File SFTOC.DOC contains the following bookmarks. Select the topic you are trying to find from the list and double click the highlighted text.

Quick links to other files:

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Poisson Superfish

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Poisson Superfish

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Copyright and disclaimer

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I. How To Use This Document

This section provides some tips on navigating this documentation when viewing it on-line and on printing either the entire document or sections of it.

This document was produced using Microsoft Word, Version 7.0 (Word 95) and the Internet Assistant for Microsoft Word. You can read and print it with Word 6, Word 7, Word 97, Word 2000, and Microsoft Word Viewer. There are several ways to move from place to place without scrolling through entire files. Some navigation features will be unavailable unless you use Microsoft Word. This chapter contains some recommended settings and procedures.

We have attempted at times to convert the documentation to more recent versions of Microsoft Word (Word 97, Word 2000). These attempts have been unsuccessful, so the DOC files remain in the older format. Users of Word 97 or Word 2000 may experience problems with pictures and equations in the document. If this is a problem, try using Word Viewer. We have also attempted to create Adobe PDF files, but have found that some fonts used in equations do not translate properly to PDF files.

A. Getting started

We realize that reading through several hundred pages of documentation can be a formidable task. We hope to make this document as comprehensive a reference as possible, but this in turn leads to a rather long work.

A good way to learn about the Poisson Superfish codes is to read the brief summary of the codes in section II.G. (in file SFINTO.DOC) and then run the sample problems described near the end of this documentation in the file SFEXMPL1.DOC.

If you are switching from the UNIX (or VAX) version of Poisson Superfish, the Automesh program should read your input files with little or no modification. A few variables from the UNIX version are no longer used in this version of the codes. Automesh will give you warning or error messages as appropriate with suggestions on how to modify your input file. Automesh recognizes either the ampersand (&) or the dollar sign ($) as the namelist delimiter. The first REG namelist contains all problems variables for the rf and static field solvers.

It is helpful to have a list of the problem variables handy in printed form. For quick reference, print the Poisson variables table and the Superfish variables tables found in file SFINTRO.DOC.

B. List of the documentation files

Different parts of the Poisson Superfish documentation can be found in the following Microsoft Word files in the LANL\Docs directory.

SFTOC.DOC	This file, containing the table of contents and suggestions for viewing and printing.

SFINTRO.DOC	General information about the software installation, features in the codes, references, history, SF.INI configuration, and technical support.
SFFILES.DOC	Brief descriptions of all the input and output files used in the Poisson Superfish codes.
SFCODES.DOC	Information about the main programs Autofish, Automesh, Fish, CFish, Poisson, and Pandira.
SFPOSTP.DOC	Information about the postprocessor programs WSFplot, SFO, SF7, and Force.
SFCODES2.DOC	The automated tuning programs CCLfish, CDTfish, DTLfish, MDTfish, ELLfish, and RFQfish.
SFCODES3.DOC	General purpose plotting programs Quikplot and Tablplot, and utility programs Beta, Kilpat, List35, ConvertF, SF8, FScale, SegField, and SFOtable.
SFEXMPL1.DOC	Discussion of rf-field example files for Fish, CFish, and Autofish contained in the Examples\RadioFrequency subdirectories.
SFEXMPL2.DOC	Discussion of the static-field example files for Poisson and Pandira contained in the Examples\Magnetostatic and Examples\Electrostatic subdirectories.
SFEXMPL3.DOC	Discussion of the tuning-program example files contained in the Examples\CavityTuning subdirectories.
SFPHYS1.DOC	Theory of electrostatics and magnetostatics from John Warren’s treatment in the 1987 Reference Manual
SFPHYS2.DOC	Properties of static magnetic and electric fields from John Warren’s treatment in the 1987 Reference Manual
SFPHYS3.DOC	Boundary conditions and symmetries from John Warren’s treatment in the 1987 Reference Manual
SFPHYS4.DOC	Numerical methods in Poisson and Pandira from John Warren’s treatment in the 1987 Reference Manual
SFPHYS5.DOC	RF cavity theory from John Warren’s treatment in the 1987 Reference Manual

C. Suggestions for viewing the documentation

For viewing on your computer screen, we recommend using Normal view with the window maximized to fill the screen. Using Normal view (rather than Page Layout view) speeds up most operations in a large document. This is not a recommendation to use the Full Screen setting in the View menu since you will most likely want the use of the scroll bars. To switch to Normal View, check Normal in the View menu or click the leftmost button next to the bottom scroll bar.

Use the Zoom command in the View menu to make the text comfortable to read on your monitor. In Word, you also can use the Percent box on the Standard toolbar. Type a number between 10 and 200 in the Percent box to choose a size other than the standard selections. Using the Wrap to Window setting described below in combination with a size a little larger than 100% makes fairly readable text.

