List of the utility routines of Code_Aster

Summary:

We give in this document a list of approximately 500 utilities of Code_Aster. For each one of them, one gives a very short description of his function.

More on the function of the utilities, it is necessary to consult the heading of the subroutine (FORTRAN in general) which corresponds to him.

Contents

1 Instructions

This document must allow the developers new features in Code_Aster to answer the following question:

“does there exist in the code a routine which does that which I need? “.

The answer (if it is positive) will be the name of this routine as well as a short description of this one (2 French lines). To use this routine with profit, other documents will have either to be consulted (D5 or D6), or if these routines are not documented (rather frequent case), to consult the text (and the comments) of its source.

To be able to quickly traverse the list of these utilities, we classified them in “packages”. One can sometimes find the same routine in several packages. The packages are associated with the types of the objects handled by the routines. For example, a routine of resolution of an assembled system will be found in the packages: matr_asse and cham_no. The objects handled in these routines are not always Structures of Data Aster; one can also handle variables FORTRAN: scalars or tables. We define in the table of the paragraph following the “types” of objects considered thereafter.

How to make live this document? This document useful (I hope for it) for the community of the developers must live by them. The author their request thus to communicate (by mel if possible) their note: to him Which are the utilities to be added to this document (new or forgotten)? Which are the utilities whose function is not clear enough (or erroneous)? Which are the utilities to remove list (removed code or to disadvise)?

2 List of the packages

PACKAGE	definition
BLAS/LAPACK	This “package” was removed. Libraries BLAS and LAPACK “are now presupposed” for Code_Aster. http://www.netlib.org/lapack/lug/lapack_lug.html
CARA_ELEM	SD cara_elem
FIELD	Field : cham_no, cham_elem, map, cham_no_s, cham_elem_s
LOAD	SD char_meca, SD char_acou, SD char_ther, SD char_cine, SD liste_rela, SD liste_charge
COMPOR	laws of behavior
DEBUG	“debugging”, routines of assistance for the developers
ANY OTHER BUSINESS	date, hour, measurement of the execution times,…
ELT_COQUE	finite elements of standard “hull”
ELT_ ISO	finite elements “isoparametric”
ELT_POUTRE	finite elements of type “BEAM” or “pipe”
ELT_TOUS	finite elements “general” (what is handled by the routines TEXXXX)
ENVIMA	Constants depending on the object computer: IRIX, SOLARIS,…
FILE	files of input/output
FUNCTION	Function: FUNCTION of FORTRAN, SD function, SD tablecloth
SIZE	physical size: names of the components, coded entireties,…
JEVEUX	Objects JEVEUX : simple objects or collections

INITEL	Initialization of ELREFE.
LIGREL	SD ligrel
GRID	SD grid
MATERIAL	Characteristics of a material: SD MATER, SD cham_mater, SD materc (coded material "used in the routines TEXXXX)
MATR_ASSE	SD matr_asse, SD solvor
MEMORY	Access to the various parameters allowing to measure the consumed memory: values given by system (VmPeak, VmSize, etc), meters brought up to date by the manager of memory JEVEUX (limit memory, office plurality of the dynamic allocations, office plurality of the objects used, etc), consumption of the supervisor.
MESSAGE	error messages or of alarm (UTMESS) or messages of the type "INFORMATION" (keyword INFORMATION orders)
MPI	parallelism MPI
MPLEIN	"full" matrix; i.e tables FORTRAN with 2 indices
NUME_DDL	Classification of the unknown factors of a linear system: SD nume_ddl, SD prof_chno, SD nume_equa, SD storage
PREPOST	"pre" and "post" graphs treatment: GIBI, IDEAS
REFERENCE MARK	change of reference mark, rotation
resuelem	Matrices (or vectors) elementary: SD resuelem, SD vect_elem, SD matr_elem
RESULT	SD result
RUPTURE	breaking process
SD	Structure of data of Code_Aster (i.e together of objects JEVEUX)
SUPERVISOR	communication of the orders with the supervisor: routines GETXXX
TABLE	SD counts
TITLE	title (or subtitles) associated with a structure of data
TYPE_FORTRAN	Types FORTRAN : REAL, COMPLEX, INTEGER, CHARACTER and vectors FORTRAN of these types
VARI_COM	SD vari_com

Table 2-1

3 List of the utilities

3.1 CARA_ELEM

RECUDE	recovery of the diameter external of a tubular structure from the abundant data by a concept of the type cara_elem

Table 3.1-1

3.2 FIELD

ALCART	to allocate one SD map [D6.10.01]
ALCHML	to create one SD cham_elem "virgin"
ASASVE	to assemble the elementary vectors coming from the loads
ASCAVC	to produce the second member of with loads kinematics
ASCOVA	to combine assembled vectors
ASSVEC	To assemble elementary vectors to make a second member of it (SD cham_no)
BARYCH	combination linaire of cham_no or of cham_elem
CALCULATION	to do the elementary calculations corresponding to one OPTION on the elements of one SD ligrel.
CALVCI	Calculation of the second member of to loads kinematics
CARCES	to transform one SD map in one SD cham_elem_s
CARCOMP	to compare two cards
CELFPG	to recover the list of the names of the families of PG of one cham_elem (ELGA)
CELCES	to transform one SD cham_elem in SD cham_elem_s
CELVER	to check that one SD cham_elem have certain properties
CESCAR	to transform one cham_elem in map
CESCES	to change the discretization of one cham_elem_s (ELNO/CART/ELGA)
CESCNS	to transform one SD cham_elem_s in one SD cham_no_s
CESCRE	to create one SD cham_elem_s
CESCRM	to create one cham_elem_s by taking another cham_elem_s like model
CESEXI	to test the existence of one CMP of a point of a mesh of one SD cham_elem_s
CESRED	"to reduce" one SD cham_elem_s on a list of meshs and/or a list of CMPS.
CHLIGR	to convert one cham_elem in another cham_elem on another ligrel.
CHPCHD	to change the geometrical support of a field (NOEU/ELNO/ELGA/CART)
CHPNUA	to transform one cham_no in one SD cloud to be able to project it on another grid (method 'NUAG_DEG_0/1')
CHSFUS	to amalgamate several SD cham_elem_s (or SD cham_no_s) (by addition or overload of CMPS)
CHSUT1	to modify the nouns of the size and of CMPS of one cham_no_s or of one cham_elem_s

