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Complot
Complot
  PROGRAM COMPILOT
Complot
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Complot
  VERSION 83-1 (FEBRUARY, 1983)
Complot
  VERSION 83-2 (MAY, 1983)
Complot
  VERSION 83-3 (DECEMBER, 1983) *MAJOR MODIFICATION.
Complot
                                     *ADDED SELECTION OF PLOTS BY MAT OR
Complot
                                     ZA/MT/ENERGY RANGE (EV) .
Complot
Complot
                                     *ADDED VARIABLE AXIS UNITS (PROGRAM
Complot
                                     CONTROLLED..X=MILLI-EV, EV, KEV,
Complot
                                     MEV...Y=MILLI-BARNS, BARNS) .
Complot
  VERSION 84-1 (APRIL, 1984) *ADDED SELECTION BY REACTION/ENERGY
Complot
                                     RANGE.
Complot
Complot
                                     *ADDED IDENTIFY DATA POINTS OPTION
Complot
                                     (SMALL BOX DRAWN AROUND EACH CROSS
Complot
                                     SECTION AND RATIO POINT) .
Complot
Complot
                                     *IMPROVED NON-IBM GRAPHICS INTERFACE
Complot
                                     (ALL CHARACTER POSITIONING NOW
Complot
                                     BASED ON CHARACTER, NOT RASTER,
Complot
                                     SIZE) .
Complot
  VERSION 85-1 (APRIL, 1985) *SPECIAL I/O ROUTINES TO GUARANTEE
Complot
                                     ACCURACY OF ENERGY.
Complot
Complot
                                     *DOUBLE PRECISION TREATMENT OF
Complot
                                     ENERGY (REQUIRED FOR NARROW
Complot
                                     RESONANCES) .
Complot
Complot
                                     *ADDED (ZA,MT) EQUIVALENCE OPTION.
Complot

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Complot		*ADDED SMALL PLOT OPTION.
Complot	VERSION 85-2 (AUGUST, 1985)	*FORTRAN-77/H VERSION
Complot	VERSION 86-1 (JANUARY, 1986)	*ENERGY DEPENDENT SCATTERING RADIUS
Complot	VERSION 86-2 (DECEMBER, 1986)	*DOUBLE PRECISION PLOT SCALING
Complot		(REQUIRED FOR NARROW ENERGY RANGES)
Complot	VERSION 88-1 (JULY 1988)	*MAJOR REVISION TO MAKE CODE EASILY
Complot		INTERFACEABLE TO ALMOST ANY PLOTTER
Complot		*WARNING..INPUT PARAMETERS FROM BEEN
Complot		CHANGED (SEE, DESCRIPTION BELOW)
Complot		*COMPUTER INDEPENDENT SOFTWARE
Complot		CHARACTERS.
Complot		*COLOR PLOTS.
Complot		*MT NUMBER DEFINITIONS FROM DATA
Complot		FILE READ BY PROGRAM
Complot		*FORTRAN-77 REQUIRED (FORTRAN-H NO
Complot		SUPPORTED BY THIS PROGRAM).
Complot		*OPTION...INTERNALLY DEFINE ALL I/O
Complot		FILE NAMES (SEE, SUBROUTINE FILEIO
Complot		FOR DETAILS).
Complot		*IMPROVED BASED ON USER COMMENTS.
Complot	VERSION 88-2 (OCTOBER 1988)	*IMPROVED BASED ON USER COMMENTS.
Complot		*ADDED LIVERMORE CIVIC COMPILER
Complot		CONVENTIONS.
Complot		*UPDATED TO USE NEW PROGRAM CONVERT
Complot		KEYWORDS.
Complot	VERSION 89-1 (JANUARY 1989)	*PSYCHOANALYZED BY PROGRAM FREUD TO
Complot		INSURE PROGRAM WILL NOT DO ANYTHING
Complot		

Complot	CRAZY.
Complot	*FORTRAN-77/FORTRAN-H COMPATIBLE
Complot	*SPECIAL ENDF/B MATERIAL DEFINITIONS
Complot	(ZA.LT.1000) FROM DATA FILE READ
Complot	BY PROGRAM.
Complot	*ADDED ENDF/B-V AND VI MT
VERSION 89-2 (MARCH 1989)	
Complot	DEFINITIONS. PROGRAM WILL DETERMINE
Complot	ENDF/B FORMAT BASED ON MF=1,
Complot	MT=451 AND USE AS APPROPRIATE MT
Complot	DEFINITIONS. IF NO MF=1, MT=451
Complot	PROGRAM WILL USE ENDF/B-VI
Complot	MT DEFINITIONS.
Complot	*A NEW PROGRAM
VERSION 90-1 (AUGUST 1990)	
Complot	*ADDED INTERACTIVE MOUSE INPUT
Complot	*ADDED 3 CHARACTER FONTS
Complot	*ADDED PHOTON DATA, MF=23 AND 27
Complot	*ADDED FORTRAN SAVE OPTION.
Complot	*ADDED MAXIMUM RATIO RANGE WHEN
Complot	PLOTTING RATIOS.
Complot	*ADDED GRID TYPES
Complot	*ADDED VARIABLE LINE THICKNESS
Complot	*WARNING...INPUT PARAMETER FORMAT
Complot	HAS BEEN CHANGED...SEE DESCRIPTION
Complot	BELOW.
Complot	*ADDED INCIDENT CHARGED PARTICLES
VERSION 92-1 (JANUARY 1992)	
Complot	(IDENTIFIED IN PLOT TITLES)
Complot	*ADDED COMPLETELY COMPATIBLE I/O
Complot	

Complot		FOR READING FLOATING POINT NUMBERS.
Complot	VERSION 92-2 (MAY 1992)	*CORRECTED DESCRIPTION OF INPUT
Complot		PARAMETERS AND EXAMPLE PROBLEMS.
Complot		*ADDED VARIABLE CHARACTER SIZE INPUT
Complot	VERSION 93-1 (MARCH 1993)	*UPDATE FOR ON SCREEN GRAPHIC
Complot		OUTPUT USING THE LAHEY COMPILER
Complot		*ADDED NU-BAR (TOTAL, DELAYED,
Complot		PROMPT) .
Complot	VERSION 94-1 (JANUARY 1994)	*VARIABLE ENDF/B DATA FILENAMES
Complot		TO ALLOW ACCESS TO FILE STRUCTURES
Complot		(WARNING - INPUT PARAMETER FORMAT
Complot		HAS BEEN CHANGED)
Complot		*CLOSE ALL FILES BEFORE TERMINATING
Complot		(SEE, SUBROUTINE ENDIT)
Complot	VERSION 95-1 (MARCH 1995)	*CORRECTED CROSS SECTION
Complot		MULTIPLIER FOR EQUIVALENCES
Complot		*CORRECTED RATIO SCALING, FOR
Complot		MAXIMUM RATIO LESS THAN 1.0
Complot	VERSION 96-1 (JANUARY 1996)	*COMPLETE RE-WRITE
Complot		*IMPROVED COMPUTER INDEPENDENCE
Complot		*ALL DOUBLE PRECISION
Complot		*UNIFORM TREATMENT OF ENDF/B I/O
Complot		*IMPROVED OUTPUT PRECISION
Complot		*DEFINED SCRATCH FILE NAMES
Complot		*INCREASED PAGE SIZE FROM 24000
Complot		TO 48000 POINTS
Complot	VERSION 97-1 (APRIL 1997)	*INCREASED PAGE SIZE FROM 48000
Complot		

TO 480000 POINTS  
 Complot  
 VERSION 99-1 (MARCH 1999) \*CORRECTED CHARACTER TO FLOATING  
 Complot  
 POINT READ FOR MORE DIGITS  
 Complot  
 \*UPDATED TEST FOR ENDF/B FORMAT  
 Complot  
 VERSION BASED ON RECENT FORMAT CHANGE  
 Complot  
 \*GENERAL IMPROVEMENTS BASED ON  
 Complot  
 USER FEEDBACK  
 Complot  
 VERS. 2000-1 (FEBRUARY 2000) \*GENERAL IMPROVEMENTS BASED ON  
 Complot  
 USER FEEDBACK  
 Complot  
 VERS. 2002-1 (MAY 2002) \*INPUT PARAMETERS OPTIONAL  
 Complot  
 \*CONTROL MINIMUM RATIO RANGE BY INPUT  
 Complot  
 \*OPTIONAL BLACK OR WHITE BACKGROUND  
 Complot  
 VERS. 2004-1 (SEPT. 2004) \*ADDED INCLUDE FOR COMMON  
 Complot  
 \*INCREASED PAGE SIZE FROM 480000  
 Complot  
 TO 600000 POINTS  
 Complot  
 \*ADDED NEW REICH-MOORE TO FILE2 TO  
 Complot  
 ALLOW IDENTIFICATION OF RESOLVED AND  
 Complot  
 ANY FOLLOWING UNRESOLVED RESONANCE  
 Complot  
 REGIONS.  
 Complot  
 VERS. 2007-1 (JAN. 2007) \*CHECKED AGAINST ALL ENDF/B-VII.  
 Complot  
 \*INCREASED MAXLOAD TO 600,000 FROM  
 Complot  
 12,000  
 Complot  
 VERS. 2009-1 (JAN. 2009) \*IGNORED DIFFERENCES NEAR RESONANCE  
 Complot  
 REGION BOUNDARIES (RESOLVED AND  
 Complot  
 UNRESOLVED).  
 Complot  
 VERS. 2010-1 (July 2010) \*Allow comparison plot even if there  
 Complot  
 is no difference (just see data).  
 Complot

