**=======================================================================COMPLOT**

 **COMPLOT**

 **PROGRAM COMPLOT COMPLOT**

 **=============== 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**

 **\*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**

 **\*ADDED IDENTIFY DATA POINTS OPTION COMPLOT**

 **(SMALL BOX DRAWN AROUND EACH CROSS COMPLOT**

 **SECTION AND RATIO POINT). COMPLOT**

 **\*IMPROVED NON-IBM GRAPHICS INTERFACECOMPLOT**

 **(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**

 **\*DOUBLE PRECISION TREATMENT OF COMPLOT**

 **ENERGY (REQUIRED FOR NARROW COMPLOT**

 **RESONANCES). COMPLOT**

 **\*ADDED (ZA,MT) EQUIVALENCE OPTION. 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 PLOTTERCOMPLOT**

 **\*WARNING..INPUT PARAMETERS FROM BEENCOMPLOT**

 **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 ANYTHINGCOMPLOT**

 **CRAZY. COMPLOT**

 **\*FORTRAN-77/FORTRAN-H COMPATIBLE COMPLOT**

 **\*SPECIAL ENDF/B MATERIAL DEFINITIONSCOMPLOT**

 **(ZA.LT.1000) FROM DATA FILE READ COMPLOT**

 **BY PROGRAM. COMPLOT**

 **VERSION 89-2 (MARCH 1989) \*ADDED ENDF/B-V AND VI MT COMPLOT**

 **DEFINITIONS. PROGRAM WILL DETERMINECOMPLOT**

 **ENDF/B FORMAT BASED ON MF=1, COMPLOT**

 **MT=451 AND USE AS PPROPRIATE MT COMPLOT**

 **DEFINITIONS. IF NO MF=1, MT=451 COMPLOT**

 **PROGRAM WILL USE ENDF/B-VI COMPLOT**

 **MT DEFINITIONS. COMPLOT**

 **VERSION 90-1 (AUGUST 1990) \*A NEW PROGRAM 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**

 **VERSION 92-1 (JANUARY 1992) \*ADDED INCIDENT CHARGED PARTICLES COMPLOT**

 **(IDENTIFIED IN PLOT TITLES) COMPLOT**

 **\*ADDED COMPLETELY COMPATIBLE I/O 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 INPUTCOMPLOT**

 **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 CHANGECOMPLOT**

 **\*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**

 **\*ONLY plot linearly interpoolable dataCOMPLOT**

 **\*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-positiveCOMPLOT**

 **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 = see change search for 2015-2COMPLOT**

 **VERS. 2015-3 (Oct. 2015) \*Allow multiple LRF=7 regions plus COMPLOT**

 **unreslved region - earlier assumed COMPLOT**

 **LRF=7 never used unrsesolved. COMPLOT**

 **VERS. 2017-1 (May 2017) \*For MF=2 use MT=151 to define COMPLOT**

 **Unresolved Resonance Region (URR). COMPLOT**

 **Ignore NJOY MT=152 and 153. COMPLOT**

 **\*All floating input parameters changedCOMPLOT**

 **to character input + IN9 conversion. COMPLOT**

 **\*Added MF=4 Legendre Coefficient COMPLOT**

 **Comparison: f1 through f6 COMPLOT**

 **Vers. 2018-1 (Jan. 2018) \*Doubled in core storage to 1,200,000.COMPLOT**

 **\*Replaced Q MeV by MT= at top of plotsCOMPLOT**

 **(Q value in ENDF is now only defined COMPLOT**

 **in MF=3, making it difficult for allCOMPLOT**

 **other MF now treated by this code) COMPLOT**

 **\*Initial Linear X scaling for MF=1 COMPLOT**

 **(nu-bar) and MF=4 (Legendre) = COMPLOT**

 **this can be turned OFF by ZOOM COMPLOT**

 **+ Unless energy range is requested = COMPLOT**

 **allows MF=1 and 4 default Linear X COMPLOT**

 **scaling to be turned off by input COMPLOT**

 **parameters, i.e., by COMHARD COMPLOT**

 **\*Zoom lower energy limit restricted COMPLOT**

 **1.0d-5 eV - to lower zoom of linear COMPLOT**

 **energy plots (otherwise cannot find COMPLOT**

 **actual lower limit on plot). COMPLOT**

 **\*Added NRO = energy dependent scatter COMPLOT**

 **radius to reading FILE2 parameters COMPLOT**

 **to define unresolved energy range. COMPLOT**

 **\*Corrected energy dependent scatter COMPLOT**

 **for all resonance types (see, above COMPLOT**

 **remarks). COMPLOT**

 **Vers. 2019-1 (June 2019) \*Additional Interpolation Law Tests COMPLOT**

 **\*Checked Maximum Tabulated Energy to COMPLOT**

 **insure it is the same for all MTs - COMPLOT**

 **if not, print WARNING messages. COMPLOT**

 **Vers. 2020-1 (Dec. 2020) \*Corrected Treatment of Threshold COMPLOT**

 **cross sections, to include threshold COMPLOT**

 **(Previously code only used positive COMPLOT**

 **cross sections = skipped threshold) COMPLOT**

 **\*Added isomeric state (m or n) to ZA COMPLOT**

 **interpretation. COMPLOT**

 **\*Increased MAXIZA to 100,000 from COMPLOT**

 **10,000 to allow searching longer COMPLOT**

 **ENDF data fils with many MATs = COMPLOT**

 **NOT RECOMMENDED!!!! COMPLOT**

 **Vers. 2021-1 (Jan. 2021) \*SHOW ALL = mouse click above the COMPLOT**

 **plotting area. COMPLOT**

 **\*Updated for FORTRAN 2018 COMPLOT**

 **Vers. 2023-1 (Feb. 2023) \*Reduced page size from 2,400,000 to COMPLOT**

 **120,000 COMPLOT**

 **COMPLOT**

 **2020-1 Acknowledgment COMPLOT**

 **===================== COMPLOT**

 **I thank Jean-Christophe Sublet (NDS, IAEA, Vienna, Austria) for COMPLOT**

 **reporting the ERROR in COMPLOT (2019-1) that led to the update in COMPLOT**

 **COMPLOT (2020-1) to correctly handle threshold reactions. 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**

 **------------------------------------ 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**

 **--------------------------- COMPLOT**

 **Dermott E. Cullen COMPLOT**

 **1466 Hudson Way COMPLOT**

 **Livermore, CA 94550 COMPLOT**

 **U.S.A. COMPLOT**

 **Telephone 925-443-1911 COMPLOT**

 **E. Mail RedCullen1@Comcast.net COMPLOT**

 **Website RedCullen1.net/HOMEPAGE.NEW 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 COMPUTERCOMPLOT**

 **INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE COMPLOT**

 **OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECTCOMPLOT**

 **IT WOULD BE APPECIATED 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 PLOTTERCOMPLOT**

 **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**

 **---------------------- 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 IDENTIFYCOMPLOT**

 **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**

 **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 SETCOMPLOT**

 **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 REACTIONSCOMPLOT**

 **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 SECTIONCOMPLOT**

 **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 SELECTORCOMPLOT**

 **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 PRESENETED 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-PLOTSCOMPLOT**

