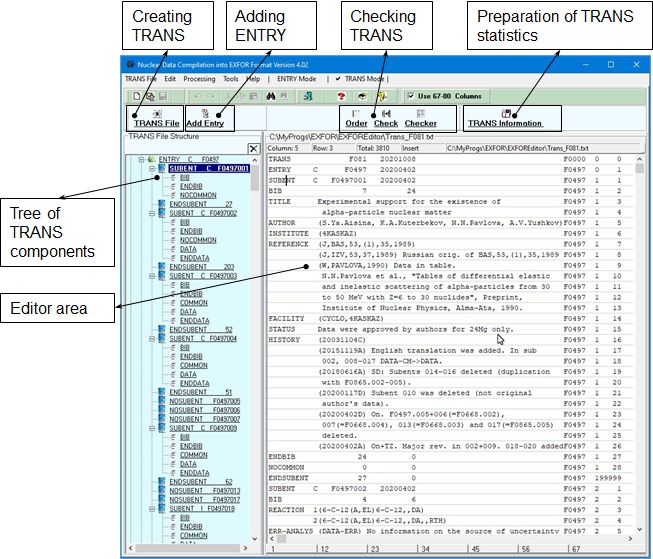


**Figure 22** − Conversion of the ENTRY into the EXFOR+ format file

The results of conversion are presented in the active HTM-browser. The protected mode of the browser should be switched off to present EXFOR+ files in a full view.

ExfData Main Window in TRANS Mode

The ExfData main window in the TRANS mode is shown on Figure 23. The window has the same structure as the one in the ENTRY mode.



**Figure 23** − ExfData main window in the TRANS mode

Creation of TRANS

To create a new TRANS use the **TRANS File** button on the tool panel or the **TRANS File/New TRANS File** menu item. In the **New TRANS** window (Fig. 24) input a new file name in the **Exchange File Name** field: select PRELIM or TRANS file type and input the centre-identification character and a three-digit number (padded with zeroes) as a filename extension. The **Selected Entries** group box initially contains a list of Entries opened in the ENTRY mode. Select by flags ENTRY files for a new TRANS. Use the **Add Entries** button to include additional Entries into the list. Then select necessary Entries saved on a hard disk in the **Select Entries for TRANS** window.

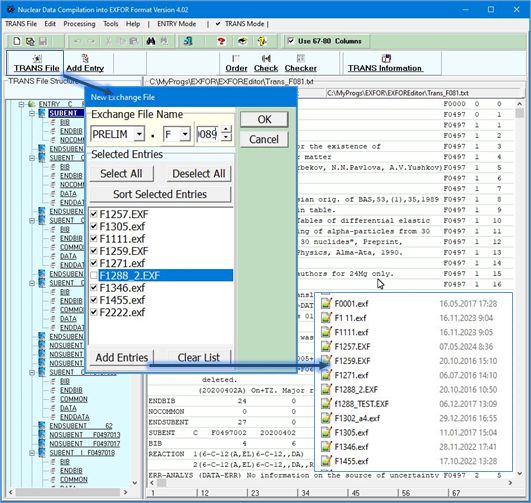


Figure 24 – Creation of a new TRANS

Editing of TRANS

The central part of the main window in the TRANS mode (Fig. 23) contains the editor area divided into columns for convenient data entering into the required EXFOR format positions. At the bottom of the editor area there is a special rule with reference column numbers for data entering and a current cursor position. The TRANS editor has all standard functions of editors operating under Microsoft Windows (opening, closing, saving, clipboard coping and pasting, searching and replacing strings, etc.). Only one TRANS can be processed at one moment.

To the left of the editor area, there is a panel with a component tree structure of an opened TRANS. This simplifies the TRANS navigation.

Use the **Add Entry** button on the tool panel or the **TRANS File/Add Entry** menu item of the main window (Fig. 23) to insert additional Entries into the exchange file. Select the necessary ENTRY files and set the input mode in the **Select Entries for TRANS** window. The selected Entries can be added to the end of the TRANS or placed at the cursor position.

