Curve Tracer

User Manual

Information

Software: Matlab 2023

File name: CurveTracer.mlapp

Description

The ‘Curve Tracer’ application was developed to get the values of the plot curves in image format. The application is generic enough that can be applied to other generic cases. It can handle images of 2D subjects with linear or log scales.

Graphic User Interface

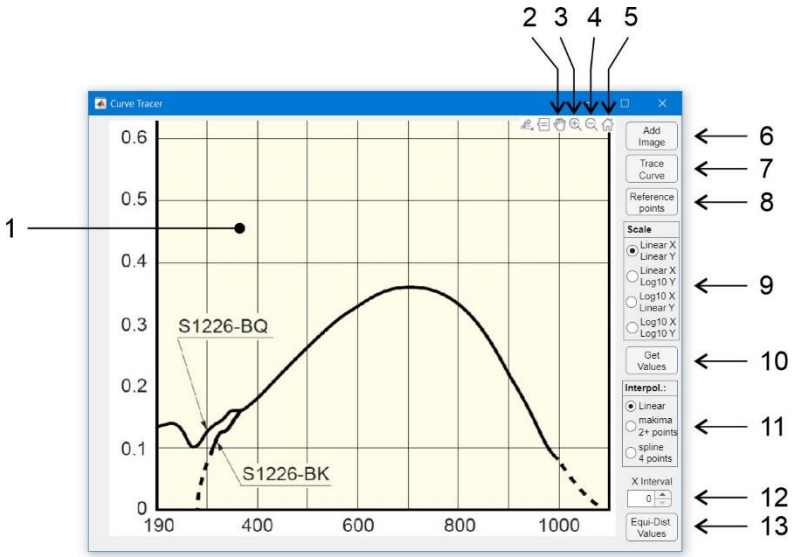

Figure 1: Application graphic user interface. 1 – image; 2 – pan; 3 – zoom in; 4 – zoom out; 5 – fit image to the area; 6 – button to add an image; 7 – button to start trace curve; 8 – button to add a reference point; 9 – axes scale; 10 – get coordinates of the trace curve points; 11 – the type of interpolation; 12 – interpolation points separation in X axis; 13 – determine equidistant (interpolation) values.

How to use the application

Start by adding an image (Figure 1, indicator 6) in the format JPEG. A new image can be added at any instance. By adding a new image, all data is removed.

Press the button ‘Trace Curve’ (figure 1, indicator 7) to add a curve formed by a sequence of points. Each new curve point is added by pressing the left mouse button over the image. The curve added is in blue. There is no limit on points used. To stop adding new points, press the

right mouse button. Afterwards, at any instant of the process, each point of the curve can be adjusted by pressing and dragging it with the mouse. To eliminate or add extra points, use right-click over a point or the curve. A new curve can be added at any point in the process. By adding a new curve, the previous one is eliminated.

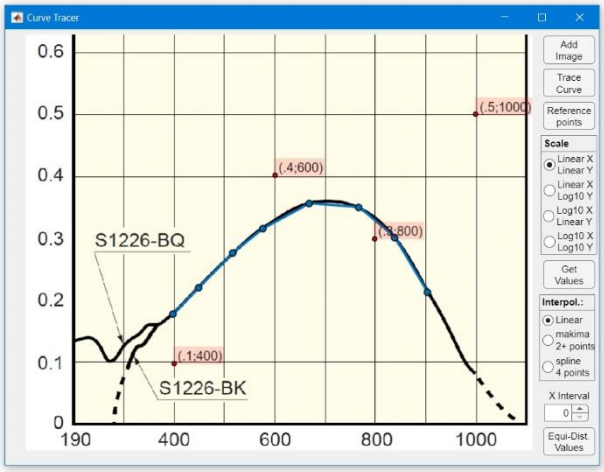

Figure 2: Example of use.

Reference points can be added by pressing the button 'Reference e points' (figure 1, indicator 8). Each button click adds one point. Reference points added are in red. There is no limit to the number of points added. After adding a point to the image, a new interface shows up to input X and Y values. A label with X and Y values is added automatically by the side of the reference point. Internal computing uses X and Y values independently. Reference points with repeated values of X or Y can be added. Eliminating a point can be done by right-clicking on it.

By having the mouse over the image, a rectangle shows up over the image at the top right corner. Buttons zoom in (figure 1, indicator 3), zoom out (figure 1, indicator 4) and pan (figure 1, indicator 2) can be used to fine-adjust of points' position. The button home (figure 1, indicator 5) is used to fit the image to the axes. These tools can be used at any instance of the process.

The scale type of the image can be chosen (figure 1, indicator 9). Available are the options for linear and log axes scales. By pressing the button 'Get Values' (figure 1, indicator 10), a new interface is shown with a table with all the values corresponding to the points used in the trace curve. Values are not updated automatically. If the trace curve or reference points are changed, it is necessary to press again the button to get the values. Values can be saved or selected and copied for an Excel sheet or origin.

If even space values are desired, interpolated values can be generated. Three different methods are available for interpolation (figure 1, indicator 11). A step for the X axes is introduced (figure 1, indicator 12). By pressing the button 'EquiDist. Values', the table is updated with the new interpolated values.

Notes

Images of graphics with log axes typically have poor accuracy. This is particularly true for images of old detectors. Better accuracy is obtained by using only the values of 1 and 2 for all magnitudes.