 **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 BECOMPLOT**

 **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 TABULATEDCOMPLOT**

 **VALUES. COMPLOT**

 **COMPLOT**

 **IF THE EVALUATED DATA IS NOT IN EITHER HISTOGRAM OR LINRARLY 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**

 **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**

 **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 OVERCOMPLOT**

 **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 NUMBERCOMPLOT**

 **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**

 **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**

 **MT LIMIT IS ZERO IT WILL BE SET EQUAL TO COMPLOT**

 **999 (NO LIMIT). IF THE UPPER ENERGY LIMIT COMPLOT**

 **IS ZERO IT WILL BE INTREPRETED TO MEAN NO COMPLOT**

 **LIMIT. IF THE FIRST RANGE LINE SPECIFIES COMPLOT**

 **ZERO LOWER AND UPPER MAT OR ZA RANGE IT COMPLOT**

 **WILL TERMINATE THE LIST BE RANGE LINES COMPLOT**

 **(A SECOND BLANK LINE NEED NOT BE INPUT) COMPLOT**

 **AND THE ENTIRE RANGE OF MATS WILL BE COMPLOT**

 **COMPARED FOR THE SPECIFIED MT AND ENERGY COMPLOT**

 **RANGES. COMPLOT**

 **COMPLOT**

 **N+1-M EQUIVALENCES COMPLOT**

 **1- 6 I6 MASTER ZA. COMPLOT**

 **7- 8 I2 MASTER MF. COMPLOT**

 **9-11 I3 MASTER MT. COMPLOT**

 **12-17 I6 EQUIVALENT ZA FROM SECOND FILE. COMPLOT**

 **18-19 I2 EQUIVALENT MF FROM SECOND FILE. COMPLOT**

 **20-22 I3 EQUIVALENT MT FROM SECOND FILE. COMPLOT**

 **23-33 E11.4 MULTIPLICATION FACTOR. ANY EQUATED ZA,MF, COMPLOT**

 **MT DATA WILL BE MULTIPLIED BY THIS FACTOR. COMPLOT**

 **\*THIS OPTION MAY BE USED TO RE-NORMALIZE COMPLOT**

 **THE SECOND CROSS SECTION OR IF COMPARING COMPLOT**

 **ONE CONSTITUENT OF A MIXTURE TO THE MIXED COMPLOT**

 **CROSS SECTION THIS MAY BE USED TO CONVERT COMPLOT**

 **THE SECOND CROSS SECTION TO BARNS PER MIXEDCOMPLOT**

 **ATOM BY USING A MULTIPLICATION FACTOR WHICHCOMPLOT**

 **IS EQUAL TO THE NUMBER OF ATOMS OF THE ONE COMPLOT**

 **CONSTITUENT PER ATOM OF THE MIXTURE. COMPLOT**

 **= 0.0 - ON INPUT WILL BE INTERPRETED AS 1.0COMPLOT**

 **(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 PLOTCOMPLOT**

 **WILL ONLY INDENTIFY 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**

 **COMPLOT**

 **EXAMPLE DEFINITION OF PLOTTER COMPLOT**

 **----------------------------- COMPLOT**

 **2015 - WARNING - THE FOLLOWING DESCRIPTION IS OUT-OF-DATE. COMPLOT**

 **TODAY THE DIMENSIONS OF THE PLOTTER ARE IN INCHES. COMPLOT**

 **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. FILERNAMES COMPLOT**

 **ARE STANDARD (THSE CAN EITHER BE EXPLICITLY INCLUDED, OR SIMPLY COMPLOT**

 **LEFT BLANK). COMPLOT**

 **COMPLOT**

 **THE 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**

 **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 FOLLOWINGCOMPLOT**

 **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**

 **IWAY = 0 - NO INPUT COMPLOT**

 **= 1 - LEFT BUTTON COMPLOT**

 **= 2 - MIDDLE BUTTON COMPLOT**

 **= 3 - RIGHT BUTTON COMPLOT**

 **= 4 - KEYBOARD INPUT COMPLOT**

 **XI = real\*4 X POSITION IN LOCAL UNITSCOMPLOT**

 **YI = real\*4 Y POSITION IN LOCAL UNITSCOMPLOT**

 **IWAY1 = MINIMUM ALLOWABLE IWAY COMPLOT**

 **IWAY2 = MAXIMUM ALLOWABLE IWAY COMPLOT**

 **COMPLOT**

 **AS USED BY THIS PROGRAM IWAY1 = 1 COMPLOT**

 **IWAY2 = 4 COMPLOT**

 **KEYBOARD INPUT (IWAY=4) MEANS NO ZOOMED PLOT REQUESTED. COMPLOT**

 **MOUSE INPUT (IWAY=1 TO 3) MEANS A ZOOMED PLOT IS REQUESTED. COMPLOT**

 **MOUSEY WILL BE CALLED ONCE TO SEE IF A ZOOMED PLOT IS REQUESTED. 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 USEDCOMPLOT**

 **TO SELECT ONE OF THE AVAILABLE COLORS. WHEN RUNNING ON A MAINFRAMECOMPLOT**

 **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 SOFTWARECOMPLOT**

 **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 OFCOMPLOT**

 **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 TOCOMPLOT**

 **DRAW EACH CHARACTER. IF YOU WISH TO DRAW ANY ADDITIONAL CHARACTERSCOMPLOT**

 **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, SUPERSCRIPT COMPLOT**

 **10 USE THE STRING, COMPLOT**

 **COMPLOT**

 **}5B{1{0 COMPLOT**

 **COMPLOT**

 **TO PLOT B, SUBSCRIPT 5 AND SUPERSCRIPT 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 THECOMPLOT**

 **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 SUPERSCRIPT 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**

 **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**