Validation of a Format of Data Input to the EXFOR Data Library by

EXFOR-Editor

Guide for EXFOR Compilers

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EXFOR-Editor includes a lot of functions to check input format for the EXFOR library. The aim of this report is to summarize all possibilities in the form of a guide for compilers.

The control of data input in the EXFOR-Editor includes the following procedures:
– **Control of numerical data input:**
  - ✓ data validation;
  - ✓ precision assignment of numerical data;
– **Verification of numerical data:**
  - ✓ Control of equal values of numerical data along abscissa;
  - ✓ Graphic presentation of numerical data;
– **Common checking procedures of EXFOR data format input:**
  - ✓ Spell-checking;
  - ✓ ZChex checking;
  - ✓ TRANS Checker checking.
  - ✓

1. Control of numerical data input in the mode of DATA TABLE

1.1. Numerical Data Validation

When importing numerical data or opening ready DATA Section in the mode DATA TABLE the automatic validation is provided. According to the column type the following check is performed:
  - – *number format check;*
  - – *angle range check ($0°..180°$);*
  - – *energy range check (> 0).*
    Additional validation of every data column is provided in the mode DATA TABLE.

1. Press button CHECK in the window DATA TABLE to define additional criteria for validation of every data column.
2. Select the necessary checking options for every data column (Fig.1):
    - – Set Absolute Value Option if column values cannot be equal to 0;
    - – Set Minimum Check Option if column values should be more then the defined Minimum Value;
    - – Set Include Minimum if Minimum Value is included in the valid range.
    The same options are provided for Maximum Value.
3. Press CHECK button in the dialog window "Options for DATA Testing" (Fig.1).
4. Make the necessary corrections in wrong numerical values according to Warning Information (Fig.2).

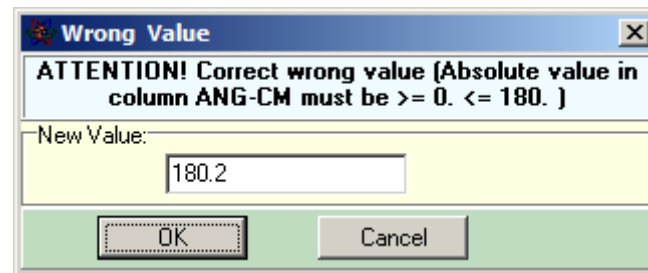*Fig. 1 – Options for data validation.*

Fig. 2 – Results of Numerical Data Validation

1.2. Precision Assignment of Numerical Data

The initial precision of numerical data is used when editing data in DATA TABLE window. Author's precision options are kept for procedures of data paste and data import.

The correction of numeric data precision is provided in the mode DATA TABLE. The following parameters for precision settings may be set (Fig.3):
- *field NUMBER OF DIGITS AFTER DECIMAL POINT and the flag ERASE TRAILING ZERO define fixed point format. An example is given below.*
- *fields ABSOLUTE VALUE > and ABSOLUTE VALUE < define the range of scientific format.*
- *field TOTAL NUMBER OF DIGITS BEFORE EXPONENT (including the one before the decimal point) and the flag ERASE TRAILING ZERO define the scientific format. An example is given below.*

1. Set precision <u>for each data column</u> with the help of SET PRECISION button on the panel COLUMN (Fig.3). The result of format modification can be seen in DATA TABLE window.

2. Set precision for <u>the whole Data Table</u> with the help of PRECISION FOR TABLE button (Fig.3). Current data precision is given for each column of Data Table.

3. Press SAVE on the panel DEFAULT VALUES to preserve the settings further usage (Fig.3).

4. Use the button LOAD to restore previous settings saved as default.

5. Press OK to apply current settings for Data Table. The results can be seen in DATA TABLE window.

Caution: when changing the numerical data format - decreasing number of digits after decimal point can lead to equal values of numerical data along abscissa. It looks suspicious; explanation is needed in this case.

