

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

VERSION 93-1 (MARCH 1993)	*UPDATED FOR USE WITH LAHEY COMPILER ON IBM-PCS.	Linear
	*INCREASED PAGE SIZE FROM 5010 TO 30000 POINTS	Linear
VERSION 94-1 (JANUARY 1994)	*VARIABLE ENDF/B DATA FILENAMES TO ALLOW ACCESS TO FILE STRUCTURES (WARNING - INPUT PARAMETER FORMAT HAS BEEN CHANGED)	Linear
	*CLOSE ALL FILES BEFORE TERMINATING (SEE, SUBROUTINE ENDIT)	Linear
VERSION 96-1 (JANUARY 1996)	*COMPLETE RE-WRITE	Linear
	*IMPROVED COMPUTER INDEPENDENCE	Linear
	*ALL DOUBLE PRECISION	Linear
	*ON SCREEN OUTPUT	Linear
	*UNIFORM TREATMENT OF ENDF/B I/O	Linear
	*IMPROVED OUTPUT PRECISION	Linear
	*DEFINED SCRATCH FILE NAMES	Linear
	*ALWAYS INCLUDE THERMAL VALUE	Linear
	*INCREASED PAGE SIZE FROM 30000 TO 60000 POINTS	Linear
VERSION 99-1 (MARCH 1999)	*CORRECTED CHARACTER TO FLOATING POINT READ FOR MORE DIGITS	Linear
	*UPDATED TEST FOR ENDF/B FORMAT	Linear
	VERSION BASED ON RECENT FORMAT CHANGE	Linear
	*GENERAL IMPROVEMENTS BASED ON USER FEEDBACK	Linear
VERSION 99-2 (JUNE 1999)	*ASSUME ENDF/B-VI, NOT V, IF MISSING MF=1, MT=451.	Linear
VERS. 2000-1 (FEBRUARY 2000)	*ADDED MF = 9 AND 10 LINEARIZATION	Linear
	*GENERAL IMPROVEMENTS BASED ON USER FEEDBACK	Linear
VERS. 2002-1 (MAY 2002)	*OPTIONAL INPUT PARAMETERS	Linear
VERS. 2004-1 (JAN. 2004)	*GENERAL UPDATE BASED ON USER FEEDBACK	Linear
VERS. 2005-1 (JAN. 2005)	*ALWAYS KEEP ORIGINAL TABULATED NU-BAR POINTS.	Linear
VERS. 2006-1 (FEB. 2006)	*CORRECTED INT=6 NEAR THRESHOLD	Linear
	*NO SUBDIVIDE BELOW MINIMUM XCMIN	Linear
VERS. 2007-1 (JAN. 2007)	*CHECKED AGAINST ALL ENDF/B-VII.	Linear
	*INCREASED PAGE SIZE FROM 60,000 TO 600,000 POINTS	Linear
VERS. 2007-2 (DEC. 2007)	*72 CHARACTER FILE NAMES.	Linear
VERS. 2010-1 (Apr. 2010)	*Skipped leading cross section = 0 up to effective start, unless keeping ALL original energy points.	Linear
	*Replaced ETHRES by ESTART - it is not a threshold - just a minimum energy - if a section starts above this energy with a positive cross section, an additional point will inserted with cross section = 0.	Linear
VERS. 2012-1 (Aug. 2012)	*Minor Updates based on User Feedback.	Linear
	*Added CODENAME	Linear
	*32 and 64 bit Compatible	Linear
	*Added ERROR stops.	Linear
VERS. 2012-2 (Nov. 2012)	*Never thin nu-bar.	Linear
VERS. 2013-1 (Nov. 2013)	*Extended OUT9.	Linear
VERS. 2015-1 (Jan. 2015)	*Allow Imaginary Anomalous Scattering Factor to be Negative (MF/MT=27/506).	Linear
	*Replaced ALL 3 way IF Statements.	Linear
VERS. 2016-1 (June 2016)	*Cosmetic changes based on FREUD psychoanalysis.	Linear
VERS. 2017-1 (May 2017)	*Updated based on user feedback.	Linear
	*Inceased page size to 3,000,000.	Linear
	*All floating input parameters changed to character input + IN9 conversion.	Linear
VERS. 2018-1 (Dec. 2018)	*Updated based on user feedback.	Linear
	*Added on-line output for ALL ENDERROR	Linear
VERS. 2019-1 (June 2019)	*Additional Interpolation Law Tests	Linear
	*Checked Maximum Tabulated Energy to insure it is the same for all MTs - if not, print WARNING messages.	Linear

