

PROGRAM SPECTRA

An extension of LINEAR to linearize ALL MF=5 spectra.  
05/28/2012 - Added MF=15 neutron induced, photon spectra.

First released in 2010 - Earlier below dates refer to LINEAR.

VERSION 74-1 (MAY 1974) Spectra  
VERSION 75-1 (APRIL 1975) Spectra  
VERSION 76-2 (OCTOBER 1976) Spectra  
VERSION 77-1 (JANUARY 1977) Spectra  
VERSION 78-1 (JULY 1978) Spectra  
VERSION 79-1 (JULY 1979) CDC-7600 AND CRAY-1 VERSION. Spectra  
VERSION 80-1 (MAY 1980) IBM, CDC AND CRAY VERSION. Spectra  
VERSION 80-2 (DECEMBER 1980) Spectra  
VERSION 81-1 (MARCH 1981) Spectra  
VERSION 82-1 (JANUARY 1982) IMPROVED COMPUTER COMPATIBILITY. Spectra  
VERSION 83-1 (JANUARY 1983) \*MAJOR RE-DESIGN. Spectra  
\*PAGE SIZE INCREASED - 1002 TO 3006. Spectra  
\*ELIMINATED COMPUTER DEPENDENT CODING. Spectra  
\*NEW, MORE COMPATIBLE I/O UNIT NUMBER. Spectra  
\*ADDED OPTION TO KEEP ALL ORIGINAL Spectra  
ENERGY POINTS FROM EVALUATION. Spectra  
\*ADDED STANDARD ALLOWABLE ERROR OPTION Spectra  
(CURRENTLY 0.1 PER-CENT). Spectra  
VERSION 83-2 (OCTOBER 1983) IMPROVED BASED ON USER COMMENTS. Spectra  
VERSION 84-1 (APRIL 1984) IMPROVED BASED ON USER COMMENTS. Spectra  
VERSION 84-2 (JUNE 1984) \*UPDATED FOR ENDF/B-VI FORMATS. Spectra  
\*SPECIAL I/O ROUTINES TO GUARANTEE Spectra  
ACCURACY OF ENERGY. Spectra  
\*DOUBLE PRECISION TREATMENT OF ENERGY Spectra  
(REQUIRED FOR NARROW RESONANCES). Spectra  
VERSION 85-1 (AUGUST 1985) \*FORTRAN-77/H VERSION Spectra  
VERSION 86-1 (JANUARY 1986) \*ENDF/B-VI FORMAT Spectra  
VERSION 87-1 (JANUARY 1987) \*DOUBLE PRECISION TREATMENT OF CROSS Spectra  
SECTION Spectra  
VERSION 88-1 (JULY 1988) \*OPTION...INTERNALLY DEFINE ALL I/O Spectra  
FILE NAMES (SEE, SUBROUTINE FILEIO Spectra  
FOR DETAILS). Spectra  
\*IMPROVED BASED ON USER COMMENTS. Spectra  
VERSION 89-1 (JANUARY 1989) \*PSYCHOANALYZED BY PROGRAM FREUD TO Spectra  
INSURE PROGRAM WILL NOT DO ANYTHING Spectra  
CRAZY. Spectra  
\*UPDATED TO USE NEW PROGRAM CONVERT Spectra  
KEYWORDS. Spectra  
\*ADDED LIVERMORE CIVIC COMPILER Spectra  
CONVENTIONS. Spectra  
VERSION 90-1 (JUNE 1990) \*EXTENDED TO LINEARIZE PHOTON Spectra  
INTERACTION DATA, MF=23 AND 27 Spectra  
\*ADDED FORTRAN SAVE OPTION Spectra  
\*UPDATED BASED ON USER COMMENTS. Spectra  
\*NEW MORE CONSISTENT ENERGY OUTPUT Spectra  
ROUTINE. Spectra  
\*WARNING...INPUT PARAMETER FORMAT Spectra  
HAS BEEN CHANGED...SEE DESCRIPTION Spectra  
BELOW. Spectra  
VERSION 91-1 (JULY 1991) \*ADDED INTERPOLATION LAW 6 - ONLY USED Spectra  
FOR CHARGED PARTICLE CROSS SECTIONS Spectra  
FOR COULOMB PENETRABILITIES. Spectra  
VERSION 92-1 (JANUARY 1992) \*ADDED NU-BAR (TOTAL, DELAYED, PROMPT) Spectra  
POLYNOMIAL OR TABULATED ALL CONVERTED Spectra  
TO LINEARLY INTERPOLABLE Spectra  
\*INCREASED PAGE SIZE FROM 3006 TO 5010 Spectra  
POINTS. Spectra  
\*ALL ENERGIES INTERNALLY ROUNDED PRIOR Spectra  
TO CALCULATIONS. Spectra  
\*COMPLETELY CONSISTENT I/O AND ROUNDING Spectra  
ROUTINES - TO MINIMIZE COMPUTER Spectra  
DEPENDENCE. Spectra