Complot		*ONLY plot linearly interpoolable data
Complot		*Include threshold energy points to
Complot		show cross sections, but NOT ratios
Complot		near threshold.
Complot	VERS. 2011-1 (Jan. 2011)	*Increased MT.DAT from 200 to 1,000
Complot		entries, to accommodate new MTs.
Complot	VERS. 2012-1 (Aug. 2012)	*Increased incident particle list to
Complot		include photon (ZA = 0).
Complot		*Added CODENAME
Complot		*32 and 64 bit Compatible
Complot		*Added ERROR stop
Complot	VERS. 2013-1 (Nov. 2013)	*ONLY use min/max ratios to decide
Complot		whether or not to plot - non-positive
Complot		cross sections are no longer used.
Complot		*Limited per-cent differences to fit
Complot		output format = -9999 to +9999 %.
Complot		*OUT9 replaced NORMX
Complot	VERS. 2015-1 (Jan. 2015)	*Added MF=10 Radionuclide Production
Complot		which requires longer plot titles.
Complot		*Restricted character size multiplier
Complot		to 0.5 to 1.5 to accommodate longer
Complot		plot titles.
Complot		*Replaced ALL 3 way if statements.
Complot	VERS. 2015-2 (Mar. 2015)	*Corrected tables for X and Y axis
Complot		labels = search for 2015-2
Complot		
Complot	2015-2 Acknowledgment	
Complot		

=====  
Complot  
I thank Chuck Whitmer (TerraPower,WA) for reporting the errors  
Complot  
that led to the 2015-2 Improvements in this code.  
Complot

Complot  
I thank Jean-Christophe Sublet (UKAEA) for contributing MAC  
Complot  
executables and Bojan Zefran (IJS, Slovenia) for contributing  
Complot  
LINUX (32 or 63 bit) executables. And most of all I must thank  
Complot  
Andrej Trkov (NDS, IAEA) for overseeing the entire PREPRO project  
Complot  
at IAEA, Vienna. This was a truly International team who worked  
Complot  
together to produce PREPRO 2015-2.  
Complot

Complot  
OWNED, MAINTAINED AND DISTRIBUTED BY  
Complot  
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Complot  
THE NUCLEAR DATA SECTION  
Complot  
INTERNATIONAL ATOMIC ENERGY AGENCY  
Complot  
P.O. BOX 100  
Complot  
A-1400, VIENNA, AUSTRIA  
Complot  
EUROPE  
Complot

Complot  
ORIGINALLY WRITTEN BY  
Complot  
-----

Complot  
Dermott E. Cullen  
Complot

Complot  
PRESENT CONTACT INFORMATION  
Complot  
-----

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Complot

Complot  
AUTHORS MESSAGE  
Complot

-----  
Complot  
THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENTATION  
Complot  
ALL RECENT IMPROVEMENTS. PLEASE READ ALL OF THESE COMMENTS BEFORE,  
Complot  
PARTICULARLY THE COMMENTS CONCERNING MACHINE DEPENDENT CODING.  
Complot

Complot  
AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTER  
Complot  
INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE  
Complot  
OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT  
Complot  
IT WOULD BE APPRECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY  
Complot  
COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO  
Complot  
IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF  
Complot  
THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR  
Complot  
COMPUTER.  
Complot

Complot  
PURPOSE  
Complot  
-----

Complot  
COMPARE ENDF/B FORMATTED DATA FROM TWO SEPARATE INPUT TAPES.  
Complot  
REACTIONS ARE CONSIDERED TO BE COMPARABLE IF THEY HAVE THE SAME  
Complot  
(ZA,MF,MT). RESULTS ARE PRESENTED IN GRAPHICAL FORM.  
Complot

Complot

IN THE FOLLOWING FOR SIMPLICITY THE ENDF/B TERMINOLOGY--ENDF/B  
Complot TAPE--WILL BE USED. IN FACT THE ACTUAL MEDIUM MAY BE TAPE, CARDS,  
Complot DISK OR ANY OTHER MEDIUM.

Complot  
Complot ON WHAT COMPUTERS WILL THE PROGRAM RUN  
Complot

-----  
Complot THE PROGRAM HAS BEEN IMPLEMENTED ON A VARIETY OF COMPUTERS FROM  
Complot CRAY AND IBM MAINFRAME TO SUN WORKSTATIONS TO AN IBM-AT PC. THE  
Complot PROGRAM IS SMALL ENOUGH TO RUN ON VIRTUALLY ANY COMPUTER.  
Complot

Complot THE PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE  
Complot (DESCRIBED BELOW) AND ALLOWS THE USER SPECIFY THE PHYSICAL SIZE  
Complot OF THE PLOTTER BEING USED, BY INPUT PARAMETERS. USING THESE  
Complot CONVENTIONS THIS PROGRAM CAN BE EASILY INTERFACED TO VIRTUALLY  
Complot ANY PLOTTER.  
Complot

Complot FOR SPECIAL CONSIDERATIONS SEE THE SECTIONS BELOW ON,  
Complot (1) COMPUTER DEPENDENT CODING  
Complot (2) PLOTTER/GRAPHICS TERMINAL INTERFACE  
Complot

Complot GRAPHICS INTERFACE  
Complot

-----  
Complot THIS PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE WHICH  
Complot REQUIRES ONLY 3 SUBROUTINES...PLOTS, PLOT AND PEN (DESCRIBED IN  
Complot DETAIL BELOW). ALL CHARACTERS AND SYMBOLS ARE DRAWN USING TABLES  
Complot OF PEN STROKES (SUPPLIED WITH THIS PROGRAM). USING THIS METHOD  
Complot THE PROGRAM SHOULD BE SIMPLE TO INTERFACE TO VIRTUALLY ANY PLOTTER  
Complot

OR GRAPHICS TERMINAL AND THE APPEARANCE AND LAYOUT OF THE PLOTS  
Complot SHOULD BE INDEPENDENT OF WHICH PLOTTER IS USED.

Complot

Complot

2015 PLOTTER DIMENSIONS

Complot

=====

Complot

PLOTTER DIMENSIONS ARE IN INCHES - NOT CM, MM, OR CUBITS.

Complot

THIS IS DONE FOR HISTORICAL REASONS AND HOPEFULLY THIS WILL

Complot

NOT INCONVENIENCE ANYONE - IN PRACTICE I HAVE USED EXACTLY THE

Complot

SAME DIMENSION = X = 0 to 12.5 and Y = 0 to 10 FOR DECADES

Complot

TO PRODUCE BOTH ON-SCREEN AND HARDCOPY POSTSCRIPT PLOTS.

Complot

Complot

I STRONGLY SUGGEST THAT YOU NOT CHANGE THESE DIMENSIONS UNLESS

Complot

YOU MUST = BASED ON THE PLOT SIZE YOU OBTAIN WHEN YOU FIRST RUN

Complot

THIS CODE.

Complot

Complot

PROGRAM IDENTIFICATION

Complot

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Complot

AS DISTRIBUTED THE FIRST FRAME OF PLOTTED OUTPUT WILL DOCUMENT

Complot

THE PROGRAM NAME, VERSION AND INSTALLATION. THIS INFORMATION IS

Complot

STORED AS DATA IN THE ARRAY VERSES NEAR THE BEGINNING OF

Complot

SUBROUTINE FRAME1. IF YOU WISH TO CUSTOMIZE THE OUTPUT TO IDENTIFY

Complot

YOUR INSTALLATION CHANGE THE LAST TWO LINES OF THE ARRAY (VERSES).