*Corrected END Histogram linearized - Linear
Previously assumed Y = 0 and deleted Linear
now whatever the value it is included Linear

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

ORIGINALLY WRITTEN BY Linear
----- Linear
Dermott E. Cullen Linear

PRESENT CONTACT INFORMATION Linear
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AUTHORS MESSAGE Linear
----- Linear
THE REPORT DESCRIBED ABOVE IS THE LATEST PUBLISHED DOCUMENTATION Linear
FOR THIS PROGRAM. HOWEVER, THE COMMENTS BELOW SHOULD BE CONSIDERED Linear
THE LATEST DOCUMENTATION INCLUDING ALL RECENT IMPROVEMENTS. PLEASE Linear
READ ALL OF THESE COMMENTS BEFORE IMPLEMENTATION. Linear

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

PURPOSE Linear
----- Linear
THIS PROGRAM IS DESIGNED TO CONVERT ENDF/B FILE 3, 23 AND 27 DATA Linear
TO LINEAR-LINEAR INTERPOLABLE FORM. ANY SECTION THAT IS ALREADY Linear
LINEAR-LINEAR INTERPOLABLE WILL BE THINNED. Linear

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

ENDF/B FORMAT Linear
----- Linear
THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS Linear
OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION Linear
OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II, III, IV, V OR VI FORMAT). Linear

IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B Linear
FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS Linear
ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE Linear
NUMBERS (COLUMNS 76-80) ARE IGNORED ON INPUT, BUT WILL BE Linear
CORRECTLY OUTPUT ON ALL LINES. THE FORMAT OF SECTION MF=1, MT=451 Linear
AND ALL SECTIONS OF MF=3 MUST BE CORRECT. THE PROGRAM COPIES ALL Linear
OTHER SECTION OF DATA AS HOLLERITH AND AS SUCH IS INSENSITIVE TO Linear
THE CORRECTNESS OR INCORRECTNESS OF ALL OTHER SECTIONS. Linear

OUTPUT FORMAT Linear
----- Linear
IN THIS VERSION OF LINEAR ALL ENERGIES WILL BE OUTPUT IN Linear
F (INSTEAD OF E) FORMAT IN ORDER TO ALLOW ENERGIES TO BE WRITTEN Linear

WITH UP TO 9 DIGITS OF ACCURACY. IN PREVIOUS VERSIONS THIS WAS AN	Linear
OUTPUT OPTION. HOWEVER USE OF THIS OPTION TO COMPARE THE RESULTS	Linear
OF ENERGIES WRITTEN IN THE NORMAL ENDF/B CONVENTION OF 6 DIGITS	Linear
TO THE 9 DIGIT OUTPUT FROM THIS PROGRAM DEMONSTRATED THAT FAILURE	Linear
TO USE THE 9 DIGIT OUTPUT CAN LEAD TO LARGE ERRORS IN THE DATA	Linear
DUE TO TRUNCATION OF ENERGIES TO 6 DIGITS DURING OUTPUT.	Linear

CONTENTS OF OUTPUT

ENTIRE EVALUATIONS ARE OUTPUT, NOT JUST THE LINEARIZED DATA
CROSS SECTIONS, E.G. ANGULAR AND ENERGY DISTRIBUTIONS ARE ALSO
INCLUDED.

