



# DECUS

## PROGRAM LIBRARY

DECUS NO.	12-22
TITLE	PLOTFFT
AUTHOR	J. R. Mason
COMPANY	U.C.L.A. Brain Research Institute Los Angeles, California
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## PLOTFFT

DECUS Program Library Write-up

DECUS No. 12-22

PLOTFFT -- plots spectra from the CFFT (Continuous Fast Fourier Transform) program.

By: J. R. MASON, UCLA BRAIN RESEARCH INSTITUTE (Data Processing Laboratory)

EQUIPMENT = PDP12 (8K), DIGITAL PLOTTER (0.01 IN/STEP), TU55 LINCtape.

The CFFT program produces a LINCtape which contains the calculated spectra values (double precision) from the Fast Fourier Transform.

PLOTFFT reads the LINCtape produced by the CFFT program, displays the spectra on the scope, then plots the spectra (with an XY grid and labels) on a digital plotter.

While the display is on the scope: Hitting U will increase the amplitude by 2, D will decrease the amplitude by 2, S will restore graph to original size. (U and D may be used repeatedly). N will read the next spectra off of tape and display on scope. When the desired amplitude is obtained, hitting P will plot the graph on the plotter. (Program written for 0.01 inch/step plotter). W will write out single precision values of the spectra on LINCtape Unit 2.

Grid is 9 x 12 inches (XOASIS = 12 ins.)

After the graph has been plotted, or written on LINC2, the next spectra is read from the tape and displayed on the scope. (If the preceding plot was scaled up or down, the amplitude of the new graph is reset to its original value).

There is also an automatic mode for continuous plotting or writing. (SEE OPERATING INSTRUCTIONS).

The PLOTFFT program is created by adding the binaries of RWFFT, HEADR, & XYGRID.

## Operating Instructions

1. Load PLOTFFT (program goes into execution immediately)
2. Data tape (from CFFT program) on LINCtape unit 1.  
If write option used - mount a marked tape on LINCtape unit 2
3. SSI Reset - Non-Automatic  
Set - Automatic mode
4. Non-Automatic: Program requests SB= for starting block\* number  
(Reply with a three digit octal number, leading zeros)
5. LINCtape is searched for the starting Block, the data is read into memory and displayed on scope.

Hit U : Scale display up by 2

D : " " down by 2

S : Restore to original value

N : Read and display next spectra

P : Plot displayed spectra on plotter (Plotter with  
.01 inch steps)

W : Write single precision values on LINCtape unit 2

T : Write an End of Data Block on LINCtape unit 2

NOTE: U and D may be used repeatedly, but either one cannot be used more than 7 times in succession (for a maximum scale factor  $\pm 10$ ).

6. AUTOMATIC PLOT MODE: SSI SET before replying to SB request.

Program requests starting block\* and end block\* (SB= EB=)

The first spectra is read (starting block) and displayed on scope. After the desired amplitude is obtained, hitting P will cause all spectra up to and including the end block to be plotted on the digital plotter with the same scale factor as set for the first graph.

As each spectra is plotted, its block(2) number is typed out on teletype.

Each graph is labeled with its block(1) number, and its scale factor:

BLK 001

SF+02

\* The spectra was written on LINCtape in two block segments, therefore, there are two block numbers associated with one spectra graph: Block(1), Block(2).

Starting block = Block(1) of first spectra to be plotted

End Block = Block(1) of last spectra to be plotted

7. AUTOMATIC WRITE MODE: SSI SET before replying to SB= request.  
Program requests SB= and EB= as in automatic PLOT mode.  
The spectra is displayed on scope.  
Hitting W will cause all spectra up to and including the End block to be written on LINC Unit 2 (with the same scale factor).  
Writing always begins at block 000 and is incremented for each block written.  
The last block written is followed by an End of Data block.

EXAMPLE OF AUTOMATIC MODE:

To plot/write the spectra in blocks 020 to 040 of LINCtape  
SSI SET  
Teletype will request SB=  
answer 020 (block(1) of first spectra)  
Teletype will request EB=  
answer 040 (block(1) of last spectra to be plotted)

The spectra from blocks 20,21 will be displayed on scope.  
If no scale factor desired, hit P/W on teletype.  
Graph will be plotted on plotter/values written on LINC 2.  
Each succeeding spectra will be plotted on plotter (no scope display)/written until end block is plotted/written, then program halts. If in Write mode, the terminating (EOD) block is written, then program halts.

NOTE : Starting Location 0020 Linc Mode

HALT @ 0071 : After writing EOD block on LINC unit 2.  
HALT @ 0344 : After plotting is completed in Automatic mode.