Complot

Complot

ENDF/B FORMAT

Complot

-----

Complot

THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS

Complot

OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION

Complot

OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II, III, IV, V OR VI FORMAT).  
Complot

Complot

BOTH SETS OF EVALUATED DATA MUST BE IN THE ENDF/B FORMAT. ONLY  
Complot  
SECTIONS OF FILE 2 (RESONANCE PARAMETERS) AND FILES 3, 23 AND 27  
Complot  
(TABULATED DATA) WILL BE READ AND ALL OTHER SECTIONS WILL BE  
Complot  
SKIPPED. IN FILE 2 THE ONLY IMPORTANT INFORMATION IS THE ENERGY  
Complot  
LIMITS OF THE RESOLVED AND UNRESOLVED RESONANCE REGION WHICH IS  
Complot  
LOCATED IN THE SAME FIELDS IN ALL VERSIONS OF THE ENDF/B FORMAT.  
Complot  
SIMILARLY THE FORMAT OF FILES 3, 23 AND 27 IS THE SAME IN ALL  
Complot  
VERSIONS OF ENDF/B. THEREFORE THIS PROGRAM CAN BE USED WITH DATA  
Complot  
IN ANY ENDF/B FORMAT (I.E. ENDF/B-I, II, III, IV, V OR VI).  
Complot

Complot

CROSS SECTION INTERPOLATION  
Complot  
-----

Complot

CROSS SECTIONS MUST BE IN EITHER HISTOGRAM (I.E., INTERPOLATION  
Complot  
LAW 1) OR LINEARLY INTERPOLABLE (I.E. INTERPOLATION LAW 2) FORM.  
Complot  
IF THEY ARE NOT A WARNING MESSAGE WILL BE PRINTED AND EXECUTION  
Complot  
WILL BE TERMINATED. SEE INSTRUCTIONS BELOW ON HOW TO CONVERT  
Complot  
DATA TO HISTOGRAM OR LINEARLY INTERPOLABLE FORM.  
Complot

Complot

REACTION INDEX  
Complot  
-----

Complot

THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN  
Complot  
SECTION MF=1, MT=451 OF EACH EVALUATION.  
Complot

Complot

SECTION SIZE  
Complot  
-----

Complot

Complot SINCE THIS PROGRAM USES A LOGICAL PAGING SYSTEM THERE IS NO LIMIT  
Complot TO THE NUMBER OF POINTS IN ANY SECTION, E.G., THE TOTAL CROSS  
Complot SECTION MAY BE REPRESENTED BY 200,000 DATA POINTS.

Complot

Complot

DATA SELECTION

Complot

-----

Complot

THE USER MAY SPECIFYING THE DATA TO BE COMPARED BY INPUTTING UP

Complot

TO 100 MAT/MT/ENERGY OR ZA/MT/ENERGY RANGES. IF THE UPPER LIMIT

Complot

OF THE MAT OR ZA RANGE IS LESS THAN THE LOWER LIMIT IT WILL BE SET

Complot

EQUAL TO THE LOWER LIMIT (I.E. THIS INDICATE ONLY COMPARE ONE

Complot

MAT OR ZA). IF THE UPPER LIMIT IS STILL ZERO IT WILL BE SET TO

Complot

9999 (NO LIMIT). IF THE UPPER MF OR MT LIMIT IS ZERO IT WILL BE

Complot

SET TO 99 OR 999, RESPECTIVELY (NO LIMIT). IF THE UPPER ENERGY

Complot

LIMIT IS ZERO IT WILL BE SET TO A LARGE NUMBER (NO LIMIT).

Complot

Complot

THE LIST OF RANGES MUST BE TERMINATED BY A BLANK LINE (I.E. ZERO

Complot

LOWER AND UPPER MAT/MF/MT OR ZA/MF/MT LIMITS).

Complot

Complot

IF THE FIRST RANGE LINE IS BLANK THIS LINE WILL TERMINATE THE

Complot

LIST OF REQUESTS (I.E. A SECOND BLANK LINE NEED NOT BE INPUT)

Complot

AND ALL PHYSICALLY COMPARABLE DATA WILL BE PLOTTED.

Complot

Complot

WHICH REACTIONS WILL BE PLOTTED

Complot

-----

Complot

THOSE REACTIONS WITH THE SAME (ZA, MF, MT) WILL BE COMPARED, BUT

Complot

ONLY THOSE DATA WHICH DIFFER BY A USER SPECIFIED ALLOWABLE

Complot

DIFFERENCE WILL BE PLOTTED. IN ORDER TO FORCE ALL COMPARABLE

Complot

REACTIONS TO BE PLOTTED THE USER NEED ONLY SPECIFY AN ALLOWABLE  
Complot DIFFERENCE OF ZERO.

Complot

Complot EQUIVALENT REACTIONS

Complot

Complot

IN ORDER TO COMPARE REACTIONS WHICH HAVE DIFFERENT ZA, MF OR MT  
Complot

THE USER IS ALLOWED TO SPECIFY AN EQUIVALENCE LIST OF UP TO

Complot

100 (ZA,MF,MT) COMBINATIONS ON THE MASTER FILE WHICH ARE TO BE

Complot

EQUATED TO DIFFERENT (ZA,MF,MT) ON THE SECOND FILE. THIS OPTION

Complot

MAY BE USED TO COMPARE SIMILAR REACTIONS FROM DIFFERENT MATERIALS

Complot

(E.G. IRON AND NICKEL INELASTIC SCATTERING) OR DIFFERENT REACTIONS

Complot

FROM THE SAME OR DIFFERENT MATERIALS (E.G. U-235 CAPTURE AND

Complot

FISSION - IN WHICH CASE THE RATIO WILL BE THE CAPTURE TO FISSION

Complot

RATIO) OR THE SAME REACTION IN DIFFERENT VERSIONS OF THE ENDF/B

Complot

FORMAT WHICH MAY BE ASSIGNED DIFFERENT MT NUMBERS, E.G., THE

Complot

PHOTOELECTRIC CROSS SECTION IS MT=602 IN ENDF/B-V AND EARLIER

Complot

VERSIONS OF ENDF/B, BUT IS MT=522 IN ENDF/B-VI.

Complot

Complot

IN THESE EQUIVALENCE LISTS A ZERO FIELD IMPLIES ALL. FOR EXAMPLE,

Complot

TO EQUATE MT=522 FROM ONE FILE TO MT=602 ON THE OTHER, FOR ALL

Complot

MATERIALS, ONE NEED ONLY SPECIFY ZA=0, MF=23, MT=522 EQUIVALENT

Complot

TO ZA=0, MF=23 AND MT=602.

Complot

Complot

PLOT FORMATS

Complot

Complot

THE TWO CROSS SECTIONS ARE CONSIDERED TO BE A STANDARD (THE FIRST

Complot

CROSS SECTION) AND A CROSS SECTION TO BE COMPARED TO THE STANDARD

Complot

(THE SECOND CROSS SECTION). THE OUTPUT FROM THIS PROGRAM IS A  
Complot  
SERIES OF PLOTS. EACH PLOT WILL CONTAIN THE STANDARD CROSS SECTION  
Complot  
AND IN ADDITION THE USER MAY SPECIFY THAT EACH PLOT ALSO CONTAIN  
Complot  
THE SECOND CROSS SECTION AND/OR THE RATIO OF THE SECOND CROSS  
Complot  
SECTION TO THE FIRST CROSS SECTION.  
Complot

Complot  
THE USER MAY SELECT ONE OF THE FOLLOWING FIVE PLOT FORMATS (THE  
Complot  
NUMBER PRECEDING THE OPTION IS THE VALUE OF THE PLOT MODE SELECTOR  
Complot  
THAT THE USER SHOULD SPECIFY AS INPUT ON THE FIRST LINE).  
Complot

Complot  
(0) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE  
Complot  
RATIO OF THE SECOND EVALUATION TO THE FIRST EVALUATION. THE  
Complot  
DATA WILL BE PRESENTED AS TWO SUB-PLOTS PER PLOT WITH THE  
Complot  
STANDARD CROSS SECTION IN THE UPPER HALF OF THE PLOT AND THE  
Complot  
RATIO IN THE LOWER HALF OF THE PLOT.  
Complot

Complot  
(1) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE  
Complot  
SECOND EVALUATION. THE DATA WILL BE PRESENTED AS TWO SUB-PLOTS  
Complot  
PER PLOT WITH THE STANDARD CROSS SECTION ON THE UPPER HALF  
Complot  
OF THE PLOT AND THE SECOND CROSS SECTION IN THE LOWER HALF OF  
Complot  
THE PLOT.  
Complot

Complot  
(2) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE  
Complot  
SECOND EVALUATION. THE DATA WILL BE PRESENTED AS ONE PLOT  
Complot  
CONTAINING BOTH THE STANDARD AND SECOND CROSS SECTION. THE  
Complot  
STANDARD CROSS SECTION WILL BE PRESENTED AS A SOLID LINE AND  
Complot  
THE SECOND CROSS SECTION WILL BE PRESENTED AS A DASHED LINE.  
Complot

Complot  
(3) THE STANDARD CROSS SECTION, SECOND CROSS SECTION AND RATIO OF  
Complot  
THE SECOND CROSS SECTION TO THE FIRST CROSS SECTION. THE DATA  
Complot  
WILL BE PRESENTED AS THREE SUB-PLOTS PER PLOT WITH THE  
Complot  
STANDARD CROSS SECTION IN THE UPPER THIRD OF THE PLOT, THE  
Complot  
SECOND CROSS SECTION IN THE MIDDLE THIRD AND THE RATIO OF THE  
Complot  
TWO IN THE LOWER THIRD OF THE PLOT (RECOMMENDED OPTION).  
Complot