TRANS Preparation for the EXFOR Database

Data ordering provides the creation of the TRANS file in its final form according to the EXFOR rules. At this stage the service information containing a number of lines in the appropriate sections and Entries and continuous numbering of all lines in the TRANS are added. Use the **Order** button on the tool panel or the **Processing/Order** menu item in the main window (Fig. 23).

To check the TRANS according to the EXFOR format rules with the help of the ZChex program (developed by V.Zerkin, NDS, IAEA) use the **Check** button on the tool panel or the **Processing/Check** menu item in the main window.

To check the TRANS according to the EXFOR format rules with the help of the Trans Checker program (developed by N.Soppera, NEA Data Bank) use the **Checker** button on the tool panel or the **Processing/Checker** menu item in the main window. The results are shown in the table on the lower panel of the main window.

If the modes CHEX and CHECKER process the TRANS without errors this TRANS is ready for the transfer.

Use the **TRANS Information** button to prepare statistics information about current exchange file for saving into the internal database or for exporting into a text file.

InpGraph User Guide

Functional Capabilities of the InpGraph Digitizer

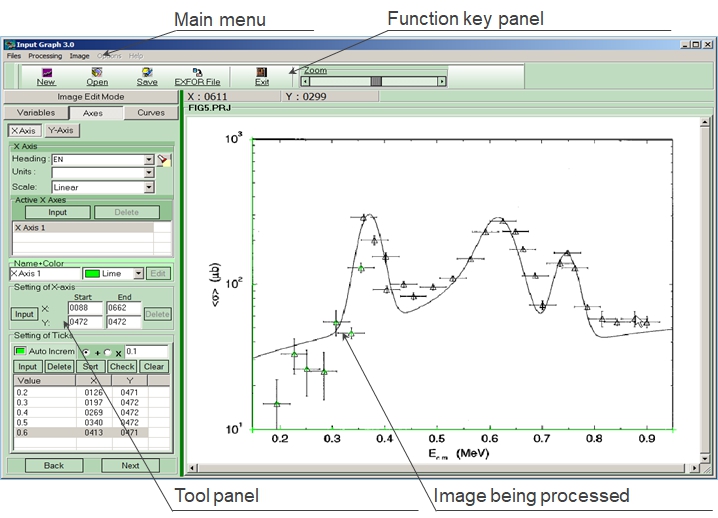
The main function of the InpGraph program is to get numerical data in the EXFOR format presented in the form of plots in the references.

The InpGraph program has the following possibilities:

* processing of images imported from different sources: from files of different graphic format (BMP, JPEG, JPG and etc.), from clipboard and through capturing the selected screen area;
* input of the service information according to the EXFOR rules using the included EXFOR dictionaries;
* applying of special mathematic treatment of digitized data to convert curve coordinates from the image coordinate scale to the experiment coordinate scale. This feature allowed digitizing plots of poor quality;
* calculation of digitizing errors of two types: the systematical error of digitization and the quantization error as a result of an image discretization;
* setting of axes parameters;
* using of “magnifier” for curve digitization;
* processing of curve points with unsymmetric errors;
* interruption and resumption of digitizing at any stage;
* editing of digitized data.

InpGraph Main Window

The InpGraph main window is presented on Figure 25.



**Figure 25** − InpGraph main window

The InpGraph main window includes the following components:

* the program main menu;
* the panel of function keys that duplicate the more popular items of the main menu;
* the panel of image being processed;
* the tool panel, the context of which depends on the digitizing stage.