DOCUMENTATION

THE FACT THAT THIS PROGRAM HAS OPERATED ON THE DATA IS DOCUMENTED
BY THE ADDITION OF 3 COMMENT LINES AT THE END OF EACH HOLLERITH
SECTION IN THE FORM

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***** PROGRAM LINEAR (2019-1) *****
FOR ALL DATA GREATER THAN 1.00000-30 IN ABSOLUTE VALUE
DATA LINEARIZED TO WITHIN AN ACCURACY OF 0.1 PER-CENT
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THE ORDER OF SIMILAR COMMENTS (FROM RECENT, SIGMA1 AND GROUPIE) REPRESENTS A COMPLETE HISTORY OF ALL OPERATIONS PERFORMED ON THE DATA BY THESE PROGRAMS.

THESE COMMENT LINES ARE ONLY ADDED TO EXISTING HOLLERITH SECTIONS, I.E., THIS PROGRAM WILL NOT CREATE A HOLLERITH SECTION. THE FORMAT OF THE HOLLERITH SECTION IN ENDF/B-V DIFFERS FROM THE THAT OF EARLIER VERSIONS OF ENDF/B. BY READING AN EXISTING MF=1, MT=451 IT IS POSSIBLE FOR THIS PROGRAM TO DETERMINE WHICH VERSION OF THE ENDF/B FORMAT THE DATA IS IN. WITHOUT HAVING A SECTION OF MF=1, MT=451 PRESENT IT IS IMPOSSIBLE FOR THIS PROGRAM TO DETERMINE WHICH VERSION OF THE ENDF/B FORMAT THE DATA IS IN, AND AS SUCH IT IS IMPOSSIBLE FOR THE PROGRAM TO DETERMINE WHAT FORMAT SHOULD BE USED TO CREATE A HOLLERITH SECTION.

REACTION INDEX

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

THIS PROGRAM DOES NOT UPDATE THE REACTION INDEX IN MF=1, MT=451. THIS CONVENTION HAS BEEN ADOPTED BECAUSE MOST USERS DO NOT REQUIRE A CORRECT REACTION INDEX FOR THEIR APPLICATIONS AND IT WAS NOT CONSIDERED WORTHWHILE TO INCLUDE THE OVERHEAD OF CONSTRUCTING A CORRECT REACTION INDEX IN THIS PROGRAM. HOWEVER, IF YOU REQUIRE A REACTION INDEX FOR YOUR APPLICATIONS, AFTER RUNNING THIS PROGRAM YOU MAY USE PROGRAM DICTIN TO CREATE A CORRECT REACTION INDEX.

SECTION SIZE

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

FOR ANY LINEARIZED SECTION THAT CONTAINS 60000 OR FEWER POINTS
THE ENTIRE OPERATION WILL BE PERFORMED IN CORE AND THE LINEARIZED
DATA WILL BE OUTPUT DIRECTLY TO THE ENDF/B FORMAT. FOR ANY SECTION
THAT CONTAINS MORE POINTS THE DATA WILL BE LINEARIZED A PAGE AT A
TIME (1 PAGE = 60000 POINTS) AND OUTPUT TO SCRATCH. AFTER THE
ENTIRE SECTION HAS BEEN LINEARIZED THE DATA WILL BE READ BACK FROM
SCRATCH AND OUTPUT TO THE ENDF/B FORMAT.

SELECTION OF DATA

THE PROGRAM SELECTS DATA TO BE LINEARIZED BASED EITHER ON EITHER
MAT (ENDF/B MAT NO.) OR ZA AS WELL AS MF AND MT NUMBERS. THIS
PROGRAM ALLOWS UP TO 100 MAT/MF/MT OR ZA/MF/MT RANGES TO BE
SPECIFIED BY INPUT PARAMETERS. THE PROGRAM WILL ASSUME THAT THE