Complot  
(4) THE STANDARD CROSS SECTION, SECOND CROSS SECTION AND RATIO OF  
Complot  
THE SECOND CROSS SECTION TO THE FIRST CROSS SECTION. THE DATA  
Complot  
WILL BE PRESENTED AS TWO SUB-PLOTS PER PLOT WITH THE STANDARD  
Complot  
AND SECOND CROSS SECTION ON THE SAME SUB-PLOT IN THE UPPER  
Complot  
TWO THIRDS OF THE PLOT AND THE RATIO OF THE TWO IN THE LOWER  
Complot  
THIRD OF THE PLOT. THE STANDARD CROSS SECTION WILL BE  
Complot  
PRESENTED AS A SOLID LINE AND THE SECOND CROSS SECTION WILL BE  
Complot  
PRESENTED AS A DASHED LINE.  
Complot

Complot  
ADDITIONAL PLOT FEATURES

Complot  
-----

Complot  
IN ADDITION TO THE CROSS SECTIONS AND/OR RATIO THE FOLLOWING  
Complot  
INFORMATIONS WILL BE INCLUDED ON EACH PLOT.  
Complot

Complot  
(1) AN IDENTIFICATION FOR EACH SET OF CROSS SECTIONS (UP TO 30  
Complot  
CHARACTERS FOR EACH SET).  
Complot

Complot  
(2) THE MAXIMUM NEGATIVE AND POSITIVE PER-CENT DIFFERENCE BETWEEN  
Complot  
THE TWO CROSS SECTIONS.  
Complot

Complot  
(3) ARROWS INDICATING THE ENERGY AT WHICH THE MAXIMUM DIFFERENCES  
Complot  
(MINIMUM AND MAXIMUM RATIO) OCCUR.

Complot  
Complot  
(4) THE ENERGY LIMITS OF THE RESOLVED AND UNRESOLVED RESONANCE  
Complot  
REGION (IF THEY FALL WITHIN THE ENERGY LIMITS OF THE PLOT).  
Complot

Complot  
RATIO DATA

Complot  
-----  
Complot  
IF RATIO OUTPUT IS REQUESTED THE RATIO WILL BE DEFINED AT EACH  
Complot  
ENERGY THAT APPEARS IN EITHER EVALUATION. BETWEEN THESE ENERGIES  
Complot  
THE RATIO WILL BE PLOTTED ASSUMING LINEAR DEPENDENCE BETWEEN  
Complot  
TABULATED VALUES. FOR HISTOGRAM OR LINEARLY INTERPOLABLE CROSS  
Complot  
SECTIONS THIS REPRESENTATION WILL POINT OUT ALL EXTREMA OF THE  
Complot  
RATIO, BUT NOT NECESSARILY THE ENERGY DEPENDENCE BETWEEN TABULATED  
Complot  
VALUES.

Complot  
Complot  
IF THE EVALUATED DATA IS NOT IN EITHER HISTOGRAM OR LINEARLY  
Complot  
INTERPOLABLE FORM THE RATIO MAY NOT EVEN FIND ALL EXTREMA. FOR  
Complot  
EXAMPLE, IF ONE EVALUATION IS LINEARLY INTERPOLABLE AND THE  
Complot  
OTHER NON-LINEAR, BUT BOTH AGREE AT ALL TABULATED ENERGIES THE  
Complot  
RATIO WILL APPEAR TO BE EQUAL TO UNITY AT ALL ENERGIES, BUT IN  
Complot  
FACT THE CROSS SECTION BETWEEN TABULATED ENERGIES MAY BE QUITE  
Complot  
DIFFERENT USING LINEAR VS. NON-LINEAR INTERPOLATION. FOR THIS  
Complot  
REASON ONLY LINEARLY INTERPOLABLE OR HISTOGRAM DATA IS ALLOWED  
Complot  
AS INPUT TO THIS PROGRAM.

Complot

Complot

LINEAR INTERPOLABLE  
 Complot  
 -----  
 Complot  
 ALL CROSS SECTIONS MAY BE CONVERTED TO LINEARLY INTERPOLABLE FORM  
 Complot  
 BE USING PROGRAM LINEAR (UCRL-50400, VOL. 17, PART A).  
 Complot  
  
 Complot  
 HISTOGRAM  
 Complot  
 -----  
 Complot  
 ALL LINEARLY INTERPOLABLE CROSS SECTION MAY BE CONVERTED TO  
 Complot  
 HISTOGRAM (I.E. MULTIGROUP) FORM BY USING PROGRAM GROUPIE  
 Complot  
 (UCRL-50400, VOL. 17, PART D).  
 Complot  
  
 Complot  
 INPUT UNITS  
 Complot  
 -----  
 Complot  
 UNIT DESCRIPTION  
 Complot  
 ---- -  
 Complot  
 2 INPUT LINE  
 Complot  
 9 MT DEFINITIONS.  
 Complot  
 10 FIRST ENDF/B FORMATTED EVALUATION (STANDARD).  
 Complot  
 11 SECOND ENDF/B FORMATTED EVALUATION.  
 Complot  
 17 SOFTWARE CHARACTERS.  
 Complot  
 18 SOFTWARE SYMBOLS AND LINE TYPES  
 Complot  
  
 Complot  
 OUTPUT UNITS  
 Complot  
 -----  
 Complot  
 UNIT DESCRIPTION  
 Complot  
 ---- -  
 Complot  
 3 NORMAL OUTPUT REPORT.  
 Complot

16 PLOTTER UNIT

Complot

Complot

SCRATCH UNITS

Complot

-----

Complot

UNIT DESCRIPTION

Complot

---- -

Complot

12 SCRATCH UNIT FOR FIRST EVALUATION

Complot

13 SCRATCH UNIT FOR SECOND EVALUATION

Complot

14 SCRATCH UNIT FOR RATIO (ONLY USED IF RATIOS REQUESTED).

Complot

Complot

OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2)

Complot

-----

Complot

UNIT FILE NAME

Complot

---- -

Complot

2 COMPLOT.INP

Complot

3 COMPLOT.LST

Complot

9 MT.DAT

Complot

10 ENDFB.IN1 (OR AS READ FROM INPUT)

Complot

11 ENDFB.IN2 (OR AS READ FROM INPUT)

Complot

12-14 (SCRATCH)

Complot

15 PLOT.CHR

Complot

16 (PLOTTER UNIT...USUALLY A DUMMY)

Complot

Complot

INPUT PARAMETERS

Complot

-----

Complot

LINE COLUMNS FORMAT DESCRIPTION

Complot

---- -

Complot

Complot	1	1-11	E11.4	LOWER X LIMIT OF PLOTTER
Complot		12-22	E11.4	UPPER X LIMIT OF PLOTTER
Complot		23-33	E11.4	LOWER Y LIMIT OF PLOTTER
Complot		34-44	E11.4	UPPER Y LIMIT OF PLOTTER
Complot		45-55	I11	NUMBER OF PLOTS PER FRAME IN X DIRECTION
Complot		56-66	I11	NUMBER OF PLOTS PER FRAME IN Y DIRECTION
Complot		67-70	F4.1	CHARACTER SIZE MULTIPLIER
Complot				= 0 TO 1 - NORMAL CHARACTER SIZE
Complot				= OTHERWISE - CHARACTERS SCALED BY THIS
Complot				FACTOR
Complot				PLOT ORIENTATION IS BASED ON THE UPPER X
Complot				LIMIT
Complot				= .GT.0 - X HORIZONTAL/Y VERTICAL
Complot				= .LT.0 - Y HORIZONTAL/X VERTICAL
Complot				AFTER TESTING THE UPPER X LIMIT WILL BE
Complot				SET TO ITS ABSOLUTE VALUE.
Complot	2	1-72	A72	FILENAME FOR FIRST ENDF/B DATA FILE
Complot				(LEAVE BLANK FOR ENDFB.IN1)
Complot	3	1-72	A72	FILENAME FOR SECOND ENDF/B DATA FILE
Complot				(LEAVE BLANK FOR ENDFB.IN2)
Complot	4	1-11	I11	RETRIEVAL MODE (0=MAT, 1=ZA)
Complot		12-22	I11	GRID (SPEED) OPTION.
Complot				= 0 - TICK MARKS ON BORDER
Complot				= 1 - SOLID AT COARSE INTERVALS
Complot				= 2 - DASHED AT COARSE INTERVALS
Complot				= 3 - SOLID AT COARSE AND FINE INTERVALS