CMPCHA	to provide the number, the name of the components of a field and component correspondence the “champ⇔composante size”
CNOCNS	to transform one SD cham_no in SD cham_no_s
CNOMAX	Calculate the max of the standard L2 displacement DX DY DZ for one cham_no_depl_R.
CNSCES	to transform one SD cham_no_s in one SD cham_elem_s
CNSCNO	to transform one SD cham_no_s in SD cham_no
CNSCRE	to create one SD cham_no_s
CNSPRJ	to project one cham_no_s on another grid
CNSRED	“to reduce” one SD cham_no_s on a list of nodes and/or a list of CMPS.
CRCHNO	creation of one SD cham_no
CRCNCT	to create one cham_no constant on all the nodes of a grid.
CSMBGG	calculation of the contribution to the second member of the imposed ddl when they are treated by elimination (SD char_cine)
IRCH19	to print a field (cham_no or cham_elem)
IRCHMD	impression of a field in a file MED (few arguments)
MAJOUR	update of a field of displacement following an increment by taking account possible great rotations
MCCONL	to take account of the conditioning of Lagrange on the second member
MCMULT	carry out the product of a matrix by NR vectors (so complex)
MECACT	to create 1 SD map constant [D6.10.01]
MECARA	recovery of the name of the fields in one cara_elem
MEGEOM	recovery of the field of geometry in 1 model or 1 list of loads
MEMAXM	to extract the “max” or the “min” from one CMP on a set of elements of one cham_elem/ELEM
MEMOY	to calculate the average (balanced) of one CMP on a set of elements of one cham_elem
MESOMM	to make the sum (on the meshs of a grid) of the values of one cham_elem
MRCONL	to take account of the conditioning of the terms of Lagrange on the second member
MRMULT	carry out the product of a matrix by NR vectors (real case)
NOCART	to note a couple (entitée_affectée, size) in one SD map [D6.10.01]
NUACHP	to transform one SD cloud in one cham_no
PJ2DCO	to create one SD corresp_2_mailla to be able to use PJEFPR (case 2D)
PJ3DCO	to create one SD corresp_2_mailla to be able to use PJEFPR (case 3D)
PJ4DCO	to create one SD corresp_2_mailla to be able to use PJEFPR (case 2,5D)
PJ6DCO	to create one SD corresp_2_mailla to be able to use PJEFPR (case 1,5D)
PJEFPR	to project one cham_no on another grid (method ‘COLLOCATION’)
PRONUA	to project one SD cloud on another grid (method ‘NUAG_DEG_0/1’)
SDCHGD	to change the type R / C of one cham_no or of one cham_elem.
TECART	“to finish” one SD map : to manage a “fine overload” of CMPS affected [D6.10.01]
UTCH19	to extract a value (CMP) of one SD cham_elem
UTCHDL	to recover the number of one CMP in one SD cham_elem
UTNCMP	recover the number and the names of CMPS of a field

VTAXPY	to carry out the operation $Y = a.X + Y$ on all the degrees of freedom of two cham_no
VLAXPY	to carry out the operation $Y = a.X + Y$ on the degrees of freedom of Lagrange of two cham_no
VTCMBL	Linear combination of cham_no
VTCOPY	Copy of the values of 1 cham_no in another cham_no having possibly another classification.
VTCREA	Allowance of one cham_no
VTCREB	Allowance of one cham_no
VTCREM	Allowance of one cham_no
VTGPLD	addition a field of displacement to a field of geometry: $X2 = X1 + a.U$ where a is a reality
ZERLAG	to put at zero them DDLS of Lagrange in one SD cham_no
ZEROSD	determine if a field is completely “virgin” (0.)

Table 3.2-1

3.3 LOAD

AFLRCH	to write in a load the linear relations of one SD liste_rela
AFRELA	to write a linear relation in one SD liste_rela
ASCAVC	to produce the second member of with loads kinematics
ASSCHC	to modify one matr_asse to take account of the elimination of the constrained ddls by SD char_cine
CALVCI	Calculation of the second member of to loads kinematics
COCHRE	check on a list of loads the presence of only one charges distributed
CORICH	to manage a possible link between a field and a load to be able to apply one later to him “FONC_MULT”
CSMBGG	calculation of the contribution to the second member of the imposed ddl when they are treated by elimination (SD char_cine)
MEDOM1	input and checking of the coherence of the mechanical data of the problem
MEDOME	input and checking of the coherence of the mechanical data of the problem
MEGEOM	recovery of the field of geometry in 1 model or 1 list of loads
NMDOME	Checking of the data of a mechanical non-linear problem

Table 3.3-1

3.4 COMPOR

EXICP	Return .TRUE. so at least a mesh of a grid or a list of meshs given as starter is associated with one element-finished modelled in plane constraints
LCDEVI	calculate the diverter of a tensor of order 3
LCDIMA	calculate the difference of 2 square full matrices
LCDIVE	calculate the difference of 2 vectors of realities

LCEQVE	copy of a vector of realities
LCEQVN	copy of a vector of realities
LCHYDR	calculate the spherical part of a tensor
LCINMA	initialization of a square matrix
LCINVE	initialization of a real vector
LCIV2E	calculation of the second invariant of a tensor of deformation
LCIV2S	calculation of the second invariant of a tensor of constraint
LCNRTE	normalizes of the second invariant of a tensor of deformation
LCNRTS	normalizes of the second invariant of a tensor of constraint
LCOPIL	operator of flexibility for a linear elastic behavior
LCOPLI	operator of rigidity for a linear elastic behavior
LCPRMM	product of 2 square matrices
LCPRMV	product stamps square * vector
LCPRSC	scalar product of 2 vectors
LCPRSM	multiply a square matrix by a scalar
LCPRSV	multiply a vector by a scalar
LCPRTE	tensorial product of 2 vectors
LCQEQV	test the equality of 2 vectors
LCSOMA	calculate the sum of 2 square matrices
LCSOVE	calculate the sum of 2 vectors
MATINV	opposite the matrices of lower size or equalizes to 3
NMDORC	Treatment of the keyword factor BEHAVIOR

Table 3.4-1

3.5 DEBUG and ERROR

Note:	To compare the execution of 2 versions of the code giving of the different results (for example debug and nodebug), one can start impressions very useful and not too bulky while positioning DBG=.TRUE. in the routine calcul.f
imptou	to print on listing the “signature” of all the objects JEVEUX present on a basis
jeimpm	print the segmentation of the memory [D6.02.01]
jeimpr	impression of the repertoire of one or more classes [D6.02.01]
jeprat	impression of the system objects or the attribute objects of collection [D6.02.01]
jeundf	to put at "undef" an object JEVEUX
jxveri	test the coherence of the segmentation memory of JEVEUX [D6.02.01]
dbgobj	To print in files 5 numbers characterizing an object JEVEUX : contents + certain attributes
uttcpu	measurement time CPU (to use and system) soup between 2 instructions [D6.01.0]
memver	to check that there is not a “escape” memory in a FORTRAN program
memres	turn over the value “max” of the zone memory which one can still allocate

mempid	turn over the values of VmData and VmSize memory used by the process
cheksd	check the coherence of a structure of data
irchmd	Impression of a field in a file MED
ASSERT	Macro (in capital letters) starting an error message if the condition in argument is not checked. To take the practice to make ASSERT (i.eq.0) and not yew (i.ne.0) ASSERT (.false.). The message contains the text of the condition as well as the name of the file and the number of line where that occurred.
Others macros	Several others macros were defined (in assert.h) in order to facilitate the writing of the checking of the optional arguments. One took again a syntax close to *rules* used in the catalogue of order. Accepting a fixed number of arguments, they have alternatives for 2.3 or 4 arguments. For example: UN_PARMI2 or ENSEMBLE4. The rules turn over Boolean that one can use in one ASSERT or to build a more complicated rule.
absent	The reverse of present (). Turn over .true. if the optional argument is not present.
UN_PARMI2 UN_PARMI3 UN_PARMI4	Turn over .true. if one and only argument among those provided are present. **Exactly 1**.
AU_MOINS_UN2 AU_MOINS_UN3 AU_MOINS_UN4	Turn over .true. if one or more arguments among those provided are present. **From 1 to NR.**
EXCLUS2 EXCLUS3 EXCLUS4	Turn over .true. so with more the one argument among those provided is present. **0 or 1.**
ENSEMBLE2 ENSEMBLE3 ENSEMBLE4	Turn over .true. if no or all the provided arguments are present. **0 or NR.**