DEFAULT ALLOWABLE ERROR	Linear
-----	Linear
IN ORDER TO INSURE CONVERGENCE OF THE LINEARIZING ALGORITHM THE	Linear
ALLOWABLE ERROR MUST BE POSITIVE. IF THE USER INPUTS AN ERROR	Linear
THAT IS NOT POSITIVE IT WILL AUTOMATICALLY BE SET TO THE DEFAULT	Linear
VALUE (CURRENTLY 0.001, CORRESPONDING TO 0.1 PER-CENT) AND	Linear
INDICATED AS SUCH IN THE OUTPUT LISTING.	Linear
COULOMB PENETRABILITY (INTERPOLATION LAW = 6)	Linear
-----	Linear
INTRODUCED FOR ENDF/B-VI. THIS IS DEFINED AS,	Linear
SIG(E) = C1*EXP(-C2/SQRT(E - T))	Linear
THIS PROGRAM ONLY CONSIDERS EXOTHERMIC REACTIONS - T = 0	Linear
SIG(E) = C1*EXP(-C2/SQRT(E))	Linear
WARNING...THIS INTERPOLATION LAW SHOULD ONLY BE USED FOR REACTIONS	Linear
WHICH HAVE A POSITIVE Q-VALUE (EXOTHERMIC REACTIONS),	Linear
SINCE HERE WE ONLY CONSIDER T = 0.0 IN THE FORMALISM.	Linear
IN ALL OTHER CASES A WARNING MESSAGE WILL BE PRINTED.	Linear
INPUT FILES	Linear
-----	Linear
UNIT DESCRIPTION	Linear
----	Linear
2 INPUT LINES (BCD - 80 CHARACTERS/RECORD)	Linear
10 ORIGINAL ENDF/B DATA (BCD - 80 CHARACTERS/RECORD)	Linear
OUTPUT FILES	Linear
-----	Linear
UNIT DESCRIPTION	Linear
----	Linear
3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD)	Linear
11 FINAL ENDF/B DATA (BCD - 80 CHARACTERS/RECORD)	Linear
SCRATCH FILES	Linear
-----	Linear
UNIT DESCRIPTION	Linear
----	Linear
12 SCRATCH FILE (BINARY - 180000 WORDS/RECORD)	Linear
OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILEIO)	Linear
-----	Linear
UNIT FILE NAME	Linear
----	Linear
2 LINEAR.INP	Linear
3 LINEAR.LST	Linear
10 ENDFB.IN	Linear
11 ENDFB.OUT	Linear
12 (SCRATCH)	Linear
INPUT PARAMETERS	Linear
-----	Linear
FOR VERSIONS EARLIER THAN 90-1 THIS PROGRAM ONLY ALLOWED THE USER	Linear
TO SPECIFY BY INPUT PARAMETERS WHICH MATERIALS (MAT) TO PROCESS.	Linear
FOR EACH REQUESTED MATERIAL NEUTRON INTERACTION CROSS SECTIONS	Linear
(MF=3) WOULD BE LINEARIZED AND THE REMAINDER OF THE MATERIAL	Linear
WOULD BE COPIED.	Linear
FOR VERSIONS 90-1 AND LATER THIS PROGRAM WILL ALLOW THE USER TO	Linear
TO SPECIFY BY INPUT PARAMETERS EXACTLY WHAT SECTIONS OF DATA	Linear
TO PROCESS. FOR EACH SECTION OF DATA, SPECIFIED BY MAT, MF, MT	Linear
RANGES, SECTIONS OF MF=3, 23 AND 27 WILL BE LINEARIZED AND ALL	Linear
OTHER REQUESTED SECTIONS WILL BE COPIED. ALL SECTIONS WHICH ARE	Linear
NOT EXPLICITLY REQUESTED WILL BE SKIPPED AND WILL NOT APPEAR ON	Linear
ENDF/B FILE OUTPUT BY THIS PROGRAM.	Linear

WITH THIS NEW PROCEDURE YOU CAN MINIMIZE THE SIZE OF THE ENDF/B
FILE OUTPUT BY THIS PROGRAM, E.G., IF YOU ONLY WANT NEUTRON
CROSS SECTIONS FOR SUBSEQUENT PROCESSING YOU NEED ONLY REQUEST
ONLY MF=3 DATA.

