PLOF: A program for plotting functions

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A FORTRAN 77 batch program has been developed for plotting of many mathematical functions within one plot frame. The program is user oriented and has an SPSS-like command language. In Figure 1, a complete example of a setup for PLOF is given; three different beta functions are plotted (see Figure 2).

Input. The user can specify a text up to three lines (each with a maximum of 60 characters). The frame of the plot is variable. Via the X and Y key words, the user specifies his required plot frame. (The numbers are given in centimeters.) The XHOR control card gives the name of the variable on the X-axis of the plot. Between parentheses, the range of this variable is given. The increment (INCR) on the X-axis is given on the same card. The user may declare up to four functions, which should be plotted in one plot frame. Ordinary FORTRAN arithmetic expressions are sufficient for this task. The DENS control card gives the user the opportunity to normalize the functions. The normalization is as follows:

$$\int_{-\infty}^{+\infty} c f(x) dx = 1,$$

with c as the normalizing constant.

With this option, it is easy to compare different density functions. The required integral is estimated in the subroutine DCADRE of the IMSL library. Optionally, there exists the possibility before plotting to inspect the print plot on a visual display or line-printer output as a preview. Finally, the user of PLOF can declare names for each function (FNAME). These names are printed in the legend beside the plot figure. Figure 2 depicts the output from Figure 1.

PLOF is especially useful for inspecting prior and posterior densities in Bayesian analyses. This application is an extension to some graphical options in the CADA monitor (Novick, 1980).

Technical Details. PLOF is written in FORTRAN 77. The plotting routines use the CALCOMP plot library. The program is implemented on a CDC Cyber 73 com-

TEXT	PLOT OF THREE BETA-DENSITY-FUNCTIONS
FRAME	X=8\$Y=8
XHOR	VARNAM=RHO(0,1)\$INCR=0.05
YVER	FUNC1=RHO#2*(1-RHO)#2\$
	FUNC2=RHO#4*(1-RHO)#4\$
	FUNC3=RHO#6*(1-RHO)#6
DENS	YES
PRPLOT	NO
FNAME	FUNC1=BETA(3,3)\$
	FUNC2=BETA(5,5)\$
	FUNC3=BETA(7,7)

Figure 1. Example of a complete setup.

Figure 2. Output of PLOF.

puter and can be transported to other systems provided the CALCOMP library is available. PLOF uses less than 60,000 octal central memory words.

Availability. A listing of the program may be obtained free of charge from the authors care of the Technisch Centrum FSW, Roeterstraat 15, University of Amsterdam, Amsterdam, The Netherlands.

REFERENCE

NOVICK, M. R. *Manual for the computer assisted data analysis (CADA) monitor*. Iowa City: University of Iowa Press, 1980.

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