Table 3.5-1

3.6 ANY OTHER BUSINESS

JJMMAA	writing of the name of the author and the creation date of this file
UTTCPU	measurement time CPU (to use and system) soup between 2 instructions [D6.01.03]

Table 3.6-1

3.7 ELT_COQUE

CQ3D2D	calculation of the coordinates 2D of a triangle or a quadrangle starting from its coordinates 3D passage in the reference mark of the plan of the triangle or the quadrangle with sucked=angle between the axis X and dimensions it A1A2
DKQBF	matrix B at the point qsi eta for the element DKQ
DKTBF	matrix B at the point qsi eta for the element DKT
DSQBFA	matrix BFA at the point qsi eta for the element DSQ
DSQBFB	matrix BFB at the point qsi eta for the element DSQ
DSQCIS	matrices BCB and BCA at the point qsi eta for the element DSQ

DSQDIS	matrix YEAR shearing for the element DSQ
DSTBFA	matrix BFA at the point qsi eta for the element DST
DSTBFB	matrix BFB at the point qsi eta for the element DST
DSTCIS	Matrices BCA and YEAR shearing for the element DST
DXBSIG	calculation of the internal forces B*SIGMA with the nodes of the element due to the stress field SIGMA defined in the points of integration for the elements: DST, DKT, DSQ, DKQ and Q4G
DXEFGT	efforts generalized of thermal origin at the points of integration for the elements HULL and DST, DKT, DSQ, DKQ and Q4G
DXEFRO	passage des efforts or generalized deformations of the intrinsic reference mark of the element to the local reference mark of HULL
DXMATE	calculation of the matrices of rigidity of inflection, membrane, coupling membrane-inflection and shearing for an isotropic or multi-layer material
DXMATH	calculation of the matrices of rigidity of inflection, membrane, coupling membrane-inflection and shearing for an isotropic or multi-layer material
DXQBM	matrix BM membrane at the point qsi eta for elements DKQ and DSQ
DXQPGL	construction of the matrix of total passage – > local for a mesh triangle DKQ or DSQ
DXREPE	calculation of the matrices T1VE and T2VE of passage of a matrix of the reference mark of the variety to the reference mark element and T2VE opposite of T2EV for all the options of post treatment HULL
DXROEP	Recovery density of material and thickness of the plate
DXSIRO	passage des forced or deformations of the intrinsic reference mark of the element to the local reference mark of HULL
DXTBM	matrix BM out of membrane for the elements DKT and DST
DXTPGL	construction of the matrix of total passage – > local for a mesh triangle DKT or DST
GQUAD4	geometrical magnitudes on QUAD4
GTRIA3	parameter setting of the elements DKT (TRIA3)
JQUAD4	jacobien at a point on QUAD4
Q4GBC	matrix BC at the point qsi eta for the element Q4G
COQREP	calculation of the matrix of passage of the reference mark of the element to the reference mark given in argument. The reference mark is characterized by 2 angles.

Table 3.7-1

3.8 ELT_ISO

BMATMC	to calculate the matrix B connecting the first order deformations to displacements for a point of integration
BSIGMC	to calculate the internal forces B*sigma with the nodes of the element
BTDBMC	to calculate the product Bt*D*B giving the elementary matrix of rigidity
CONNEC	initialization of the elements Iso-P2
DFDM1D	calculation of the derivative of the functions of form per report has an element running in a point of gauss for the elements 1D

DFDM2D	calculation of the derivative of the functions of form per report has an element running in a point of gauss for the elements 2D
DFDM3D	calculation of the derivative of the functions of form per report has an element running in a point of gauss for the elements 3D
DMATMC	calculation of the matrix of HOOKE for the isoparametric elements for materials isotropic, orthotropic and isotropic transverse
DPFCH3	calculation of the derivative of the functions of form per report has an element running in a point of gauss for the elements 3D nonisoparametric
EPSIMC	construction of the vector of the initial deformations defined in each point of integration from the user data for the current element
EPSTMC	calculation of the thermal deformations for the isoparametric elements
EPSVMC	calculation of the mechanical deformations (i.e eps_totales - eps_thermic) at the points of integration for the isoparametric elements
SUBACV	calculation of the base counter-alternative (dimension 3)
SUMETR	calculation of the metric tensor (2×2) and sound jacobien
VFF2DN	calculate the normal and the weight of a point of Gauss of an element SEG in 2D
VFF3D	calculate the weight of a point of Gauss of an element SEG in 3D.
DFDMIP	calculation of the derivative of the functions of form and the jacobien 2D, AXI, 3D
NMGEOM	calculation of the elements kinematics in a point of Gauss (possibly into large transformations)
NMMABU	calculation of the matrix B (LIFO = B.DU)
NMEPSI	calculation of the deformations kinematics 2D, AXI, 3D, LARGE
NMEPSB	calculation of the regularized deformations and their gradients 2D, 3D

Table 3.8-1

3.9 ELT_POUTRE

CARCOU	to recover the geometry of the elements pipe (elbow)
DEELPO	recovery of the diameter external of an element of BEAM
FUN1	calculation of the surface or the constant of equivalent torsion of one BEAM right-hand side with variable section under the assumption of linear variation of the coordinates
FUN2	calculate the moment of inertia are equivalent of one BEAM right-hand side with variable section under the assumption of linear variation of the coordinates
GDFINT	for an element of BEAM in great displacement, the contribution of the point of gauss number calculates KP with the internal forces
GDJRG0	for an element of BEAM in great displacement, calculates, at the points of gauss, the jacobien and rotation of the main axes of inertia in position of reference stamps it, compared to the axes of coordinates generals
GDMB	for an element of BEAM in great displacement, the contribution of the displacement of the node calculates with the matrix of deformation B at the point of gauss KP
JPD1FF	calculation of the functions of form of deformations generalized for the element BEAM 6 ddl with 3 points of gauss
JSD1FF	calculation of the functions of form of deformations generalized for the element BEAM 7 ddl at 3

	points of gauss
POEFGR	calculation of the elementary vector real generalized effort, for the elements of BEAM of Euler and Timoshenko
POMASS	calculate the matrix of mass of the elements of BEAM
PORIGI	calculate the matrix of rigidity of the elements of BEAM
POUEX7	Treatment of the eccentricity of the elements of BEAM
PTENCI	Calculate the kinetic energy for the elements of BEAM, DISCRETE and BAR
PTENPO	Calculate the deformation energy for the elements of BEAM, DISCRETE and BAR
PTKA01	calculate the matrix of stiffness of the element of BEAM right-hand side with constant section
PTKA02	calculate the matrix of stiffness of the element of BEAM right-hand side with variable section
PTKA10	calculate the matrix of stiffness of the element of BEAM curve
PTKA21	calculate the matrix of stiffness of the element of BEAM right-hand side with constant section to 7 ddl by node
PTMA01	calculate the matrix of mass of the element of BEAM right-hand side
PTMA10	calculate the matrix of mass of the element of BEAM curve