HOWEVER, YOU MUST UNDERSTAND THAT ONLY THOSE SECTIONS WHICH YOU
EXPLICITLY REQUEST WILL APPEAR ON THE ENDF/B FILE OUTPUT BY
THIS PROGRAM. FOR EXAMPLE, IF YOU WISH TO DOCUMENT EXACTLY
HOW YOU LINEARIZED THE DATA BY INCLUDING COMMENTS IN MF=1, MT=451
THEN YOU MUST EXPLICITLY REQUEST THAT MF=1, MT=451 BE PROCESSED
FOR EACH MATERIAL THAT YOU REQUEST. SIMILAR IF YOU WANT THE
ENTIRE EVALUATION YOU MUST REQUEST ALL MF AND MT TO BE OUTPUT.

LINE	COLS.	DESCRIPTION	
----	----	-----	Linear
1	1-11	SELECTION CRITERIA (0=MAT, 1=ZA)	Linear
	12-22	MONITOR MODE SELECTOR	Linear
		= 0 - NORMAL OPERATION	Linear
		= 1 - MONITOR PROGRESS OF LINEARIZING OF THE DATA.	Linear
		EACH TIME A PAGE OF DATA POINTS IS WRITTEN TO	Linear
		THE SCRATCH FILE PRINT OUT THE TOTAL NUMBER OF	Linear
		POINTS ON SCRATCH AND THE LOWER AND UPPER	Linear
		ENERGY LIMITS OF THE PAGE (THIS OPTION MAY BE	Linear
		USED IN ORDER TO MONITOR THE EXECUTION SPEED	Linear
		OF LONG RUNNING JOBS).	Linear
23-33		MINIMUM CROSS SECTION OF INTEREST (BARNS).	Linear
		(IF 0.0 OR LESS IS INPUT THE PROGRAM WILL	Linear
		USE 1.0E-10). ENERGY INTERVALS WILL NOT BE	Linear
		SUB-DIVIDED IF THE ABSOLUTE VALUE OF THE CROSS	Linear
		SECTION WITHIN THE INTERVAL IS LESS THAN THIS VALUE.	Linear
		AN EXCEPTION TO THIS RULE IS NEAR THRESHOLDS ENERGY	Linear
		INTERVALS WILL BE SUB-DIVIDED UNTIL CONVERGENCE	Linear
		REGARDLESS OF THE MAGNITUDE OF THE CROSS SECTION.	Linear
34-44		KEEP ORIGINAL EVALUATED DATA POINTS.	Linear
		= 0 - NO.	Linear
		= 1 - YES - ADDITIONAL POINTS MAY BE ADDED IN ORDER	Linear
		TO LINEARIZE DATA, BUT ALL ORIGINAL	Linear
		DATA POINTS WILL BE INCLUDED IN THE	Linear
		RESULTS.	Linear
2	1-72	ENDF/B INPUT DATA FILENAME	Linear
		(STANDARD OPTION = ENDFB.IN)	Linear
3	1-72	ENDF/B OUTPUT DATA FILENAME	Linear
		(STANDARD OPTION = ENDFB.OUT)	Linear
4-N	1- 6	LOWER MAT OR ZA LIMIT	Linear
	7- 8	LOWER MF LIMIT	Linear
	9-11	LOWER MT LIMIT	Linear
	12-17	UPPER MAT OR ZA LIMIT	Linear
	18-19	UPPER MF LIMIT	Linear
	20-22	UPPER MT LIMIT	Linear
		UP TO 100 RANGES MAY BE SPECIFIED, ONLY ONE RANGE	Linear
		PER LINE. THE LIST OF RANGES IS TERMINATED BY A	Linear
		BLANK LINE. IF THE UPPER MAT LIMIT OF ANY REQUEST	Linear
		IS LESS THAN THE LOW LIMIT IT WILL BE SET EQUAL TO	Linear
		THE LOWER LIMIT. IF THE UPPER LIMIT IS STILL ZERO	Linear
		IT WILL BE SET EQUAL TO 999999. IF THE UPPER MF OR	Linear
		MT LIMIT IS ZERO IT WILL BE SET TO 99 OR 999	Linear
		RESPECTIVELY.	Linear
VARY	1-11	ENERGY FOR ERROR LAW	Linear
	12-22	ALLOWABLE FRACTIONAL ERROR FOR ERROR LAW.	Linear
		THE ACCEPTABLE LINEARIZING ERROR MAY BE SPECIFIED TO	Linear
		BE EITHER ENERGY INDEPENDENT (DEFINED BY A SINGLE	Linear
		ERROR), OR ENERGY DEPENDENT (DEFINED BY UP TO 20	Linear
		ENERGY, ERROR PAIRS). FOR THE ENERGY DEPENDENT CASE	Linear
		LINEAR INTERPOLATION WILL BE USED TO DEFINE THE ERROR	Linear
		AT ENERGIES BETWEEN THOSE AT WHICH IT IS TABULATED.	Linear
		IN ALL CASES THE ERROR LAW IS TERMINATED BY A BLANK	Linear
		LINE. IF ONLY ONE ENERGY, ERROR PAIR IS GIVEN THE	Linear
		THE LAW WILL BE CONSIDERED TO BE ENERGY INDEPENDENT.	Linear
		IF MORE THAN ONE PAIR IS GIVEN IT WILL BE CONSIDERED	Linear
		TO BE ENERGY DEPENDENT (NOTE, ENERGY INDEPENDENT	Linear
		FORM WILL RUN FASTER THAN THE EQUIVALENT ENERGY	Linear