VERSION 92-2 (JULY 1992)	*CORRECTED CONVERSION OF NU-BAR FROM POLYNOMIAL TO TABULATED - COPY SPONTANEOUS NU-BAR (BY DEFINITION THE SPONTANEOUS NU-BAR IS NOT AN ENERGY DEPENDENT QUANTITY).	Spectra Spectra Spectra Spectra
VERSION 93-1 (MARCH 1993)	*UPDATED FOR USE WITH LAHEY COMPILER ON IBM-PCS. *INCREASED PAGE SIZE FROM 5010 TO 30000 POINTS	Spectra Spectra Spectra
VERSION 94-1 (JANUARY 1994)	*VARIABLE ENDF/B DATA FILENAMES TO ALLOW ACCESS TO FILE STRUCTURES (WARNING - INPUT PARAMETER FORMAT HAS BEEN CHANGED) *CLOSE ALL FILES BEFORE TERMINATING (SEE, SUBROUTINE ENDIT)	Spectra Spectra Spectra Spectra
VERSION 96-1 (JANUARY 1996)	*COMPLETE RE-WRITE *IMPROVED COMPUTER INDEPENDENCE *ALL DOUBLE PRECISION *ON SCREEN OUTPUT *UNIFORM TREATMENT OF ENDF/B I/O *IMPROVED OUTPUT PRECISION *DEFINED SCRATCH FILE NAMES *ALWAYS INCLUDE THERMAL VALUE *INCREASED PAGE SIZE FROM 30000 TO 60000 POINTS	Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra
VERSION 99-1 (MARCH 1999)	*CORRECTED CHARACTER TO FLOATING POINT READ FOR MORE DIGITS *UPDATED TEST FOR ENDF/B FORMAT VERSION BASED ON RECENT FORMAT CHANGE *GENERAL IMPROVEMENTS BASED ON USER FEEDBACK	Spectra Spectra Spectra Spectra
VERSION 99-2 (JUNE 1999)	*ASSUME ENDF/B-VI, NOT V, IF MISSING MF=1, MT-451.	Spectra Spectra
VERS. 2000-1 (FEBRUARY 2000)	*ADDED MF = 9 AND 10 LINEARIZATION *GENERAL IMPROVEMENTS BASED ON USER FEEDBACK	Spectra Spectra Spectra
VERS. 2002-1 (MAY 2002)	*OPTIONAL INPUT PARAMETERS	Spectra
VERS. 2004-1 (JAN. 2004)	*GENERAL UPDATE BASED ON USER FEEDBACK	Spectra
VERS. 2005-1 (JAN. 2005)	*ALWAYS KEEP ORIGINAL TABULATED NU-BAR POINTS.	Spectra Spectra
VERS. 2006-1 (FEB. 2006)	*CORRECTED INT=6 NEAR THRESHOLD *NO SUBDIVIDE BELOW MINIMUM XCMIN	Spectra Spectra
VERS. 2007-1 (JAN. 2007)	*CHECKED AGAINST ALL ENDF/B-VII. *INCREASED PAGE SIZE FROM 60,000 TO 600,000 POINTS	Spectra Spectra Spectra
VERS. 2010-1 (JUNE 2010)	*ADDED MF = 5 - MF = 6 STILL PLANNED. *72 CHARACTER FILE NAMES. *ONLY PROCESS MF=5 - SKIP ALL OTHERS TO PREVENT CONFLICT WITH LINEAR THINNING.	Spectra Spectra Spectra Spectra Spectra
VERS. 2012-1 (Aug. 2012)	*Added MF=15, neutron induced photon spectra. *Added CODENAME *32 and 64 bit Compatible *Added ERROR stop	Spectra Spectra Spectra Spectra
VERS. 2015-1 (Jan. 2015)	*Extended OUT9. *Replaced ALL 3 way IF Statements. *Corrected MF=15 Data - it was adding SEND between sub-sections.	Spectra Spectra Spectra Spectra
VERS. 2017-1 (May 2017)	*Deleted unused parts, e.g., NUBAR. *Increased page size to 3,000,000 *Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possible RESERVED NAME *All floating input parameters changed to character input + IN9 conversion.	Spectra Spectra Spectra Spectra Spectra Spectra
VERS. 2018-1 (Jan. 2018)	*On-line output for ALL ENDERROR	Spectra Spectra
OWNED, MAINTAINED AND DISTRIBUTED BY ----- THE NUCLEAR DATA SECTION		Spectra Spectra Spectra















