

KB1V

Field Precision

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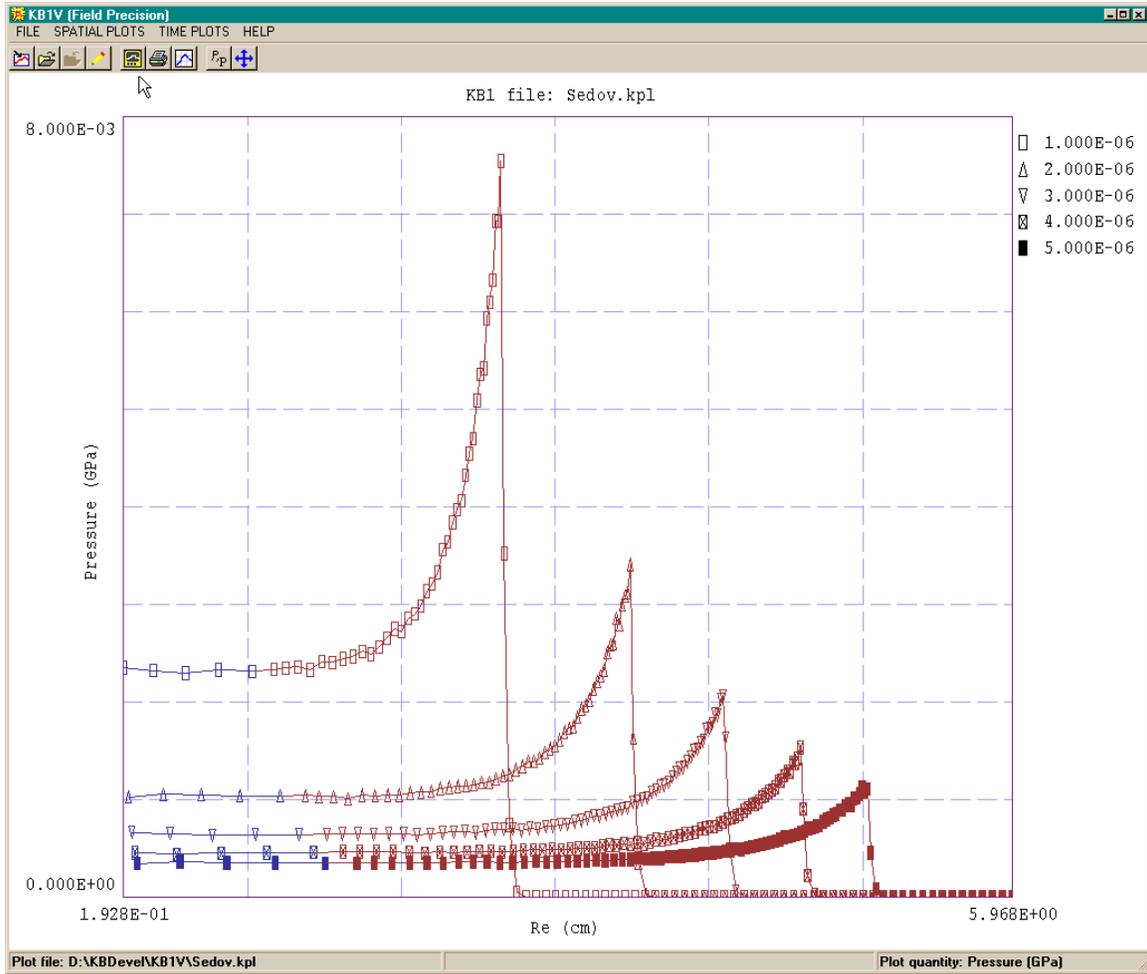


Figure 1. KB1V screen shot - spatial plot

Introduction

KB1V is an analysis program for output from **KB1** (one-dimensional hydrodynamic solutions). **KB1V** makes screen and hardcopy plots of data stored in the binary **KB1** plot files (`FPrefix.KPL`). The program creates plots in linear or log format with automatic scaling and grids. **KB1V** features a digital oscilloscope mode for active inspection of data. Quantitative information from an analysis session can be recorded in a data file. You can run `KB1V.EXE` directly or from the **KB** program launcher.

File menu

Figure 1 shows the **KB1V** screen display. The program window has pull-down menus and a toolbar at the top and a status bar at the bottom. When the program starts only the *File* and *Help* menus are active. The plotting functions become active after a data file is loaded. The *File* menu contains the following commands:

Load plot file

This command displays a dialog to load a plot file (FPrefix.KPL) into the program. You can change the current working directory from within the dialog. Only one file can be loaded at a time. The plot file contains information on hydrodynamic quantities in all elements at times specified by the **KB1** *NDiag*, *MakeDiag* and *DTime* commands. The *Spatial plot* and *Time plot* menus become active after the file is loaded.