Complot			= 4 - DASHED AT COARSE AND FINE INTERVALS
Complot			= 5 - SOLID COARSE/DASHED FINE INTERVALS
Complot	23-33	I11	SHOULD BORDER BE PLOTTED AROUND EACH PLOT
Complot			= 0 - NO
Complot			= 1 - YES
Complot	34-44	I11	LINE THICKNESS
Complot			= 0 TO 5 - LINES AND CHARACTERS
Complot			=-1 TO -5 - ONLY LINES
Complot	45-55	I11	OUTPUT MODE
Complot			=-1 - ONLY COMPARISON LISTING. NO PLOTS.
Complot			= 0 - CROSS SECTION OVER RATIO.
Complot			= 1 - CROSS SECTION OVER CROSS SECTION.
Complot			= 2 - TWO CROSS SECTIONS ON SAME PLOT.
Complot			= 3 - CROSS SECTION OVER CROSS SECTION OVER
Complot			RATIO.
Complot			= 4 - TWO CROSS SECTIONS ON SAME PLOT OVER
Complot			RATIO.
Complot	56-66	I11	STARTING PLOT NUMBER
Complot			= 0 - DO NOT NUMBER PLOTS
Complot			= .GT.0 - NUMBER PLOTS IN LOWER LEFT HAND
Complot			CORNER STARTING WITH INPUT NUMBER
Complot	67-70	I41	BACKGROUND COLOR
Complot			= 0 = BLACK
Complot			= OTHERWISE = WHITE
Complot	5	1-11	E11.4 ALLOWABLE FRACTIONAL DIFFERENCE. USED WHEN
Complot			PLOTTING RATIOS. ANY REACTION WHERE THE
Complot			TWO EVALUATIONS DIFFER BY MORE THAN THE

Complot			ALLOWABLE DIFFERENCE WILL BE PLOTTED. IF
Complot			ZERO IS INPUT THE STANDARD ALLOWABLE
Complot			DIFFERENCE OF 0.001 (0.1 PER-CENT) WILL BE
Complot			USED.
Complot	12-22	E11.4	MAXIMUM ALLOWABLE RATIO. IF RATIOS ARE
Complot			PLOTTED THEY WILL BE IN THE RANGE RATMAX
Complot			TO 1/RATMAX. IF 0.0 IS INPUT THERE WILL
Complot			BE NO LIMIT ON THE RANGE OF THE RATIOS.
Complot			THIS OPTION MAY BE USED TO IGNORE LARGE
Complot			DIFFERENCES OVER VERY NARROW ENERGY RANGES
Complot			(WHICH MAY BE UNIMPORTANT) AND ALLOW ONE
Complot			TO SEE IMPORTANT, BUT SMALLER DIFFERENCES,
Complot			OVER EXTENDED ENERGY RANGES.
Complot	6	1-40	40A1 IDENTIFICATION FOR UPPER EVALUATIONS
Complot	7	1-40	40A1 IDENTIFICATION FOR LOWER EVALUATIONS
Complot			(IDENTIFICATIONS SHOULD BE LEFT ADJUSTED
Complot			TO START IN COLUMN 1).
Complot	8-N	1- 6	I6 LOWER MAT OR ZA LIMIT (SEE SELECTION MODE,
Complot			INPUT LINE 1, COLUMNS 1-11).
Complot		7- 8	I2 LOWER MF LIMIT
Complot		9-11	I3 LOWER MT LIMIT
Complot		12-22	E11.4 LOWER ENERGY LIMIT
Complot		23-28	I6 UPPER MAT OR ZA LIMIT (SEE SELECTION MODE,
Complot			INPUT LINE 1, COLUMNS 1-11).
Complot		29-30	I2 UPPER MF LIMIT
Complot		31-33	I3 UPPER MT LIMIT
Complot		34-44	E11.4 UPPER ENERGY LIMIT
Complot			

Complot	45-55	I11	IDENTIFY EVALUATED DATA POINTS OPTION.
Complot			= 0 - DO NOT IDENTIFY DATA POINTS.
Complot			= 1 - IDENTIFY DATA POINTS (BY DRAWING A
Complot			SMALL BOX AROUND EACH POINT).
Complot	56-66	I11	INTERACTIVE INPUT FLAG
Complot			= 0 - NO INTERACTIVE INPUT ALLOWED
Complot			= 1 - INTERACTIVE INPUT ALLOWED
Complot			*SETTING THIS OPTION =1 WILL TURN ON THE
Complot			MOUSE AFTER EACH PLOT AND ALLOW YOU TO
Complot			INTERACTIVELY SPECIFY PLOT LIMITS.
Complot			*IF YOU DO NOT WISH TO INTERACT WITH A PLOT
Complot			OR IF YOU HAVE NO INTERACTIVE CAPABILITY
Complot			THIS OPTION SHOULD BE SET = 0.
Complot			
Complot			*WARNING...DATA POINTS IDENTIFIED OPTION IS
Complot			NOT RECOMMENDED FOR PLOTS CONTAINING MANY
Complot			(I.E. THOUSANDS) OF DATA POINTS SINCE IT
Complot			WILL MERELY INCREASE THE RUNNING TIME OF
Complot			THE PROGRAM AND STILL NOT ALLOW ONE TO
Complot			ACCURATELY SEE DATA POINTS.
Complot			
Complot			*UP TO 100 MAT OR ZA RANGES ARE ALLOWED.
Complot			THE LIST IS TERMINATED BY A BLANK LINE.
Complot			IF THE UPPER LIMIT IS LESS THAN THE LOWER
Complot			LIMIT IT WILL BE SET EQUAL TO THE LOWER
Complot			LIMIT. IF THE FIRST RANGE LINE IS BLANK
Complot			ALL DATA WILL BE RETRIEVED. IF THE UPPER



Complot CONSTITUENT PER ATOM OF THE MIXTURE.  
Complot = 0.0 - ON INPUT WILL BE INTERPRETED AS 1.0  
Complot (WITH THIS CONVENTION THE USER NEED ONLY  
Complot INPUT MULTIPLICATION FACTORS IF THEY ARE  
Complot NOT 1.0).  
Complot \*UP TO 100 MAT OR ZA EQUIVALENCES ARE  
Complot ALLOWED.  
Complot \*THE LIST IS TERMINATED BY A BLANK LINE.  
Complot \*A ZERO INPUT FIELD IMPLIES ALL. TO EQUATE  
Complot A GIVEN MT NUMBER TO ANOTHER MT NUMBER YOU  
Complot NEED MERELY SPECIFY ZA=0 ON INPUT.  
Complot \*NOTE, IN ALL CASES THE TITLE AT TOP OF PLOT  
Complot WILL ONLY IDENTIFY MASTER (ZA,MF,MT). THE  
Complot USER INPUT TITLES MUST BE USED TO IDENTIFY  
Complot THE SECOND REACTION (SEE, EXAMPLE INPUT 4  
Complot BELOW).

Complot EXAMPLE DEFINITION OF PLOTTER  
Complot

Complot -----

Complot 2015 - WARNING - THE FOLLOWING DESCRIPTION IS OUT-OF-DATE.

Complot TODAY THE DIMENSIONS OF THE PLOTTER ARE IN INCHES.

Complot THE FIRST INPUT LINE DEFINES THE DIMENSIONS OF THE PLOTTER BEING  
Complot USED IN ANY UNITS (INCHES, CENTIMETERS, MILLIMETERS, ANYTHING)  
Complot WHICH APPLY TO THE PLOTTER. IN ADDITION THE FIRST LINE DEFINES  
Complot HOW MANY PLOTS SHOULD APPEAR ON EACH FRAME. THE PLOTTING AREA  
Complot DEFINED ON THE FIRST INPUT LINE MAY BE SUBDIVIDED INTO ANY NUMBER  
Complot

OF PLOTS IN THE X AND Y DIRECTION. FOR EXAMPLE, TO PRODUCE A  
Complot  
SERIES OF FRAMES EACH CONTAINING 3 PLOTS IN THE X DIRECTION AND  
Complot  
2 PLOTS IN THE Y DIRECTION (6 PLOTS PER FRAME) COLUMN 45-55 OF  
Complot  
THE FIRST INPUT LINE SHOULD BE 3 AND COLUMNS 56-66 SHOULD BE 2.  
Complot

Complot  
IF THE LOCAL PLOTTER USES DIMENSIONS OF INCHES IN ORDER TO OBTAIN  
Complot  
10 X 10 INCH FRAMES WITH 3 X 2 PLOTS PER FRAME THE FIRST INPUT  
Complot  
LINE SHOULD BE,  
Complot

Complot  
0.0            10.0            0.0            10.0                            3                            2  
Complot

Complot  
IF THE LOCAL PLOTTER USES DIMENSION OF MILLIMETERS THE SAME  
Complot  
PHYSICAL SIZE PLOT MAY BE OBTAINED IF THE FIRST INPUT LINE IS,  
Complot

Complot  
0.0            254.0            0.0            254.0                            3                            2  
Complot

Complot  
FOR SIMPLICITY THE FOLLOWING EXAMPLE INPUTS WILL NOT DISCUSS THE  
Complot  
PHYSICAL DIMENSIONS OF THE PLOTTER AND THE FIRST INPUT LINE WILL  
Complot  
IN ALL CASES INDICATE 10 X 10 INCH PLOTS WITH ONLY 1 PLOT PER  
Complot  
FRAME.  
Complot

Complot  
IN THE FOLLOWING EXAMPLES IN ALL CASES THESE OPTIONS WILL BE USED,  
Complot  
1) DASHED GRID                    - COLUMNS 12-22 OF SECOND INPUT LINE = 1  
Complot  
2) NO BORDER                      - COLUMNS 23-33 OF SECOND INPUT LINE = 0  
Complot  
3) LINE THICKNESS                - COLUMNS 34-44 OF SECOND INPUT LINE = -2  
Complot  
4) OUTPUT MODE                    - COLUMNS 45-55 OF SECOND INPUT LINE = 3  
Complot  
5) FIRST PLOT NUMBER - COLUMNS 56-66 OF SECOND INPUT LINE = 1  
Complot