The tool panel is a set of pages with the following tabs:

**- Image Edit Mode** for preliminarily processing of an image via rotation or removing skews;

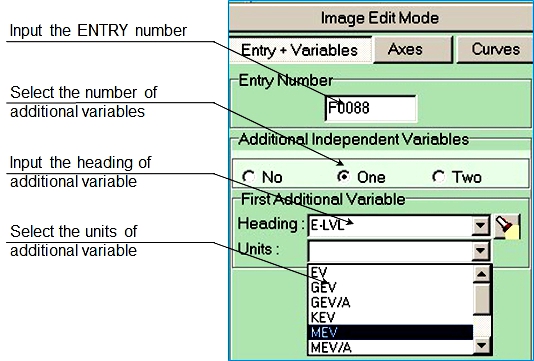
* **Variables** for input information about the additional independent variables using the EXFOR dictionaries;
* **Axes** for setting parameters of axes and their digitizing;
* **Curves** for digitizing of curves.

Use the **Next** and **Back** buttons at the bottom of the tool panel or a corresponding tab to select a page.

Digitizing with the help of InpGraph

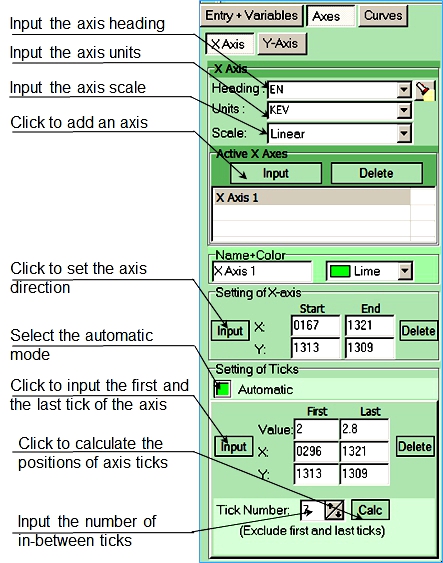
STEP 1 − Uploading of an image and its preliminarily processing via rotation or removing skews.

STEP 2 – Input of headings and units of additional independent variables (Fig.26).



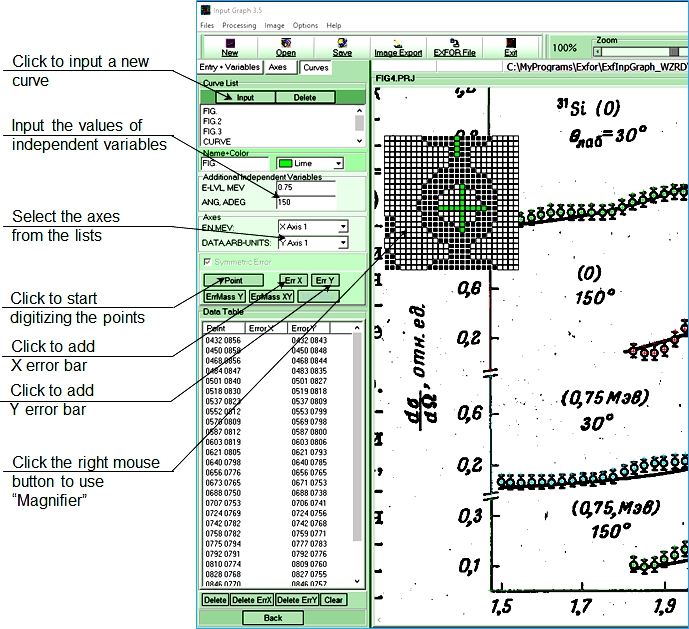
**Figure 26** − Input of headings and units of additional independent variables

STEP 3 − Input the headings and units of the axes, their directions, scales and ticks (Fig. 27). The number of X- and Y-axes is not limited. The axes ticks can be set manually or in an automated mode. Checking of axes linearity and accuracy of their setting is performed during the input stage.



**Figure 27** − Setting of axes parameters

STEP 4 – Digitize the curves themselves (Fig. 28). X-error bars and Y-error bars of points can be added. The input of points with symmetric and unsymmetric error bars along both axes is provided. Possible number of curves on the plot is also unlimited. For digitization convenience and precision enhancement use a “magnifier” with the fixed factor.