Open listing file

When a listing file is opened **KB1V** records the values used to create plots. The program also records point data in the oscilloscope mode. The resulting ASCII file can be edited or imported into a spreadsheet.

Close data file

This command terminates file listings and closes the current data file. Be sure to close a data file before you attempt to *Edit* it or use it in another program.

Edit file

This command brings up a dialog to pick a file, and then opens it in a full-featured Windows ASCII editor. Changing directories in the dialog does not change the working directory of the program.

Spatial plot menu

Spatial plots show the spatial distribution of a chosen hydrodynamic quantity over all elements (*i.e.*, a **KB1** data dump). As shown in Fig. 1, information from multiple data dumps can be superimposed. Each curve has optional plot symbols that designate the dump and show the center-of-mass locations of the elements. The time corresponding to each plot is shown in the legend on the right. Lines and plot symbols are color-coded by either the region number or material number of the corresponding element.

Screen plot

This command initiates a spatial plot or refreshes the screen.

Hardcopy plot

Redirects the current screen plot to the Windows **Default** printer. If you have multiple printers, be sure to set the desired device as the default using *Settings/Printers* before initiating the plot.

Plot file (EPS)

Redirects the current screen plot to a plot file in Encapsulated PostScript format in the current directory. The program prompts for a file prefix and creates a file with a name of the form `FPrefix.EPS`.

Plot file (WMF)

Redirects the current screen plot to a plot file in Windows MetaFile format in the current directory. The program prompts for a file prefix and creates a file with a name of the form `FPrefix.WMF`.