Table 3.9-1

3.10 ELT_TOUS

TEATTR	to recover the value of an attribute associated with one TYPE_ELEMENT
LTEATT	to test if an attribute has a given value (on-layer of TEATTR)
FGEQUI	calculation of the equivalent sizes in constraint and deformation
ISELLI	Return TRUE if it TYPE_ELEMENT is linear
ISMALI	Return TRUE if it TYPE_MAILLE is linear
JEVECH	To recover the address of the local field corresponding to a parameter
ELREFE_INFO	to recover the addresses of the tables containing the values of the functions of form (and their derivative) on a family of points of integration (+ dimensions, matrix of passage Gauss → Node)
PPGAN2	passage des values at the points of gauss to the values with the nodes tops and the nodes mediums by median value
UTELVF	to recover the values of the functions of form on a family of points of integration when one is not in an elementary routine of calculation. (If not, it is necessary to use ELREFE_INFO).
TECACH	to recover the characteristics of a champ_local: address, length,…
TECAEL	to recover the characteristics of a élément_fini: name of the associated mesh,…

Table 3.10-1

3.11 ENVIMA

ISMAEM	possible maximum entirety [D6.01.01]

R8DEPI	the actual value 2*PI [D6.01.01]
R8DGRD	Conversion degree/radian [D6.01.01]
R8GAEM	range: number such as range ** 2 is representable out of machine [D6.01.01]
R8MAEM	the largest reality [D6.01.01]
R8MIEM	the smallest reality [D6.01.01]
R8NNEM	A reality Not [D6.01.01]
R8PI	Turn over the actual value Pi. [D6.01.01]
R8PREM	relative precision of the real numbers [D6.01.01]
R8RDDG	Conversion radian/degree [D6.01.01]
R8VIDE	the value of an “impossible” reality (can be used to test if real were affected or not) [D6.01.01]

Table 3.11-1

3.12 FILE

ULDEFI	defines association logical unit - local name (FILE) - name file (NOM_SYSTEME), called on ULOPEN for the files ASCII
ULOPEN	carry out association, itopen FORTRAN and positioning for the files ASCII
ULCLOS	carry out the release and it "closed" for the files ASCII
ULPOSI	positions (NEW, OLD, SUSPEND) in the file of the type ASCII (in FORTRAN it is unfortunately not possible to position at the time ofOPEN and the extensions to the standard are not always allowed on all the platforms)
ULINIT	initialize the structure of data stored in the commun runs
ULIMPR	print the contents of the structure of data
ULISOP	return an entirety not no one if the logical unit were affected and if the associated file is open. The local name is also returned.
ULNUME	return a number of logical unit unutilised between 1 and 99
IUNIFI	The routine IUNIFI intended to recover the number of logical unit associated with a local name (FILE) is preserved to ensure compatibility, but is based now on the new structures of data.

Table 3.12-1

3.13 FUNCTION

foot-note:	when one needs a “worthless” function (for example like function by default in orders), one can always use the function "&FOZERO" created by the routine debut.f and thus available at any moment.
FOATTR	overload attributes of a concept of type function
FOC1MA	to calculate the maximum ones of a concept of type function
FOCRCH	recovery of a function in a structure tran_gene for a node of shock
FOCSTE	creation of a concept of type constant function
FODERI	obtaining the value of the function and its derivative for a linear function per piece

FOEC2F	writing of the couples (parameter, result) of a concept of type function
FOEC2N	writing of the values (parameter, function) of a tablecloth
FOIMPR	impression of a concept of type function on a file
FOINT0	handing-over has zero of common used by the routine foint2
FOINTE	to evaluate a function (i.e calculation of $f(x, y, z, ...)$)
FOINTN	interpolation in the tablecloths
FOINTR	interpolation-extrapolation of a whole function
FOLOCX	research of the place of X in the ordered vector growing
FONBPA	to recover the list of the names of the parameters of one SD function
FOPRO1	to recover the prolongations and type of interpolation of a concept of type function
FOZERO	to create a worthless function
TBEXFO	to extract a function from a table by indicating 2 columns in opposite. [D6.06.01]
UTTRIF	sorting of a function by increasing X-coordinates
ZERODI	Resolution of a scalar real function per dichotomy (an iteration: require to manage oneself the iterative algorithm)
ZEROD2	Resolution of a scalar real function per dichotomy with treatment of the derivative (an iteration: require to manage oneself the iterative algorithm)
ZEROCO	Resolution of a scalar real function by a method of cord (an iteration: require to manage oneself the iterative algorithm)
ZEROG2	Resolution of a scalar real function by approximations P2 (an iteration: require to manage oneself the iterative algorithm)
ZEROFR	Resolution of a scalar real function with possible search for initial interval: general routine, which returns towards ZEROFC, ZEROFO, ZEROF2, ZEROFB
ZEROFC	Resolution of a scalar real function by a method twists (secant)
ZEROFO	Resolution of a scalar real function by a method twists (secant) combined with a conditional dichotomy (method of Dekker)
ZEROF2	Resolution of a scalar real function by a method twists (secant) combined with a dichotomy all the 3 iterations (alternative of the method of Dekker)
ZEROFB	Resolution of a scalar real function by the method of Brent
ZEROP2	Resolution of a polynomial of degree 2
ZEROP3	Resolution of a polynomial of degree 3
ZEROPN	Resolution of a polynomial of degree N by the method “Companion Matrix Polynomial”

Table 3.13-1

3.14 SIZE

DEC2PN	to decode a coded entirety bases 2 of them
DGMODE	to find the descriptor size associated with a local mode with map, cham_no, or cham_elem, in form "iden"
DIGDEL	To recover the number of scalars representing the size for a local mode
EXISDG	to decode a coded entirety

IPOSDG	the position of 1 component in a descriptor size returns DG
IRCCMP	to find the number and the names of the components of a list presents in a size
ISCODE	to code an entirety coded on the first 30 powers of 2 (not of power 0)
ISDECO	to decode an entirety coded on the first 30 powers of 2 (not of decoding on power 0)
ISGECO	to manage the addition or the subtraction of both entirety coded out of the first 7 whole powers of 2
NBCMP	turn over the number of entireties coded for a size
NBEC	turn over the number of entireties coded for a size
SCALAI	turn over the type of a size: reality, entirety, character.
VERIGD	to check the coherence of a list of CMPS of a size
UTCMP1 UTCMP2 UTCMP3	To recover information behind a keyword NOM_CMP

Table 3.14-1

3.15 INITEL

ELRACA	various dimensions of one ELREFE
ELRAGA	description of the families of integration of one ELREFE
ELRFVF	functions of forms of one ELREFE
ELRFDF	derived from the functions of forms of one ELREFE