Complot  
 EXAMPLE INPUT 1  
 Complot  
 -----  
 Complot  
 RETRIEVE MATS 1023, 1056 AND 1065 THROUGH 1072, MT = 1 AND 2  
 Complot  
 (TOTAL AND ELASTIC) FROM THE FIRST INPUT FILE AND COMPARE TO  
 Complot  
 ANY SECTION FROM THE SECOND FILE THAT HAS THE SAME ZA/MF/MT. ONLY  
 Complot  
 COMPARE DATA OVER THE ENERGY RANGE 0.1 EV TO 1 KEV. IDENTIFY  
 Complot  
 THE TWO SETS OF DATA AS ENDF/B-V AND ENDF/B-IV, RESPECTIVELY.  
 Complot  
 ONLY PLOT THOSE REACTIONS WHICH DIFFER AT ONE OR MORE ENERGIES  
 Complot  
 BY MORE THAN 1 PER-CENT (NOTE, 1 PER-CENT = 0.01 AS INPUT  
 Complot  
 FRACTION). NO EQUIVALENT REACTIONS ARE SPECIFIED. FILERNAME  
 Complot  
 ARE STANDARD (THSE CAN EITHER BE EXPLICITLY INCLUDED, OR SIMPLY  
 Complot  
 LEFT BLANK).

Complot  
 THE FOLLOWING 12 INPUT LINES ARE REQUIRED.

Complot  
 0.0            10.0            0.0            10.0                            3            2  
 Complot  
 ENDFB.IN1  
 Complot  
 ENDFB.IN2  
 Complot  
 0            1            0            -2                            3            1  
 Complot  
 0.01            0.0  
 Complot  
 ENDF/B-V DATA (STANDARD)  
 Complot  
 ENDF/B-IV DATA  
 Complot  
 1023 3 1 0.1                            3 2 1000.0                            0  
 Complot  
 1056 3 1 0.1                            3 2 1000.0                            0  
 Complot  
 1065 3 1 0.1                            1072 3 2 1000.0                            0  
 Complot

(TERMINATES REQUEST LIST)

Complot

(TERMINATES EQUIVALENCE LIST)

Complot

Complot

EXAMPLE INPUT 2

Complot

-----

Complot

TO USE ALL OF THE SAME OPTIONS AS SPECIFIED IN EXAMPLE INPUT 1,

Complot

EXCEPT TO RETRIEVE U-235, U-238 AND PU-239 THROUGH PU-242 THE

Complot

FOLLOWING 12 INPUT LINES ARE REQUIRED.

Complot

Complot

0.0 10.0 0.0 10.0 3 2

Complot

ENDFB.IN1

Complot

ENDFB.IN2

Complot

1 1 0 -2 3 1

Complot

0.01 0.0

Complot

ENDF/B-V DATA (STANDARD)

Complot

ENDF/B-IV DATA

Complot

92235 3 1 0.1 3 2 1000.0 0

Complot

92238 3 1 0.1 3 2 1000.0 0

Complot

94239 3 1 0.1 94242 3 2 1000.0 0

Complot

(TERMINATES REQUEST LIST)

Complot

(TERMINATES EQUIVALENCE LIST)

Complot

EXAMPLE INPUT 3

Complot

-----

Complot

TO USE ALL OF THE SAME OPTIONS AS SPECIFIED IN EXAMPLE INPUT 1,

Complot

EXCEPT TO RETRIEVE AND COMPARE ALL MATS THE FOLLOWING 10 INPUT

Complot

LINES ARE REQUIRED.

Complot

Complot

0.0 10.0 0.0 10.0 3 2

Complot

```

    ENDFB.IN1
Complot
    ENDFB.IN2
Complot
    0          1          0          -2          3          1
Complot
    0.01      0.0
Complot
    ENDF/B-V DATA (STANDARD)
Complot
    ENDF/B-IV DATA
Complot
    1 1 1 0.0      999999999 0.0      0
Complot
    (TERMINATES REQUEST LIST)
Complot
    (TERMINATES EQUIVALENCE LIST)
Complot
    NOTE, ZERO LOWER AND UPPER
Complot
    MAT LIMITS INDICATES NO LIMIT.
Complot
Complot
    EXAMPLE INPUT 4
Complot
    -----
Complot
    RETRIEVE U-235 AND EQUATE THE FISSION CROSS SECTION (MT=18) ON
Complot
    THE MASTER FILE TO CAPTURE (MT=102) ON THE SECOND FILE. PLOT
Complot
    THE CAPTURE, FISSION AND CAPTURE TO FISSION RATIO OVER THE ENERGY
Complot
    RANGE 0.0253 EV TO 1 KEV. THE FOLLOWING 11 INPUT LINES ARE
Complot
    REQUIRED.
Complot
Complot
    0.0      10.0      0.0      10.0      3      2
Complot
    ENDFB.IN1
Complot
    ENDFB.IN2
Complot
    1          1          0          -2          3          1
Complot
    0.01      0.0
Complot
    FISSION
Complot
    CAPTURE
Complot

```

92235 3 18 0.0253 92235 3 18 1000.0 0  
Complot (TERMINATES REQUEST LIST)  
Complot  
92235 3 18 92235 3102 (MULTIPLICATION OF 1.0 INFERRED)  
Complot (TERMINATES EQUIVALENCE LIST)  
Complot  
Complot  
EXAMPLE INPUT 5  
Complot  
-----  
Complot  
IN DIFFERENT VERSIONS OF THE ENDF/B FORMAT DIFFERENT MT NUMBERS  
Complot  
ARE ASSIGNED TO THE SAME REACTION. FOR EXAMPLE, IN ENDF/B-V AND  
Complot  
EARLIER VERSIONS OF ENDF/B THE PHOTOELECTRIC CROSS SECTION IS  
Complot  
MT=602, WHILE IN ENDF/B-VI IT IS MT=522. IN ORDER TO COMPARE  
Complot  
ASSUMING THAT THE MASTER IS ENDF/B-VI AND THE OTHER ENDF/B FILE  
Complot  
IS ENDF/B-V (OR EARLIER) YOU MAY EQUATE MT=522 TO 602.  
Complot  
Complot  
WHEN COMPARING PHOTOELECTRIC CROSS SECTIONS WE EXPECT THERE TO BE  
Complot  
LARGE DIFFERENCES NEAR EDGES, SINCE IT IS UNLIKELY THAT TWO  
Complot  
INDEPENDENT EVALUATIONS USE EXACTLY THE SAME EDGE ENERGIES. FROM  
Complot  
A PRACTICAL VIEWPOINT THESE DIFFERENCES ARE NOT IMPORTANT IF THEY  
Complot  
ONLY OCCUR OVER NARROW ENERGY RANGES NEAR ENERGIES. HOWEVER THESE  
Complot  
LARGE DIFFERENCES MAY MAKE IT DIFFICULT TO SEE DIFFERENCES OVER  
Complot  
OTHER ENERGY RANGES, WHICH MAY BE IMPORTANT. IN ORDER TO BE ABLE  
Complot  
TO SEE IMPORTANT DIFFERENCES IN THE FOLLOWING COMPARISON WE WILL  
Complot  
CONSTRAIN THE PLOTTED RATIO TO THE RANGE ABOUT 0.9 TO 1.1 IN  
Complot  
ORDER TO BE ABLE TO SEE DIFFERENCES OF UP TO 10 PER-CENT. WE WILL  
Complot  
DO THIS BY SPECIFYING A MAXIMUM RATIO OF 1.1, WHICH WILL IN TURN  
Complot  
DEFINE A MINIMUM RATIO OF 1/1.1, OR ABOUT 0.9.  
Complot  
Complot

```

        IN ORDER TO COMPARE THE PHOTOELECTRIC CROSS SECTION FOR ALL
Complot
        MATERIALS THE FOLLOWING 11 INPUT LINES ARE REQUIRED.
Complot

Complot
    0.0      10.0      0.0      10.0      3      2
Complot
    ENDFB.IN1
Complot
    ENDFB.IN2
Complot
    0      1      0      -2      3      1
Complot
    0.01      1.1
Complot
    ENDF/B-VI
Complot
    ENDF/B-V
Complot
    023522      999923522      0
Complot
                                                (TERMINATES REQUEST LIST)
Complot
    023522      023602      (MULTIPLICATION OF 1.0 INFERRED)
Complot
                                                (TERMINATES EQUIVALENCE LIST)
Complot

Complot
    EXAMPLE INPUT 6
Complot
    -----
Complot
    THE SAME EXAMPLE AS ABOVE, EXCEPT THAT DIFFERENT FILENAMES WILL
Complot
    BE USED TO READ THE DATA FROM A FILE TREE STRUCTURE. THE FOLLOWING
Complot
    11 INPUT LINES ARE REQUIRED.
Complot

Complot
    0.0      10.0      0.0      10.0      3      2
Complot
    /Evaluated/ENDFB6/PHOTON.IN
Complot
    /Evaluated/ENDFB5/PHOTON.IN
Complot
    0      1      0      -2      3      1
Complot
    0.01      1.1
Complot
    ENDF/B-VI
Complot