1. Microsoft Word template and dictionary files

When displaying Poisson Superfish documentation and other Los Alamos software documentation, Microsoft Word uses two files in the LANL directory. The file LANLHELP.DOT is a Word template file containing styles, macros, and other settings. We use macros in LANLHELP.DOT when editing the documentation, but users reading the documentation do not need them.

The file LANLHELP.DIC is a custom dictionary file containing a list of terms that Word would ordinarily flag as misspelled words. This file contains proper names, accelerator jargon, program keywords, SF.INI settings, and mathematical variable names used in the Los Alamos documentation. If in Word 7 you see a large number of words underlined in red, then Word is probably not using the custom dictionary LANLHELP.DIC. You can add this file to the list of custom dictionary files in the Tools, Options, Spelling tab. We also recommend checking the boxes to ignore words in upper case and words with numbers.

2. Settings in Microsoft Word

You need only the Standard toolbar when viewing this document. To remove the other toolbars, leaving more room for text, click View, Toolbars… and remove the check marks on all but Standard, then click OK.

Click Tools, Options… and check the following settings. There are several items to inspect on the View tab. Under Nonprinting Characters, deselect all of the options (that is, remove the check marks). Under Show, select Wrap to Window, but deselect Draft Font, Picture Placeholders, Field Codes, and Bookmarks. Choose Never in the Field Shading box. On the Print tab, under Include with Document, be sure there is a check mark next to Drawing Objects, otherwise figures will not print. On the Save tab, you may wish to deselect Allow Fast Saves and Automatic Save Every xx Minutes.

You can toggle the table grid lines on and off by checking or unchecking Gridlines in the Table menu. This setting has no effect on printing. Tables in this document do not contain cell borders.

3. Settings in Microsoft Word Viewer

Click View, Options… and check the following settings. There are several items to inspect on the View tab. Under Nonprinting Characters, deselect all of the options (that is, remove the check marks). Under Show, select Wrap to Window, but deselect Draft Font, Picture Placeholders, Field Codes, and Bookmarks. Choose Never in the Field Shading box. Checking Table Gridlines displays a grid in tables, but has no effect on printing. Tables in this document do not contain cell borders.

On the Print tab, under Include with Document, be sure there is a check mark next to Drawing Objects, otherwise figures will not print.

4. Using the table of contents

This file, SFTOC.DOC, contains the master table of contents for the Poisson Superfish documentation. Each individual document file contains its own table of contents pertaining to the material in the file. Within each file, you can double click a page number in the table of contents to jump to that page in the file. In Word Viewer, use a single click. This feature is not available in SFTOC.DOC because of the method used to create the master table of contents.

If you print the entire document, you may wish to discard the separate tables of contents at the beginning of the other files. All the information is included in the master table of contents contained in this file.

5. Using the hypertext links

As you read this document on line, you will notice that some text is highlighted in blue. This highlighted text is a hypertext link (or hyperlink) to a location in this documentation that contains more detailed information of the subject. There are two type of links. The links within the same file use a GOTOBUTTON field and are not underlined. A link to another file uses a hyperlink inserted with the Internet Assistant for Microsoft Word. The links that refer to another file are underlined. Links to other files may not work in some older version of Word Viewer. They work in Microsoft Word if you have installed the Internet Assistant, which is available free from Microsoft.

Double-click in Word, or single-click in Word Viewer, in the blue text area to jump to that location. If the section you are jumping to is later in the same document, then the cursor will usually appear at the bottom of the screen. You will need to scroll up a few lines to see the material you are interested in. When jumping to a location earlier in the document, the cursor appears at the top of the screen.

We have included at the start of each file a list of all the bookmarks within the file. You can get to this list by pressing Ctrl-Home to move to the top of the file. Select the topic you are trying to find and click in the highlighted text. The sections on example files often include a link to another file that discusses a feature used in the example. That destination file usually includes a return link to the example. For example, the link in this sentence goes to the rf-field examples, in file SFEXMPL1.DOC, which includes a link to return here.

6. Using the Edit, Go To… menu

You can use Go To… in the Edit menu to jump to a specific page number or move forward or backward by some number of pages. Use this method when viewing the table of contents. Bring up the Go To… menu and select Page in the Go To What list on the left. Enter the page number in the text window, then press Go To button on the right.

Another way to use the Go To… dialog box is to jump to a bookmark in the text. The bookmarks correspond to the hypertext links. For convenience, the bookmarks have long, descriptive names. Scroll through the list, which is sorted alphabetically and when the desired topic appears in the Enter Bookmark Name window, press the Go To button. You can also type in the name of a bookmark if you remember it from past use. Here are some shortcut methods for bringing up the Go To… dialog box:

- Hold down the Ctrl key and then press G, or
- Press the F5 key.