**Figure 28** – Curve digitizing

Table 4 contains the list of buttons used for curve digitizing and their functions.

**Table 4** – Function of buttons used for digitizing

| **Button** | **Function** |
| --- | --- |
| ***Input mode for points with symmetric errors*** | |
|  | Input of curve points. Click again to cancel the mode. |
|  | Input of X error bar. Mode is canceled automatically after entering. |
|  | Input of Y error bar. Mode is canceled automatically after entering. |
|  | Input of array of points with Y error bars. After entering a point Y error bar should be entered next. Click again to cancel the mode. |
|  | Input of array of points with X error and Y error bars. After entering a point X error bar and then Y error bar should be entered on the spot. Click again to cancel the mode. |
|  | Input of array of points including minimal and maximal error values on Y-axis. Click again to cancel the mode. |
|  | Deletion of the selected point with its error bars. |
|  | Deletion of X error bar only. |
|  | Deletion of Y error bar only. |
|  | Deletion of all points and error bars of the curve. |
| ***Input mode for points with unsymmetric errors*** | |
|  | Input of curve points. Click again to cancel the mode. |
|  | Input of X error bar. First the minimal value is entered and then the maximal one. Mode is canceled automatically after entering. |
|  | Input of Y error bar. First the minimal value is entered and then the maximal one. Mode is canceled automatically after entering. |
|  | Input of array of points with Y error bars. After entering a point the Y error bar is entered on the spot: first - minimal value, then maximal value. Click again to cancel the mode. |
|  | Input of array of points with X and Y error bars. After entering a point the X and Y error bars are entered on the spot: first - minimal and maximal values of X error bar then minimal and maximal values of Y error bar. Click again to cancel the mode. |

STEP 5 − Compile the digitized data into the EXFOR format file (ENTRY). The results of compilation are displayed in a special dialogue window (Fig. 29).

The program InpGraph identifies two types of digitizing errors: systematic error and quantization error. The systematic digitizing error is calculated as a mean-square (standard) deviation of the ticks introduced along X- and Y- axes in the coordinate system of graphic representation. The quantization error is calculated as a half of an image pixel size expressed in physical coordinates. For original image of poor quality the quantization error can be essentially higher than the systematic digitizing error. In this case it should not be ignored.

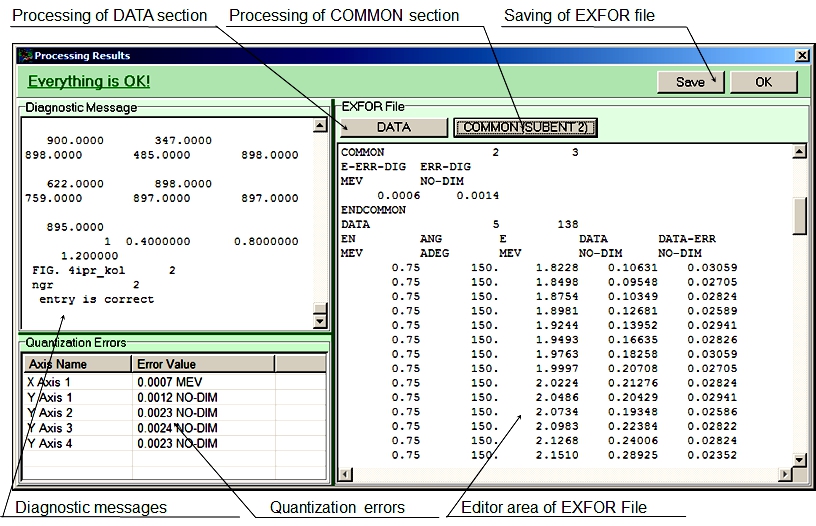


Figure 29– Digitizing results

The result window (Fig. 29) provides the DataTable mode use to process the digitized numerical data. Manual of the DataTable mode is presented in 4.1.3.5. The processing of COMMON section is also provided (See 4.1.3.4).