```

```

    ENDF/B-V
Complot
    023522          999923522          0
Complot
                                     (TERMINATES REQUEST LIST)
Complot
    023522    023602          (MULTIPLICATION OF 1.0 INFERRED)
Complot
                                     (TERMINATES EQUIVALENCE LIST)
Complot
Complot
    EXAMPLE INPUT 7
Complot
    -----
Complot
    THE OUTPUT FOR ALL OF THE ABOVE EXAMPLES ARE ORIENTED WITH X
Complot
    HORIZONTAL AND Y VERTICAL. TO CHANGE THE ORIENTATION OF THE PLOTS
Complot
    YOU NEED MERELY SPECIFY A NEGATIVE UPPER X LIMIT OF THE SIZE OF
Complot
    THE PLOTS ON THE FIRST INPUT LINE.
Complot
Complot
    THE FOLLOWING EXAMPLE IS EXACTLY THE SAME AS THE ABOVE EXAMPLE,
Complot
    EXCEPT THAT THE ORIENTATION OF THE PLOTS HAS BEEN CHANGED. THE
Complot
    FOLLOWING 11 INPUT LINES ARE REQUIRED.
Complot
Complot
    0.0      -10.0      0.0      10.0      3      2
Complot
    /Evaluated/ENDFB6/PHOTON.IN
Complot
    /Evaluated/ENDFB5/PHOTON.IN
Complot
    0          1          0          -2          3          1
Complot
    0.01      1.1
Complot
    ENDF/B-VI
Complot
    ENDF/B-V
Complot
    023522          999923522          0
Complot
                                     (TERMINATES REQUEST LIST)
Complot
    023522    023602          (MULTIPLICATION OF 1.0 INFERRED)
Complot

```

(TERMINATES EQUIVALENCE LIST)

Complot

Complot

===== PLOTTER/GRAPHICS TERMINAL INTERFACE =====

Complot

Complot

NON-INTERACTIVE

Complot

-----  
Complot

THIS PROGRAM USES A SIMPLE CALCOMP LIKE INTERFACE INVOLVING

Complot

ONLY 5 SUBROUTINES,

Complot

Complot

STARPLOT - INITIALIZE PLOTTER

Complot

NEXTPLOT - CLEAR SCREEN FOR NEXT PLOT

Complot

ENDPLOTS - TERMINATE PLOTTING

Complot

Complot

PLOT(X,Y,IPEN) - DRAW OR MOVE FROM LAST LOCATION TO (X,Y),

Complot

END OF CURRENT PLOT OR END OF PLOTTING.

Complot

IPEN = 2 - DRAW

Complot

= 3 - MOVE

Complot

Complot

PEN(IPEN) - SELECT COLOR.

Complot

IPEN- COLOR = 1 TO N (N = ANY POSITIVE INTEGER)

Complot

Complot

BOXCOLOR(X,Y,IFILL,IBORDER) - FILL A RECTANGLE WITH COLOR

Complot

X,Y = DEFINE THE CORNERS OF THE BOX

Complot

IFILL = COLOR TO FILL BOX WITH

Complot

IBORDER = COLOR OF BORDER OF BOX

Complot

Complot

INTERACTIVE

Complot

```

-----
Complot      THIS PROGRAM INCLUDES AN INTERACTIVE INTERFACE FOR USE WITH A
Complot      MOUSE. THE INTERFACE INVOLVES 2 SUBROUTINE,
Complot
Complot      INTERACT(MYACTION)          - WHETHER OR NOT INTERACTION
Complot      MYACTION                    = 0 - NO (RETURNED BY INTERACT)
Complot                                           = 1 - YES (RETURNED BY INTERACT)
Complot
Complot      MOUSEY(IWAY,XI,YI,IWAY1,IWAY2) - READ POSITION OF MOUSE
Complot
Complot      IWAY                        = 0 - NO INPUT
Complot                                           = 1 - LEFT BUTTON
Complot                                           = 2 - MIDDLE BUTTON
Complot                                           = 3 - RIGHT BUTTON
Complot                                           = 4 - KEYBOARD INPUT
Complot
Complot      XI                          = X POSITION IN LOCAL UNITS
Complot
Complot      YI                          = Y POSITION IN LOCAL UNITS
Complot
Complot      IWAY1                       = MINIMUM ALLOWABLE IWAY
Complot
Complot      IWAY2                       = MAXIMUM ALLOWABLE IWAY
Complot
Complot      AS USED BY THIS PROGRAM IWAY1 = 1
Complot
Complot      IWAY2                       = 4
Complot
Complot      KEYBOARD INPUT (IWAY=4) MEANS NO ZOOMED PLOT REQUESTED.
Complot
Complot      MOUSE INPUT (IWAY=1 TO 3) MEANS A ZOOMED PLOT IS REQUESTED.
Complot
Complot      MOUSEY WILL BE CALLED ONCE TO SEE IF A ZOOMED PLOT IS REQUESTED.
Complot
Complot      IF IT IS XI WILL BE USED TO DEFINE ONE X (E.G., ENERGY) LIMIT OF
Complot      THE ZOOMED PLOT. MOUSEY WILL THEN BE CALLED A SECOND TIME TO
Complot      DEFINE A SECOND XI TO DEFINE THE OTHER X LIMIT OF THE ZOOMED
Complot

```

```

        PLOT.
Complot

Complot
        IF YOU DO NOT WANT INTERACTION YOU SHOULD INCLUDE THE FOLLOWING
Complot
        SUBROUTINES IN YOUR GRAPHIC INTERFACE,
Complot

Complot
        SUBROUTINE INTERACT(MYACTION)
Complot
        MYACTION=0
Complot
        RETURN
Complot
        END
Complot
        SUBROUTINE MOUSEY(IWAY,XI,YI,IWAY1,IWAY2)
Complot
        IWAY=4
Complot
        XI=0.0
Complot
        YI=0.0
Complot
        RETURN
Complot
        END
Complot

Complot
        ALTERNATIVE INTERACTIVE
Complot
        -----
Complot
        IF YOU DO NOT HAVE A MOUSE BUT WOULD STILL LIKE TO INTERACTIVE
Complot
        INPUT YOU CAN REPLACE SUBROUTINE ACTION IN THIS PROGRAM.
Complot

Complot
        AS DISTRIBUTED SUBROUTINE ACTION USES A MOUSE TO DEFINE LOWER
Complot
        AND UPPER ENERGY (OR X) LIMITS WHICH ARE USED TO PRODUCE THE
Complot
        NEXT PLOT. A CALL TO ACTION IS OF THE FORM,
Complot

Complot
        CALL ACTION(KACTV,XACT1,XACT2)
Complot

Complot

```

KACTV   = 0 - NO INTERACTIVE INPUT  
Complot

                                  = 1 - INTERACTIVE INPUT  
Complot

                  XACT1   = LOWER ENERGY LIMIT  
Complot

                  XACT2   = UPPER ENERGY LIMIT  
Complot

Complot

          IF THERE IS NO INTERACTIVE INPUT THE PROGRAM WILL PROCEED TO THE  
Complot

          NEXT PLOT REQUESTED BY NON-INTERACTIVE INPUT.  
Complot

Complot

          IF THERE IS INTERACTIVE INPUT THE PROGRAM WILL USE XACT1 AND  
Complot

          XACT2 TO DEFINE THE ENERGY LIMITS OF THE NEXT PLOT USING THE  
Complot

          SAME DATA AS APPEARED ON THE LAST PLOT. AS WITH NON-INTERACTIVE  
Complot

          INPUT, IF YOU SELECT AN ENERGY RANGE WHERE THE MAXIMUM DIFFERENCE  
Complot

          IS LESS THAN THAT SPECIFIED BY INPUT NO PLOT WILL BE PRODUCED  
Complot

          AND THE CODE WILL PROCEED TO THE NEXT PLOT REQUESTED BY  
Complot

          NON-INTERACTIVE INPUT.  
Complot

Complot

          YOU CAN REPLACE SUBROUTINE ACTION FOLLOWING THE ABOVE CONVENTIONS  
Complot

          TO ALLOW INTERACTION VIA DIRECT READ OF X LIMITS, LIGHTPEN OR  
Complot

          WHATEVER FACILITIES YOU HAVE AVAILABLE.  
Complot

Complot

          INTERFACING  
Complot

-----

Complot

          IN ORDER TO INTERFACE THIS PROGRAM FOR USE ON ANY PLOTTER WHICH  
Complot

          DOES NOT USE THE ABOVE CONVENTIONS IT IS MERELY NECESSARY FOR THE  
Complot

          THE USER TO WRITE 5 SUBROUTINES DESCRIBED ABOVE AND TO THEN CALL  
Complot

          THE LOCAL EQUIVALENT ROUTINES.  
Complot

Complot

COLOR PLOTS

Complot

-----  
Complot

TO SELECT PLOTTING COLORS SUBROUTINE PEN (DESCRIBED ABOVE) IS USED  
Complot  
TO SELECT ONE OF THE AVAILABLE COLORS. WHEN RUNNING ON A MAINFRAME  
Complot  
USING AN IBM GRAPHICS TERMINAL OR ON AN IBM-PC USING A HEWLETT-  
Complot  
PACKARD PLOTTER THE GRAPHICS INTERFACE (DESCRIBED ABOVE) WILL  
Complot  
PRODUCE COLOR PLOTS.