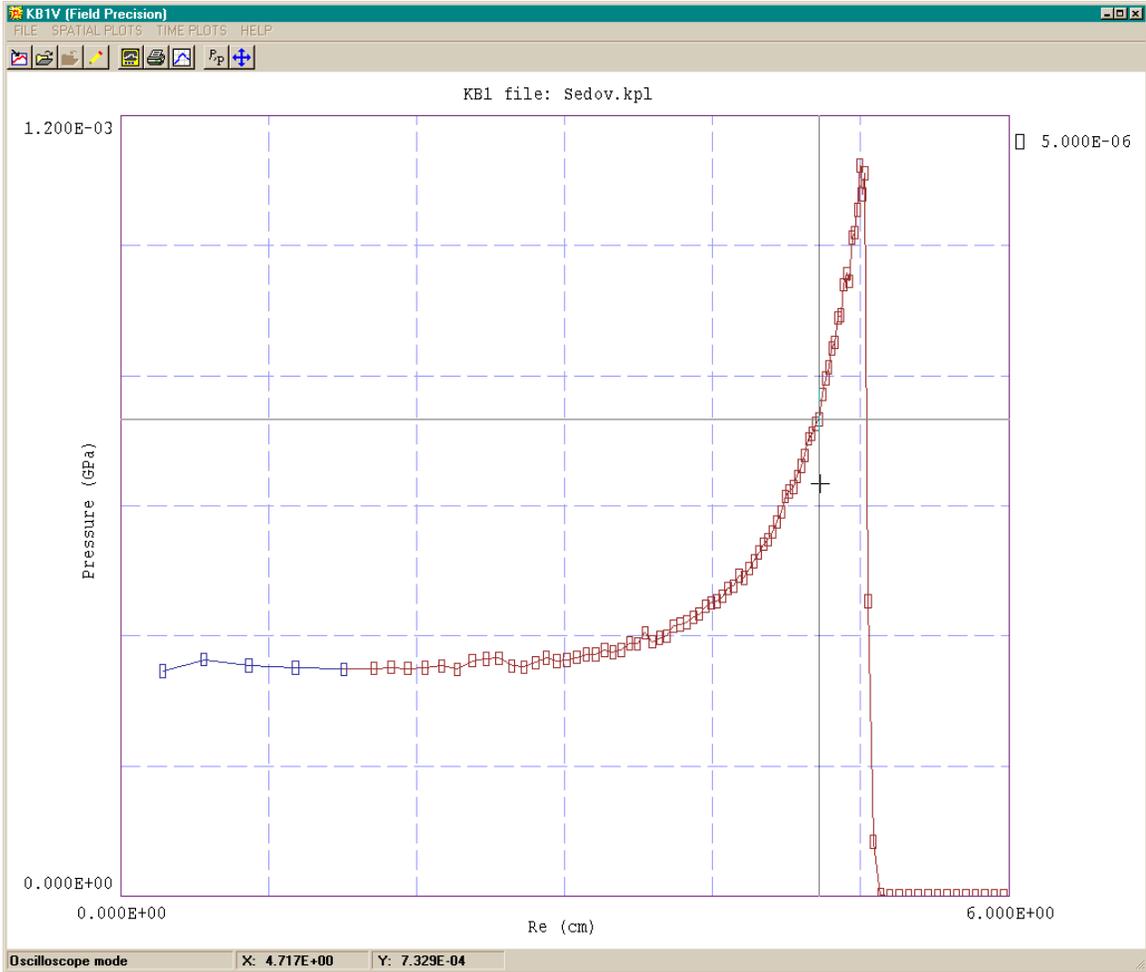


Figure 2. Operation in the oscilloscope mode

Oscilloscope

This command is active when a screen plot has been displayed. In the oscilloscope mode (Fig. 2), the program displays a cross-hair pattern that you can drag with the mouse. The x and y coordinates of the current point are displayed in the status bar. If a listing file is open, press the left mouse button to record a point in the file. All other menu functions are deactivated in the oscilloscope mode. Press the right mouse button or *ESC* key to return to normal program operation. Note that when multiple plots are displayed on the screen, the oscilloscope function uses the last plot drawn.

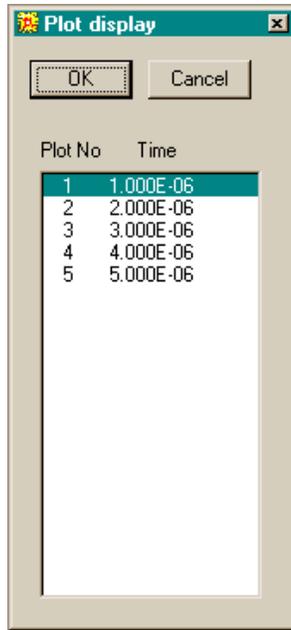


Figure 3

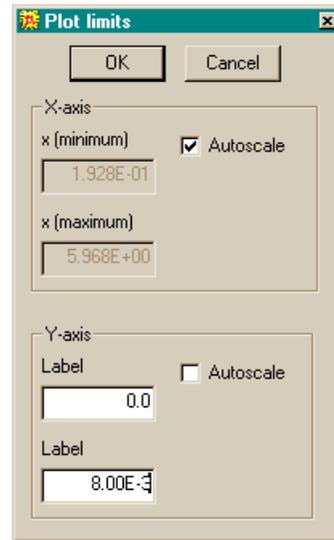


Figure 4

Set included plots

The program displays a dialog (Fig. 3) that lists the times of all data dumps recorded in the KPL file. Use the left mouse button to highlight any number of dumps to plot. Resetting the highlight removes the associated plot.

Set plot quantity

Choose the hydrodynamic quantity to be plotted. Note that a choice of the quantity element position (r_c) in a spatial plot produces a straight line with unity slope. The quantity is included for *Time plots*.

Set plot limits

Displays a dialog (Fig. 4) to set the horizontal or vertical plot limits manually or to restore autoscaling. In the autoscaling mode, the program searches all plotted data dumps to find limits so that the display fills the screen and all data points are included. If you change the plotted quantity, it may be necessary to restore autoscaling to make the plot visible on the screen.

Set LOG/LIN

KB1V can display quantities on the horizontal or vertical axis in linear or log format. Note that negative values are omitted from log plots.

Set MAT/REG

In spatial plots the symbols are color-coded according to the identity of the element. This feature makes it easy to see the behavior of material boundaries. The color can be assigned according to the material or region number of the element.

Toggle symbols

Turn plotting symbols on or off. The symbol shape denotes the data dump in multiple plots. The symbol color corresponds to either the region or material number.

Toggle grid

Turn plot grid lines on or off. The line spacings are automatically set to easily recognized intervals along linear axes (*i.e.*, 0.002, 0.005, 0.010, ...).

Plot file information

Displays information about the plot file (*i.e.*, number of elements per plot, number of plots,...).

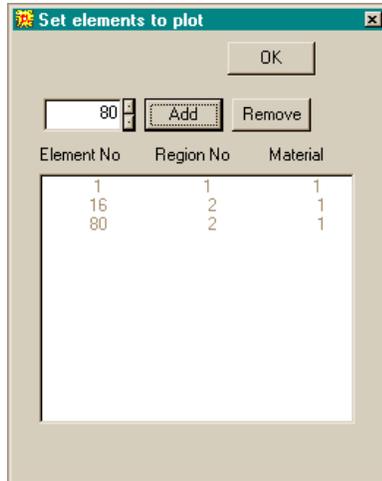


Figure 5

Time plot menu

If a plot file contains a large number of data dumps, you can create useful plots of hydrodynamic quantities as a function of time for any elements. With one exception, the commands serve the same functions as those in the *Spatial plot* menu.

Set included elements

The program displays a dialog (Fig. 5) where you can add or subtract elements (identified by index number) from the plots. Set the target element number using the spinner at the top left and then click a button to add or remove the element from the list. The listing box shows the material number and region number of displayed elements.

Help menu

KB1V manual

Displays a text version of this manual. The file KB1V .HTM must be in the same directory as KB1V .EXE.

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