[illegible]

IN THIS CASE THE FOLLOWING 6 INPUT LINES ARE REQUIRED

	(MAT, 1.0E-10 BARNS, THIN)	Linear
\ENDFB6\ZA092238		Linear
\ENDFB6\LINEAR\ZA092238		Linear
	(RETRIEVE ALL DATA, END REQUEST LIST)	Linear
5.00000-03		Linear
	(END OF ERROR LAW)	Linear
NOTE THAT IN THIS CASE IF THE INPUT HAD SPECIFIED AN EQUIVALENT		Linear
ENERGY DEPENDENT ERROR LAW BY GIVING A NUMBER OF ENERGY POINTS		Linear
AT EACH OF WHICH THE ERROR IS 0.5 PER-CENT THE PROGRAM WOULD TAKE		Linear
LONGER TO RUN (I.E., ONLY USE AN ENERGY DEPENDENT ERROR LAW WHEN		Linear
IT IS NECESSARY).		Linear
EXAMPLE INPUT NO. 4		Linear
-----		Linear
IN ORDER TO LINEARIZE ALL MATERIALS ON AN ENDF/B TAPE TO THE		Linear
STANDARD OPTION OF 0.1 PER-CENT IT IS ADEQUATE TO INPUT A SET		Linear
OF COMPLETELY BLANK LINES WHICH WILL AUTOMATICALLY INVOKE ALL		Linear
OF THE STANDARD OPTIONS.		Linear
LEAVE THE DEFINITION OF THE FILENAMES BLANK - THE PROGRAM WILL		Linear
THEN USE STANDARD FILENAMES.		Linear
IN THIS CASE THE FOLLOWING THREE INPUT LINES ARE REQUIRED		Linear
	(MAT, 1.0E-10 BARNS, THIN)	Linear
	(USE DEFAULT FILENAME = ENDFB.IN)	Linear
	(USE DEFAULT FILENAME = ENDFB.OUT)	Linear
	(RETRIEVE ALL DATA, END REQUEST LIST)	Linear
	(0.1 PER-CENT ERROR, END OF ERROR LAW)	Linear
=====		Linear