Table 3.15-1

3.16 JEVEUX

CHLICI	to check that a character string is licit within the meaning of JEVEUX
IMPTOU	to print on listing the “signature” of all the objects JEVEUX present on a basis
JACOPO	to recopy a piece of object JEVEUX in another
JEAGCO	To recopy a collection JEVEUX in another the largest
JECCTA	“Retasser” a contiguous collection which was oversize during its creation (attribute LONT)
JECREC	to create a collection JEVEUX [D6.02.01]
JECREO	to create a simple object JEVEUX [D6.02.01]
JECROC	to declare a new object in a collection (or in a repertoire of name) [D6.02.01]
JEDEMA	décrémente the mark and releases the marked objects [D6.02.01]
JEDETC	destruction of a set of objects JEVEUX [D6.02.01]
JEDETR	to destroy an object JEVEUX (simple or collection) [D6.02.01]
JEDISP	return in a table the lengths max available [D6.02.01]
JEDUPC	to duplicate a set of objects JEVEUX [D6.02.01]

JEDUPO	to duplicate 1 object JEVEUX [D6.02.01]
JEDUP1	to duplicate 1 object JEVEUX without being concerned with its existence
JEECRA	assignment of an attribute of an object JEVEUX [D6.02.01]
JEEXIN	test the existence of an object JEVEUX [D6.02.01]
JEIMPA	to print the attributes of an object JEVEUX [D6.02.01]
JEIMPM	print the segmentation of the memory [D6.02.01]
JEINFO	turn over information on the core use JEVEUX
JEIMPO	to print an object JEVEUX [D6.02.01]
JEIMPR	impression of the repertoire of one or more classes [D6.02.01]
JELIBE	to release an object JEVEUX memory [D6.02.01]
JELIRA	to consult an attribute of an object JEVEUX [D6.02.01]
JELSTC	to find the names of the objects whose name contains a character string given, present on a basis JEVEUX [D6.02.01]
JEMARQ	increment the current mark [D6.02.01]
JENONU	return the number associates has a name (hash-coding JEVEUX) [D6.02.01]
JENUNO	return the name associates has a number (hash-coding JEVEUX) [D6.02.01]
JEPRAT	impression of the system objects or the attribute objects of collection [D6.02.01]
JERAZO	handing-over has zero of the associated segment of values has an object JEVEUX [D6.02.01]
JEUNDF	to put at "undef" an object JEVEUX
JEVEUO	to recover a pointer on an object JEVEUX [D6.02.01]
JEVEUT	recover an object in memory in a permanent way (mark = -1) [D6.02.01]
JEXATR	recovery cumulated lengths of the objects of a contiguous collection [D6.02.01]
JEXNOM	function of access to the objects of the named collections (or of the pointers of names) [D6.02.01]
JEXNUM	function of access to the objects of the numbered collections (or of the pointers of names) [D6.02.01]
JUVECA	enlarging of a simple object JEVEUX [D6.02.01]
JXVERI	test the coherence of the segmentation memory of JEVEUX [D6.02.01]
TSTOBJ	To recover 5 numbers characterizing an object JEVEUX : contents + certain attributes
WKVECT	to create an object JEVEUX of standard vector [D6.02.01]

Table 3.16-1

3.17 LIGREL

ADALIG	to reorganize the grels of one SD ligrel so that they have sizes adapted to the management of the memory.
CALCULATION	to do the elementary calculations corresponding to one OPTION on the elements of one SD ligrel.
CHLIGR	to convert one cham_elem in another cham_elem on another ligrel.
EXLIM1	Creation of one ligrel starting from a list of meshs

EXLIM2 EXLIM3 EXLIMA	
INITEL	to initialize the standard elements present in ligrel and to create the objects .PRNM and/or .PRNS ligrel
LIGLMA	To extract from a ligrel, the list of the affected meshs as well as the list of their type_elem.
LGPHMO	To create a ligrel on all the meshs of a grid
NBELEM	turn over the number of elements of one GREL of one SD ligrel
NBGREL	turn over the number of GREL of one SD ligrel
NOLIGR	To add finite elements in one SD ligrel
TYPELE	To determine the type of the finite elements of one GREL of one SD ligrel

Table 3.17-1

3.18 GRID

CESRED	“to reduce” one SD cham_elem_s on a list of meshs and/or a list of CMPS.
CHPNUA	to transform one cham_no in one SD cloud to be able to project it on another grid (method 'NUAG_DEG_0/1')
CNCINV	construction of the table of connectivity reverses of one SD grid
CNSPRJ	to project one cham_no_s on another grid
CNSRED	“to reduce” one SD cham_no_s on a list of nodes and/or a list of CMPS.
COOR_BARY	Calculate the coordinates barycentric of a point in a simplex defined by 2.3 or 4 nodes (1D/2D/3D)
CPCLMA	Carry out the recopy of the collections .GROUPEMA and .GROUPENO of one sd_maillage
CRLINU	transform a list of names of nodes into a list of numbers of late meshs for NOCART
EXLIM1	Creation of one LIGREL starting from a list of meshs
EXLIMA	Creation of one LIGREL starting from a list of meshs
EXMANO	extraction of the numbers of the meshs of the type SEG2 one of the ends is a node of number given
GETVEM	to check the coherence of a list of entities of the grid given by the user
GETCARA_LISNO	Determine the geometrical dimension of a list of nodes: 0 2/1/3
GMGNRE	to fill the list of node subjacent with the list with mesh
MEGEOM	recovery of the field of geometry in 1 model or 1 list of loads
NUACHP	to transform one SD cloud in one cham_no
PACOAP	to sort 2 lists of nodes so as to put out of screw has screw the nodes of the 2 lists
PACOOR	to give the list of the coordinates of the nodes of a mesh
DIS2NO	To calculate the distance between 2 nodes of the grid
PADIST	To calculate the distance between 2 points
PANBNO	to calculate the number of nodes tops, nodes of edges, interior nodes of a mesh of a given type

PJ2DCO	to create one SD corresp_2_mailla to be able to use PJXXPR (case 2D)
PJ3DCO	to create one SD corresp_2_mailla to be able to use PJXXPR (case 3D)
PJ4DCO	to create one SD corresp_2_mailla to be able to use PJXXPR (case 2,5D)
PJ6DCO	to create one SD corresp_2_mailla to be able to use PJXXPR (case 1, 5D)
PJXXPR	to project fields of a sd_resultat on another grid
PJXXCH	to project 1 field on another grid
PRONUA	to project one SD cloud on another grid (method 'NUAG_DEG_0/1')
RELIEM	to recover the list of the nodes (or the meshs) given behind keywords.
UMALMA	to draw up the list (without doubled blooms) meshs of a list of GROUP_MA
UMALNO	to draw up the list (without doubled blooms) nodes of a list of meshs
UTMAMO	to draw up the list in a jeveux object (without doubled blooms) of the meshs affected by the model
UTMAM2	to draw up the list in a vector (without doubled blooms) of the meshs affected by the model
UTFLMD	to filter a list of mesh in a jeveux object according to their dimension or their type
UTFLM2	to filter a list of mesh in a vector according to their dimension or their type
UTNONO	return the 1st node (or the 1st mesh) of one GROUP_NO (or of one GROUP_MA)
VERIMA	to check the coherence of a list of entities of the grid given by the user
VTGPLD	addition a field of displacement to a field of geometry: $X2 = X1 + U$

Table 3.18-1

3.19 MATERIAL

MATELA	recovery of the values of E, NAKED, ALPHA in a material
RCADMA	recovery of the metallurgical components of a material
RCCOMA	obtaining the complete behavior of a material
RCCOME	obtaining the complete behavior of a material
RCFODE	obtaining the value of the function and its derivative for a function of the linear temperature per piece
RCFONC	interpolation on a function of the type R (P)
RCMFMC	creation of the map of material coded from cham_mater
RCPARE	checking of the presence of a characteristic in a given behavior
RCTRAC	determination of the Young modulus and the function of work hardening starting from the traction diagram of a given material
RCVADA	obtaining the value of the coefficients of material and their derivative per report has the temperature
RCVALA	obtaining the value of a real parameter of an element of a relation of behavior of a given material, starting from an address of material coded by explicitly giving the list of the variables of order of which can depend the functions on material.
RCVALB	obtaining the value of a real parameter of an element of a relation of behavior of a given material, starting from the designation of the point of Gauss (and under-point).