Fig. 3 − Precision assignments of numerical data

2. Verification of Numerical Data

2.1. Control of Equal Values of Numerical Data along Abscissa

To avoid duplication of numerical data along abscissa a special mode DIGIT CHECK is provided.

1. Click DIGIT CHECK on the upper part of the main window.
2. The following parameters should be determined for checking procedure (Fig.4):
   - select Subentry;
   - select table columns for equal abscissa checking;
   - set corresponding flag if the column with a flag for marking equal abscissa values is necessary;
   - click CHECK to start checking. The results of such checking are presented in figure 5.
3. Make necessary corrections.

4. Click SAVE to save changes in the current ENTRY, click SAVE FLAG to save the column FLAG as well.
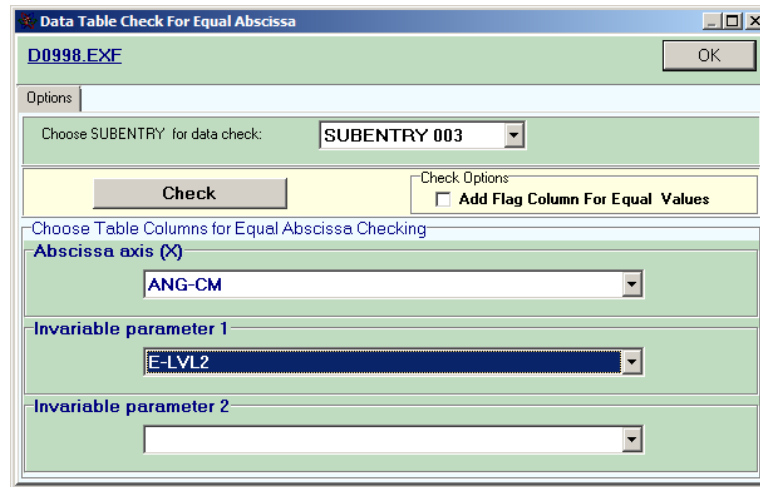

Fig. 4 – Checking of abscissa values

Fig. 5 – Checking results of abscissa values

2.2   Control of Numerical Values with the Help of Charts

Use the mode CHART for additional control of numerical data. Data presentation from different Subentries on one plot is available.