D. Printing sections of this documentation

You can print directly from Word or Word Viewer, but the pagination may change depending upon the default printer selected on your computer. (Page numbering in this document corresponds to a Hewlett Packard 5Si laser printer.)

Even if you do not print the entire document, we recommend that you print selected sections of the documentation for quick reference. For example, you may wish to print a portion of the Automesh documentation, since this code is the starting point for all Poisson Superfish problems. Most of your data entry will be REG namelist, PO namelist, and MT namelist variables in Automesh. You may find it helpful to have a list of the problem variables handy in printed form. There are separate alphabetically sorted lists of the Poisson variables and the Superfish variables.

There are several ways to print material from this document. You can print the entire document, the current page, a range of pages, or material that you highlight by holding down the mouse button and dragging over the text.

1. Printing the entire document

If three-hole paper is available, we recommend using it to save time punching holes in several hundred pages of paper. To print the entire document, open in turn each of the files listed above, Select Print in the File menu, then in the Page range section check the All setting, and click OK.

The first page of each file lists all the bookmarks within the file. Following the bookmarks is a table of contents for the file. The master table of contents in SFTOC.DOC includes all the information from each file's table of contents. These pages may not be useful as part of the printed document and may be discarded.

Page numbers appear centered at the bottom of the page. The first numbered page in each file starts after the file's table of contents. The first page will always be an odd number to accommodate printing on both sides of the page. As a result, the last page of some files may be blank.

a. Margin settings

We recommend using the default margin settings for US letter size paper of 1.00 inch top and bottom and 1.25 inches left and right. To change or check the margin settings, click File, Page Setup… and go to the Margins tab. We also recommend, if available, using a Hewlett Packard or compatible laser-jet printer. If this is not possible, then before printing anything, you may want to update the table of contents.

b. Printing on A4 paper

If you will be printing on A4 paper, you may want to use the margin settings 1.135 inches (28.8 mm) left and right, 1.00 inch (25.4 mm) top, and 1.69 inches (42.9 mm) bottom. These settings use the same "footprint" as the default settings for US letter paper. The pagination in the document should agree with the table of contents as distributed for most printers with 600-dot-per-inch resolution. Furthermore, tables that span more than one page should print correctly with new headings and titles at the top of continuation pages. Tables and figures that use nearly all of the 6-inch width between left and right margins should not generate error messages about margins from the printer.

2. Printing the current page

To print just the page you are viewing, click anywhere in the text to be sure the cursor is in the page you are viewing. Select Print in the File menu, then in the Page range section check the Current setting, and click OK.

3. Printing a range of pages

To print a range of pages, use the status bar at the bottom of the screen to identify the page numbers of the starting and ending page you want to print. Also note the section that the pages are in. For example, this paragraph should be in Sec 3. In other files, everything after the table of contents should be in Sec 2. Select Print in the File menu, then in the Page range section click in the data entry window next to Pages. Type "p" and the beginning page number followed immediately by "s" and the section number, then a dash and the ending page and section numbers (for example, p26s2-29s2). Click OK. The Pages selection will be chosen as soon as you start typing the page numbers.

4. Printing highlighted material

In the Print dialog box, printing a Selection refers to printing highlighted material. First, while holding down the left mouse button, drag the mouse over the material you wish to print. Release the mouse button. Select Print in the File menu, then in the Page range section check the Selection setting, and click OK.

E. Updating the table of contents

Your printer driver and default printer setup affects the pagination in a document. We recommend using the page layout settings discussed above and a Hewlett Packard or compatible LaserJet printer. If you notice that page numbers in the table of contents do not agree with page numbers printed from the other files, you can update the table of contents in this file. However, this is a somewhat involved process and it requires Microsoft Word. You cannot edit the document using Word Viewer.

Make sure that your default printer is set to the one you will use to print the documentation files. When the default printer is set properly, open each document in turn and note the page number of the last page in the file. As you open the next file in the sequence, place your cursor anywhere in the body of the text after the table of contents, then select Page Numbers… in the Insert menu. (The first few pages of each file are not numbered pages. The list of bookmarks and the table of contents are actually in a separate section in the file. This section is for on-line viewing and is not intended to be part of the printed documentation.) In the Page Numbers dialog box, select Format… and add one to the last page in the previous file and type that number in the Start At box. (If you plan to print doubled-sided pages, add one or two as necessary to start each new file on an odd-numbered page.) Click OK twice. Continue this procedure until all the starting page numbers have been updated.

Finally, place the cursor anywhere in the table of contents in this file, press the right mouse button and select Update Field. In the dialog window that appears select Update Entire Table. The update may take several minutes on slower machines. Repeat the Update Field operation for the lists of tables and figures that follow the table of contents. If the dialog window appears for these two updates, select Update Entire Table.