RCVALC	obtaining a parameter complexes of an element of a relation of behavior of a material given
RCVALE	obtaining the value of a real parameter of an element of a relation of behavior of a given material, starting from a name of coded material
RCVALT	To recover ALL the parameters material under the same keyword factor
RCADLV	To recover the parameters material corresponding to a keyword of the type “lists”. For example for behaviors DHRC and UMAT.

Table 3.19-1

3.20 MATR_ASSE

ATASMO	construction of one SD matr_asse by calculation of the product: At * A where With is a rectangular matrix
AJLAGR	addition lagrange in the matrix of mass starting from the matrix of stiffness
ASMATR	to assemble elementary matrices in an assembled matrix
ASSCHC	to modify one matr_asse to take account of the elimination of the constrained ddls by SD char_cine
CONLAG	to recover the coefficient of conditioning of the lagrange of an assembled matrix
COPMAT	copy of one matr_asse in a full matrix
CRESOL	To create one SD solvor
CRSOLV	To create one SD solvor by “defect” for the method LDLT
DETLSP	To destroy the authority MUMPS of the preconditionnor LDLT _SP
ECHMAT	to calculate the extrema (and their arithmetic mean) of the absolute values of the nonworthless terms of the diagonal of the matrix (apart from the terms corresponding to Lagrange)
EXTDIA	extraction of the diagonal of a matrix
FLEXIB	to calculate the matrix of associated residual flexibility has a cyclic problem with interface Mac Neal or any
JACOBI	resolution of the problem reduced to the eigenvalues by the decomposition of generalized Jacobi
MATIDE	modification of the terms of a matrix, according to a list of specified DDL, to make it invertible
MCCONL	to take account of the conditioning of Lagrange on the second member
MCMULT	carry out the product of a matrix by NR vectors (so complex)
MRCONL	to take account of the conditioning of the terms of Lagrange on the second member
MRMULT	carry out the product of a matrix by NR vectors (real case)
MTCMBL	linear combination of matrices
MTCONL	linear combination of the conditioning of Lagranges of the matrices
MTCOPY	recopy values of the matrix in another matrix
MTDEFS	definition of the structure of a matrix
MTDSC2	recovery of the address of an object of one SD matr_asse
MTDSCR	allowance/desallocation of the descriptors of one SD matr_asse
MTEXIS	to check the existence of a matrix
PCLDLT	pre conditioning of one matr_asse for the use of the solvor GCPC (LDLT_INC)
PCMUMP	pre conditioning of one matr_asse for usedtion of the solveurs GCPC or PETSC (LDLT_SP)
PRERES	to factorize one matr_asse (LDLT/MULT_FRONT) or to manufacture a matrix of pre conditioning (GCPC or PETSC)
RESGRA	resolution by a method of gradient combines (GCPC) for a stored matrix 'MORSE'
RESOUD	Resolution of a linear system

Table 3.20-1

3.21 MESSAGE

infbav	to put the mechanism INFORMATION in talkative mode [D6.04.01]
infmaj	update for the keyword INFORMATION [D6.04.01]
infmue	to put the mechanism INFORMATION in dumb mode [D6.04.01]
infniv	Reference the level of impression and the logical unit of impression [D6.04.01]
utmess	to print an error message, of alarm or information with, optionnellement, of the parameters of the character string type, entireties or realities (vector or scalar). One can also provide a number of exception to emit a particular exception.
onerrf	To manage the behavior in the event of error <F> : abort or exception

Table 3.21-1

3.22 MEMORY

utgtme	Return the values of the various meters associated with the consumption of the memory
utptme	Allows to position certain values associated with consumption with memory (total memory allocated with the execution, memory consumed by the external solveurs, etc)

Table 3.22-1

3.23 MPI

asmpi_info	Turn over the row of the process and/or the number of process associated with a communicator.
asmpi_comm in aster_mpi.c	Function of interrogation on the transfer MPI: one can recover the total communicator or current, to affect the communicator running, to remove one of them.
asmpi_split_comm in aster_mpi.c	Allows to create thetransfer ones.
asmpi_barrier	Place a barrier on a communicator or the current communicator.
asmpi_comm_vect	Carry out a communication of the type MPI_ALLREDUCE, MPI_BCAST, MPI_REDUCE for a vector (or a scalar) of whole type, real or complex. It is carried out on the current communicator.
asmpi_comm_jev	Carry out a communication of the type MPI_ALLREDUCE, MPI_BCAST, MPI_REDUCE for an object JEVEUX. It is carried out on the current communicator.
asmpi_comm_point	Carry out a point-to-point communication MPI_SEND, MPI_RECV of a vector (or scalar) of type whole or real.
asmpi_status, asmpi_check, asmpi_warn	Functions allowing to check that communications MPI occur well: before initiating a total communication (asmpi_barrier, asmpi_comm_vect, asmpi_comm_jev), one checks by carrying out a communication not blocking enters the process 0 and each of the others that all the processors are with go (within 20 % of time remaining). If not one transmits an error message and one stops calculation.
comatr.f	To make the communications MPI necessary so that all the processors (associates with the communicator running) transfer mutually certain columns from a matrix from I/R/C. One can also make the same thing on the lines of the transposed matrix.

sdmpic.f	To make the communications MPI necessary “to supplement” a SD (i.e to return it 'MPI_COMPLET').