1. Click CHART on upper part of the main window.
2. Click ADD CURVES to select information for plotting in the dialog window DATA PLOTTING (Fig.6).
3. The following parameters should be defined for graphic presentation of numerical data:
    − select Subentry;
    − select columns of independent variables (if present);
    − select columns for X and Y axis;
    − select columns for X and Y axis errors and type of these errors (if present);
    The result is presented in figure 6.
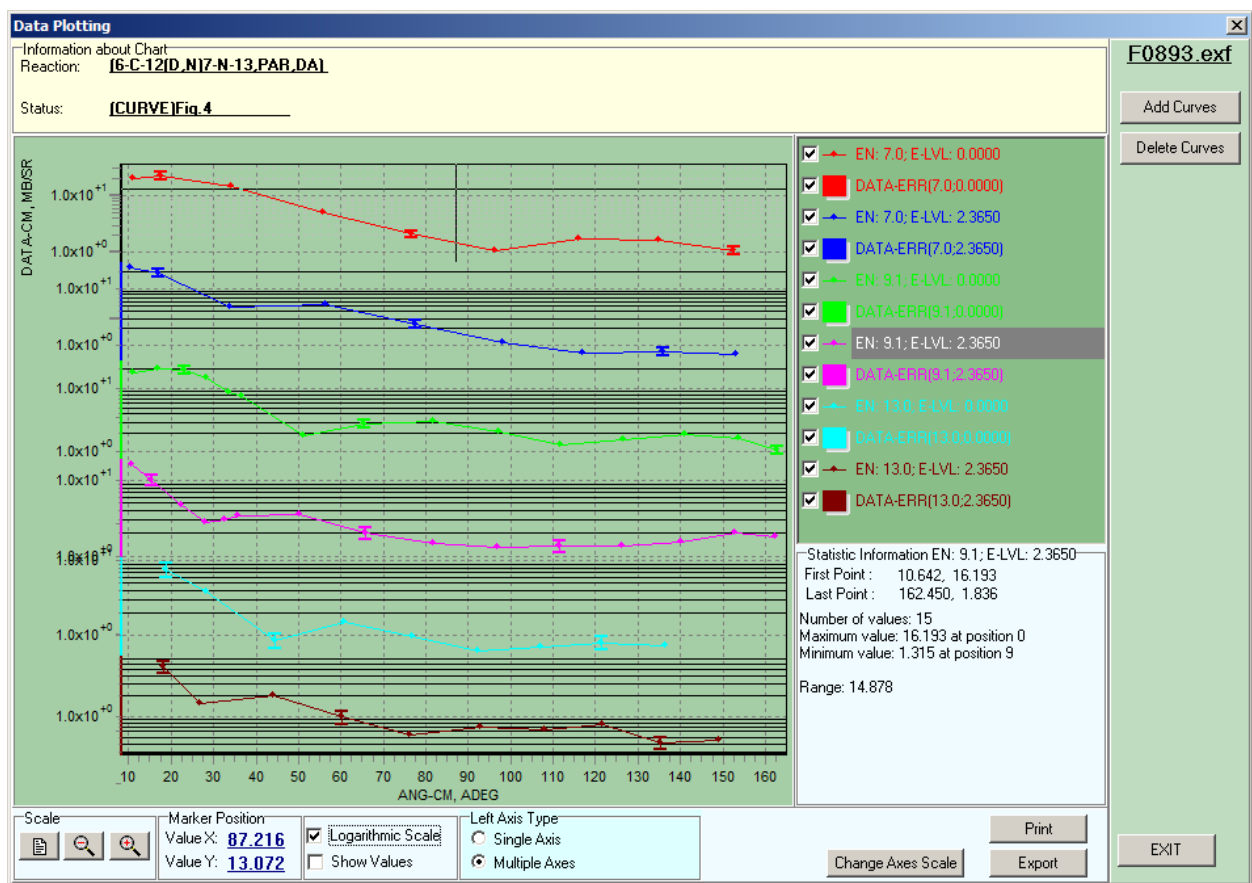
Fig. 6 – Graphic presentation of numerical data

4. Try to make a chart more approximate to a source image:
    − select linear or logarithmic scale;
    − select maximum, minimum, labels of axes;
    − assign own Y-axis for every curve if necessary.
5. Pay attention to presented statistic information (Fig.6). It helps assessing correctness of numerical data. The following values are presented:
    − coordinates marking start and end point of curve;

‒ number of data points;
‒ range of Y-values;
‒ minimum and maximum Y-values and their numbers.

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

3. Common Checking Procedures of EXFOR Data Format Input

3.1. Spell-checking

Check spelling of BIB-section information in the mode SPELL CHECK.

1. Click the button SPELL CHECK on the upper panel of the main window.
2. Correct errors in a special dialog window using proposed alternatives.

3.2. ZChex

Check EXFOR Entry with the help of ZChex program developed by V.Zerkin.

1. Click the button CHECK on the upper panel of the main window.
2. Look through the results shown in the lower panel of the main window and make necessary corrections.

Double clicking on the row containing an error description in the window with checking results will highlight the wrong line. (Such possibility is available after processing of a file with the ORDER program)

3.3. TRANS Checker

Check EXFOR Entry with the help of TRANS Checker program developed by N. Soppera.

1. Click the button CHECKER on the upper panel of the main window.
2. Look through the results shown in the lower panel of the main window and make necessary corrections.

Double clicking on the row containing an error description in the window with checking results will highlight the wrong line.

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