Complot

Complot

BLACK AND WHITE PLOTS

Complot

-----  
Complot

WHEN PRODUCING BLACK AND WHITE HARDCOPY ON A MAINFRAME THE USER  
Complot  
SHOULD ADD A DUMMY SUBROUTINE PEN TO THE END OF THE PROGRAM TO  
Complot  
IGNORE ATTEMPTS TO CHANGE COLOR. ADD THE FOLLOWING SUBROUTINE,  
Complot

Complot

SUBROUTINE PEN(IPEN)

Complot

RETURN

Complot

END

Complot

Complot

CHARACTER SET

Complot

-----  
Complot

THIS PROGRAM USES COMPUTER AND PLOTTER DEVICE INDEPENDENT SOFTWARE  
Complot  
CHARACTERS. THIS PROGRAM COMES WITH A FILE THAT DEFINES THE PEN  
Complot  
STROKES REQUIRED TO DRAW ALL CHARACTERS ON AN IBM KEYBOARD (UPPER  
Complot  
AND LOWER CASE CHARACTERS, NUMBERS, ETC.) PLUS AN ALTERNATE SET OF  
Complot  
ALL UPPER AND LOWER CASE GREEK CHARACTERS AND ADDITIONAL SPECIAL  
Complot  
SYMBOLS.

Complot

Complot

THE SOFTWARE CHARACTER TABLE CONTAINS X AND Y AND PEN POSITIONS TO  
Complot  
DRAW EACH CHARACTER. IF YOU WISH TO DRAW ANY ADDITIONAL CHARACTERS  
Complot  
OR TO MODIFY THE FONT OF THE EXISTING CHARACTERS YOU NEED ONLY  
Complot  
MODIFY THIS TABLE.  
Complot

Complot  
CONTROL CHARACTERS  
Complot

-----  
Complot  
IN THE SOFTWARE CHARACTER TABLE ALL CHARACTERS TO BE PLOTTED WILL  
Complot  
HAVE PEN POSITION = 2 (DRAW) OR = 3 (MOVE). IN ADDITION THE TABLE  
Complot  
CURRENTLY CONTAINS 4 CONTROL CHARACTERS,  
Complot

Complot  
PEN POSITION = 0  
Complot  
-----

Complot  
SHIFT THE NEXT PRINTED CHARACTER BY X AND Y. 3 CONTROL CHARACTERS  
Complot  
ARE PRESENTLY INCLUDED IN THE SOFTWARE CHARACTER TABLE TO ALLOW  
Complot  
SHIFTING.  
Complot

Complot  
{ = SHIFT UP (FOR SUPERSCRIPTS.....X= 0.0, Y= 0.5)  
Complot  
} = SHIFT DOWN (FOR SUBSCRIPTS.....X= 0.0, Y=-0.5)  
Complot  
\ = SHIFT LEFT 1 CHARACTER (FOR BACKSPACE...X=-1.0, Y= 0.0)  
Complot

Complot  
PEN POSITION =-1  
Complot  
-----

Complot  
SELECT THE NEXT PRINTED CHARACTER FROM THE ALTERNATE CHARACTER  
Complot  
SET. AT PRESENT THIS CONTROL CHARACTER IS,  
Complot

Complot  
] = SWITCH TO ALTERNATE CHARACTER SET  
Complot

Complot  
THESE 4 CONTROL CHARACTERS ARE ONLY DEFINED BY THE VALUE OF THE  
Complot  
PEN POSITION IN THE SOFTWARE CHARACTER TABLE (I.E., THEY ARE NOT  
Complot  
HARD WIRED INTO THIS PROGRAM). AS SUCH BY MODIFYING THE SOFTWARE  
Complot  
CHARACTER TABLE THE USER HAS THE OPTION OF DEFINING ANY CONTROL  
Complot  
CHARACTERS TO MEET SPECIFIC NEEDS.  
Complot

Complot  
THESE CHARACTERS MAY BE USED IN CHARACTER STRINGS TO PRODUCE  
Complot  
SPECIAL EFFECTS. FOR EXAMPLE, TO PLOT SUBSCRIPT 5, B, SUPERSCRIP  
Complot  
T 10 USE THE STRING,  
Complot

Complot  
}5B{1{0  
Complot

Complot  
TO PLOT B, SUBSCRIPT 5 AND SUPERSCRIP 10 WITH THE 5 DIRECTLY  
Complot  
BELOW THE 1 OF THE 10 WE CAN USE THE BACKSPACE CHARACTER TO  
Complot  
POSITION THE 1 DIRECTLY ABOVE THE 5 USING THE STRING,  
Complot

Complot  
B}5\{1{0  
Complot

Complot  
TO PLOT UPPER CASE GREEK GAMMA FOLLOWED BY THE WORD TOTAL (I.E.,  
Complot  
RESONANCE TOTAL WIDTH) USE THE STRING.  
Complot

Complot  
]G TOTAL  
Complot

Complot  
NOTE, WHEN THESE CONTROL CHARACTERS ARE USED THEY ONLY EFFECT THE  
Complot  
NEXT 1 PRINTED CHARACTER (SEE, ABOVE EXAMPLE OF PLOTTING SUPER-  
Complot  
SCRIPT 10 WHERE THE SHIFT UP CONTROL CHARACTER WAS USED BEFORE THE  
Complot

1 AND THEN AGAIN BEFORE THE 0 AND THE BACKSPACE AND SHIFT UP  
Complot CONTROL CHARACTERS WERE USED IN COMBINATION).  
Complot

Complot IF THESE 4 CONTROL CHARACTERS ARE NOT AVAILABLE ON YOUR COMPUTER  
Complot YOU CAN MODIFY THE SOFTWARE CHARACTER TABLE TO USE ANY OTHER 4  
Complot CHARACTERS THAT YOU DO NOT NORMALLY USE IN CHARACTER STRINGS (FOR  
Complot DETAILS SEE THE SOFTWARE CHARACTER TABLE).  
Complot

Complot STANDARD/ALTERNATE CHARACTER SETS  
Complot

-----  
Complot THE SOFTWARE CHARACTER TABLE CONTAINS 2 SETS OF CHARACTERS WHICH  
Complot ARE A STANDARD SET (ALL CHARACTERS ON AN IBM KEYBOARD) AND AN  
Complot ALTERNATE SET (UPPER AND LOWER CASE GREEK CHARACTERS AND SPECIAL  
Complot CHARACTERS). TO DRAW A CHARACTER FROM THE ALTERNATE CHARACTER SET  
Complot PUT A RIGHT BRACKET CHARACTER (]) BEFORE A CHARACTER (SEE THE  
Complot ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS  
Complot CONTROL CHARACTER WILL ONLY EFFECT THE NEXT 1 PLOTTED CHARACTER.  
Complot

Complot SUB AND SUPER SCRIPTS  
Complot

-----  
Complot TO DRAW SUBSCRIPT PRECEED A CHARACTER BY }. TO DRAW SUPERSCRIPIT  
Complot PRECEED A CHARACTER BY { (SEE THE ABOVE EXAMPLE AND THE SOFTWARE  
Complot CHARACTER TABLE FOR DETAILS). THESE CONTROL CHARACTER WILL ONLY  
Complot EFFECT THE NEXT 1 PLOTTED CHARACTER.  
Complot

Complot BACKSPACING  
Complot

-----  
Complot

TO BACKSPACE ONE CHARACTER PRECEED A CHARACTER BY \ (SEE, THE  
Complot ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS  
Complot CONTROL CHARACTER WILL PERFORM A TRUE BACKSPACE AND WILL EFFECT  
Complot ALL FOLLOWING CHARACTERS IN THE SAME CHARACTER STRING.

Complot PLOT DIMENSIONS  
Complot -----

Complot ARE DEFINED BY USER INPUT. INTERNALLY THE PROGRAM WILL CREATE A  
Complot PLOT IN APPROXIMATELY A4 OR 8-1/2 BY 11 INCH FORMAT. DURING  
Complot OUTPUT THE PLOT IS TRANSFORMED TO THE UNITS (INCHES, CENTIMETERS,  
Complot MILLIMETERS, WHATEVER) OF THE PLOTTER BEING USED AND OUTPUT.

Complot  
Complot ===== PLOTTER/GRAPHICS TERMINAL INTERFACE =====  
Complot  
Complot =====