Table 3.23-1

3.24 MPLEIN

AMPPR	to add a real full matrix to a real full matrix
COPMAT	copy of one MATR_ASSE in a full matrix
MAVEC	passage stamps full (m*m) > half-matrix column vector (N)
MGAUSS	resolution by the method of Gauss of a linear system
PMAT	product of square matrices
PMAVEC	product stamps square full by a vector
PMPPR	product of two matrices stored full with taking into account with transposition via indicator
PRMAMA	product of rectangular full matrices
PROMAT	product of two full matrices
UTBTAB	fact produces it full matrices: BT * WITH * B
VECMA	transform a symmetrical matrix (triangular) into a square matrix

Table 3.24-1

3.25 NUME_DDL

CHEDDL	to seek the row of a ddl starting from its type and the node
CRPRNO	creation and allowance of a structure prof_chno
NUDLG2	To create an object allowing to pair the couples of coefficients of Lagrange corresponding to the dualized linear relations.
NUMBER	To create one SD nume_ddl
POSDDL	give the number of the ddl associated with the node and its component
PTEDDL	to recover the numbers of equation corresponding to certain names of CMPS
PTEEQU	to create the object .DEEQ of one SD prof_chno
RGNDAS	to find the name of the node and the component corresponding to a number of equation in an assembled system

Table 3.25-1

3.26 PREPOST

ECRTES	writing of at the top of one dataset SUPERTAB
GICOOR	to create the collection which gives the permutation of the nodes of the meshs (ASTER-> GIBI)

INISTB	initialization of the names of the meshs ASTER-TRIFOU according to the graphic code I-DEAS 4.0
IRADHS	adherences IDEAS
IRGAGS	research of the sizes IDEAS present in a size

Table 3.26-1

3.27 REFERENCE MARK

ANGVX	Calculate the 2 nautical angles starting from a vector
ANTISY	calculate a matrix of rotation in R3
CANOR2	calculate the normal with one SEG2 (in 2D)
CANOR3	calculate the normal with one TRIA3 (in 3D)
CANORM	to calculate the normal with a mesh in a node with or without standardisation of this vector
CHGREP	Change of reference mark: total room and vice versa
CHMALG	passage du locates local with the total reference mark of the elementary matrices
CQ3D2D	calculation of the coordinates 2D of a triangle or a quadrangle starting from its coordinates 3D passage in the reference mark of the plan of the triangle or the quadrangle with sucked=angle between the axis X and dimensions it A1A2
CTETGD	calculation of the matrix sucked allowing to pass from the ddl of the right interface to those of the left interface
GLO LOC	change of reference mark for a modal dynamic system
INTET0	to calculate the matrix of rotation for DX, DY, DZ, DRX, DRY MARTINI and DRZ
LOCGLO	passage du locates local with the total reference mark for a modal dynamic system
MAROTA	calculate the matrix of rotation corresponding to the vector rotation
MATPGL	Construction of the matrix of local total passage
MATRO2	calculation of the matrix rotation for one BEAM curve
MATROT	calculation of the matrix rotation for one BEAM right-hand side
MUDIRX	calculate the cosine directors of the matrix of passage of the reference mark of the element to the reference mark of reference as well as the 3 normalized directions of the reference mark of the element
ORIEN2	orientation of a trihedron defined by 3 points
ORTREP	recovery of the user data defining the reference mark of orthotropism relating to the current element
PROJMG	passage BASE_MODALE → physical reference mark
REFLTH	calculate the passage of the terms of conductivity of the reference mark of reference to the reference mark of the element
UTPSGL	passage Global → Local for a symmetrical elementary matrix (triangular)
UTPSLG	passage Local → Total for a symmetrical elementary matrix (triangular)
UTPVGL	passage Global → Local for a vector
UTPVLG	passage Local → Total for a vector

Table 3.27-1

3.28 Resuelem

ASASMA	to assemble the elementary matrices of rigidity and Dirichlet
ASASVE	to assemble the elementary vectors coming from the loads
ASMATR	to assemble elementary matrices in an assembled matrix
ASSVEC	To assemble elementary vectors to make a second member of it (SD cham_no)
CALCULATION	to do the elementary calculations corresponding to one OPTION on the elements of one SD ligrel.
CESVAR	to create one SD cham_elem_s (DCEL_I) allowing to extend them cham_elem (VARI_R) calculated by the routine CALCULATION.
MEAMME	calculation of the elementary matrices of AMOR_MECA or RIGI_MECA_HYST
MEDIME	calculation of the elementary matrices of the elements of Lagrange (mechanical)
MEDITH	calculation of the elementary matrices of the elements of Lagrange (thermal)
MEMAME	calculation of the elementary matrices of MASS_MECA
MEMARE	to create and initiate the object .REFE_RESU SD matr_elem (or SD vect_elem)
MERIME	calculation of the elementary matrices of RIGI_MECA (rubber band)
MERIMO	calculation of the elementary matrices of the elements of the model and the elementary terms of the residue (STAT_NON_LINE)
MERITH	calculation of the elementary matrices of RIGI_THER
TYPMAT	to determine if one matr_elem contains not-symmetrical elementary matrices
REDETR	to destroy them resuelem worthless present in one matr_elem (Pb of the doubled bloom symmetrical, nonsymmetrical matrices)

Table 3.28-1

3.29 RESULT

BMNODI	to recover the deformations of interface in one SD base_modale
CTETGD	calculation of the matrix sucked allowing to pass from the ddl of the right interface to those of the left interface
DCAPNO	to recover the address of one .VALE of one cham_no from its type and of sequence number in a made up result
DYARCH	seizure of the keyword factor FILING (in one SD result)
EXTMOD	to extract from a concept mode_meca deformation for one or more ddl. The lagranges are remove.
FOCRCH	recovery of a function in a structure tran_gene for a node of shock
IMBAMO	to print the relative results has the modal base
IRECRI	writing of a structure of data result on a file
IRPARA	impression of the parameters of a structure of data result

IRPARB	determination/checking of the parameters of a structure of data result
IRTITR	impression of the title of one SD result
NDARCH	filing of displacements, speeds, accelerations, forced
PROJMG	physical passage base_modale → reference mark
RSADPA	recovery of the addresses JEVEUX parameters of calculation or variables of access of a structure of data result for the sequence number given and the list of variables of reference symbols [D6.05.01]
RSAGSD	redimensioning of a structure of data result [D6.05.01]
RSBARY	To interpolate a field between 2 moments of one SD result [D6.05.01]
RSCRSD	Creation of a structure of data result [D6.05.01]
RSEXCH	recovery of the name of the field of a structure of data result [D6.05.01]
RSEXIS	Existence of a structure of data result [D6.05.01]
RSEXPA	Existence of a parameter (or a variable of access) in a structure of data result [D6.05.01]
RSINCH	Interpolation of a field of a structure of data result [D6.05.01]
RSINDI	to find a reality (or a complex) in a parameter list of one SD result [D6.05.01]
RSINFO	impression (on listing) of the structure of one SD result [D6.05.01]
RSMENA	“household” (removal of the useless objects) in one SD result
RSNOCH	To note a field in the structure of data result [D6.05.01]
RSNOPA	recovery amongst variables of access and parameters as well as theirs names of a structure of data result [D6.05.01]
RSORAC	Recovery of the sequence numbers of a structure of data result starting from a variable of access [D6.05.01]
RSRUSD	To destroy the fields of a structure of data result starting from a sequence number [D6.05.01]
RSUTNU	Recovery of the sequence numbers of a structure of data result starting from a variable of access [D6.05.01]
RSUTN2	Like RSUTNU, but filter sequence numbers found by checking the existence of a field symbolic system on these sequence numbers.
RSUTN1	Like RSUTNU, but filter sequence numbers found by checking the existence of a parameter (or a variable of access) on these sequence numbers.

Table 3.29-1

3.30 RUPTURE

DFFDIR	Turn over the vector of direction of propagation (1er vector of the local base in bottom of crack) in a node
DFFNOR	Turn over the normal vector to the surface of the crack (2ème vector of the local base in bottom of crack) in a node
DFFTAN	Turn over the tangent vector to the bottom of crack (3ème vector of the local base in bottom of crack) in a node
DFFLON	Calculate an estimate length of the segments of the bottom of crack in a node of the bottom (only in 3D)
GABSCU	for each node of the bottom of crack one calculates his curvilinear X-coordinate

GDFONC	calculation of the gradients for the calculation of the rate of refund of energy in 2D
GDINOR	calculation of the direction of the field theta in the case or the normal with the plan of the lips appears in sd fond_fiss
GDIREC	for each node of the bottom of crack, one calculates the direction of the field theta
EXIXFE	Detect if one deals with a modeling XFEM
XVFIMO	Detect if a crack X-FEM (sd_fiss_xfem) is associated with one model

Table 3.30-1

3.31 SD

COPISD	to duplicate a structure of data under another name [D6.07.05]
DETRSD	to destroy a structure of data [D6.07.05]
DISMOI	to ask a question about a SD [D6.07.05]
EXISD	To test the existence of a SD [D6.07.05]
IMPRSD	To print (readable) a structure of data (field, table or matrix) [D6.07.05]
UTIMSD	To print (dump) the contents of the objects of a SD [D6.07.05]
GNOMSD	To obtain a name validates for “hidden” SD.

Table 3.31-1

3.32 SUPERVISOR

GCNCON	to obtain the name of a SD (K8) who is not in conflict with the other names of SD
GETFAC	turn over the number of occurrences of a keyword factor [D6.03.01]
GETLTX	turn over the length of the chains of a keyword of type ‘text’ [D6.03.01]
GETRES	turn over the name and the type of the result of an order [D6.03.01]
GETTCO	turn over the type of a SD user [D6.03.01]
GETVC8	turn over the list of the arguments of a keyword of the type ‘complexes’ [D6.03.01]
GETVID	turn over the list of the arguments of a keyword of the ‘identifying’ type [D6.03.01]
GETVIS	turn over the list of the arguments of a keyword of the ‘whole’ type [D6.03.01]
GETVR8	turn over the list of the arguments of a keyword of the ‘real’ type [D6.03.01]
GETVTX	turn over the list of the arguments of a keyword of type ‘text’ [D6.03.01]
UTALRM	allows to mask an alarm temporarily (then to restore posting of it)

Table 3.32-1

3.33 TABLE

TBAJLI	To add a line to one SD counts [D6.06.01]
TBAJPA	To add parameters in one SD counts [D6.06.01]

TBAJVA	To add a value “to the good place” associated with a parameter in one with the typified lists
TBAJVC	To add a value C “to the good place” associated with a parameter in one with the typified lists
TBAJVI	To add a value I “to the good place” associated with a parameter in one with the typified lists
TBAJVK	To add a value K “to the good place” associated with a parameter in one with the typified lists
TBAJVR	To add a value R “to the good place” associated with a parameter in one with the typified lists
TBCRSD	to create one SD counts [D6.06.01]
TBCRSD	to declare a news SD counts [D6.06.01]
TBEXFO	to extract a function from one SD counts by indicating 2 columns in opposite. [D6.06.01]
TBEXIP	Existence of a parameter in one SD counts [D6.06.01]
TBEXTB	To extract a under-table from one SD counts [D6.06.01]
TBEXVE	to extract a objet_JEVEUX containing a column of one SD counts. [D6.06.01]
TBLIVA	Reading of a cell of one SD counts [D6.06.01]
TBNULI	Return the number of a line of one SD counts [D6.06.01]

Table 3.33-1

3.34 TITLE

IRTITR	impression of the title of one SD result
TITRE2	to create a subtitle
TITLE	to create a title

Table 3.34-1

3.35 TYPE_FORTRAN

ALMULR	product of N real numbers with test ofoverflow and ofunderflow with office plurality of value former or handing-over zero have
AS_ALLOCATE AS_DEALLOCATE	To allocate (or désallouer) a vector of I, R, C, K8,…
BASE3N	calculate an orthonormal base of R3 having its 1st vector colinéaire with a given vector
CODE	writing an entirety in a character string
CODREE	writing a reality in a character string
COMPR8	compare two realities between them with a given precision (in absolute or relative)
EXTRAC	extraction in a table containing of the vectors at successive moments of the vector possibly interpolated at the desired moment
FOVERF	checking of the character growing of the values in a vector
FREQOM	calculate the associated frequency has the pulsation
GCNCO2	to obtain a character string by incrementing of a number
GGUBS	generator of numbers (pseudo) random uniformly left again between (0.1)
INDIIS	turn over the row of an entirety in a vector of entirety

INDIK8	turn over the row of one K8 in a vector of K8
INDK16	turn over the row of one K16 in a vector of K16
INDK24	turn over the row of one K24 in a vector of K24
INDK32	turn over the row of one K32 in a vector of K32
INDK80	turn over the row of one K80 in a vector of K80
KNDIFF	to make the difference between 2 lists of character strings LK3 = LK1 - LK2
KNDOUB	to check that there are no doubled blooms in a list of character strings
KNINCL	to check that a list of character strings is included in another
KNINDI	turn over the row of one K* in a vector of K*
LIIMPR	to print a list of entireties or realities
LSAME	test the equality of 2 character strings independently of their breakages
LXCAPS	met in capital letters a character string
LXLGUT	turn over the length uses of a character string (without the white)
LXLIIS	decode a character string to read an entirety there
LXSCAN	decode a character string in words of various types: entirety, reality, text,…
NORMEV	a vector normalizes of R3 and its initial standard turns over
OMEGA2	calculate the pulsation associated with the frequency
Computers	rearrangement of a list of entireties by ascending order
ORDR8	to find the order ascending of a list of realities, not of modification about entry but determination of a pointer of order
PERMR8	circular shift of the elements of a table of REAL*8
PROVEC	calculation of the vector product of two vectors of R3
PSCVEC	multiply a vector of RN by a real scalar
R8INIR	initialization of a vector of RN
SOMINT	function (of whole type) summoning all the terms of a vector of entireties.
SORTING	sorting (Quick Leaves) of a table of entireties and effect on a table of entireties
TRIR	sorting (Quick Leaves) of a table of entireties and effect on a table of realities
UTLISI	utility of logical operations on the lists of entireties: union, intersection, singleton
UTREMT	research a word in a list of words
UTTR24	to sort a list of K24
UTTRII	to sort a list of entireties
UTTRIR	to sort a list of realities
VDIFF	calculate the difference between 2 vectors: Z = X - Y
VECMA	transform a symmetrical matrix (triangular) into a square matrix
VECINC	initialization of a vector complexes with a value complexes given.
VECINI	initialization of a real vector to a given actual value.
VECINK	initialization of a vector of characters to a character string given.
VECINT	initialization of a vector of entireties to a given whole value.

Table 3.35-1

3.36 VARI_COM

VRCINS	manufacturing of the field of variables of order at a given moment.
RCVARC	recovery of a variable of order on a point of Gauss (in an elementary routine of calculation)
NMVCD2	test if a variable of order is present

Table 3.36-1