Documentation of the quantities of *Code_Aster*

Résumé:

Description of the quantities associated with the fields being able to be created by the commands of *Code_Aster*.

The following table has three columns. The name of the quantities appears in the left column (classified alphabetically).
Each quantity is separated from following by a white line.

On the first line of a quantity, one finds the type of this quantity (reality: R, complex: C ,…)

One lists then the names of the components of this quantity (column 2) and one makes a small comment on each one of them.

Standard	CORR_R: R	Corrosion
CORR_R	CORR	Standard
Corrosion	CRRU_R: R	Rupture criteria for multi-layer shells composite
CRRU_R	SIGL	Forced following the 1st direction of orthotropy
CRRU_R	SIGT	Forced following the 2nd direction of orthotropy
CRRU_R	SIGLT	Shearing stress
CRRU_R	CRIL	Rupture criterion following the first direction of orthotropy
CRRU_R	CRIT	Rupture criterion following the second direction of orthotropy
CRRU_R	CRILT	Rupture criterion in shears following LT
CRRU_R	CRITH	Criterion of Tsai-Hill
DBEL_R	Type: R	Décibel acoustic
DBEL_R	dB	Décibel
DEPL_C	Type: C	See DEPL_R
DEPL_R	Standard: R	Displacement (unknown for the mechanical phenomenon)
DEPL_R	DX	translation according to OX
DEPL_R	DY	translation according to OY
DEPL_R	DZ	translation according to OZ
DEPL_R	DRX	rotation around OX
DEPL_R	DRY	rotation around OY
DEPL_R	DRZ	rotation around OZ
DEPL_R	GRX	warping (for a beam element)
DEPL_R	PRES	Degree of freedom of pressure
DEPL_R	TEMP	Degree of freedom of temperature
DEPL_R	PHI	Angle of cracking
DEPL_R	DH	Hydraulic diamtere
DEPL_R	GONF	Swelling for quasi-incompressible elements
DEPL_R	UI2	Warping and ovalization in mode 2 for pipes
DEPL_R	VI2	Warping and ovalization in mode 2 for pipes
DEPL_R	WI2	Warping and ovalization in mode 2 for pipes
DEPL_R	…	…
DEPL_R	UI3	Warping and ovalization in mode 3 for the pipes
DEPL_R	VI3	Warping and ovalization in mode 3 for pipes
DEPL_R	WI3	Warping and ovalization in mode 3 for pipes
DEPL_R	…	…
DEPL_R	D1	Projection of the translation on vector D1X, D1Y, D1Z
DEPL_R	D2	Projection of the translation on vector D2X, D2Y, D2Z
DEPL_R	D3	Projection of the translation on vector D3X, D3Y, D3Z
DEPL_R	D1X, D1Y, D1Z	Component according to $X\ Y\ Z$ vector (see D1)
DEPL_R	D2X, D2Y, D2Z	Component according to $X\ Y\ Z$ vector (see D2)

DEPL_R	D3X, D3Y, D3Z	Component according to $X\ Y\ Z$ vector (see D3)
DEPL_R	PTOT	Stagnation pressure of fluid in THM
DERA_R	Type: R	local indicators of discharge and loss of local
radiality	DERA_R	DCHA_V indicating of total discharge with the deviator of local
stresses	DERA_R	DCHA_T indicating of total discharge with total stresses
DERA_R	IND_DCHA	loadmeter (1.2) or discharges (- 1 elastic, -2 plasticization if kinematic hardening) for VMIS_ISOT_*
DERA_R	VAL_DCHA	value from abusive discharge (one would have plasticized with a kinematic hardening)
DERA_R	X11	kinematical tensor uses for the computation of IND_DCHA and kinematical
VAL_DCHA	DERA_R	X22 tensor uses for the computation of IND_DCHA and kinematical
VAL_DCHA	DERA_R	X33 tensor uses for the computation of IND_DCHA and kinematical
VAL_DCHA	DERA_R	X12 tensor uses for the computation of IND_DCHA and VAL_DCHA
DERA_R	X13	kinematical tensor uses for the computation of IND_DCHA and kinematical
VAL_DCHA	DERA_R	X23 tensor uses for the computation of IND_DCHA and indicating
VAL_DCHA	DERA_R	RADI_V of loss of radiality with the norm of Von Mises (deviative)
DERA_R	ERR_RADI	indicating of error of integration due to non-radiality
DURT_R	Type: R	Initialisation of the computation of hardness associated with metallurgy
DURT_R	HV	value with hardness
ENER_R	Type: R	energy
ENER_R	TOTALE	total energy of element
ENER_R	TRAC_COM	energy in traction and compression
ENER_R	TORSION	energy in torsion
ENER_R	MEMBRANE	energy out of membrane
ENER_R	BENDING	energy in bending
ENER_R	FLEX_Y	energy in bending Y
ENER_R	FLEX_Z	energy in bending Z
ENER_R	PLAN_XY	energy in plane XY
ENER_R	PLAN_XZ	energy in plane XZ
ENER_R	DX	energy according to DX
ENER_R	DY	energy according to DY
ENER_R	DZ	energy according to DZ
ENER_R	DRX	energy according to DRX
ENER_R	DRY	energy according to DRY
ENER_R	DRZ	energy according to DRZ
EPSI_R	Type: R	Strain
EPSI_R	EPXX	ε_{xx} strain of a continuum
EPSI_R	EPYY	ε_{yy} strain of a continuum
EPSI_R	EPZZ	ε_{zz} strain of a continuum
EPSI_R	EPXY	ε_{xy} strain of a continuum
EPSI_R	EPXZ	ε_{xz} strain of a continuum
EPSI_R	EPYZ	ε_{yz} strain of a continuum
EPSI_R	EXX	shell: generalized strains
EPSI_R	EYY	shell: generalized strains
EPSI_R	EXY	shell: generalized strains
EPSI_R	KXX	shell: generalized strains
EPSI_R	KYY	shell: generalized strains
EPSI_R	KXY	shell: generalized strains

EPSI_R	GAX	shell: generalized strains
EPSI_R	GAY	shell: generalized strains
EPSI_R	EPX	beam: strain according to the axis of beam
EPSI_R	KY	beam: curvature according to axis Y
EPSI_R	KZ	beam: curvature according to axis Z
EPSI_R	INVA_2	second invariant of strain tensor
EPSI_R	PRIN_1	principal strain of the tensor direction 1
EPSI_R	PRIN_2	principal strain of the tensor direction 2
EPSI_R	PRIN_3	principal strain of the tensor direction 3
EPSI_R	INVA_2SG	second signed invariant of voluminal
strain tensor	EPSI_R	DIVU Strain in THM
ERRE_R	Type: R	Analysis the error of discretization
ERRE_R	ERREST	absolute error in mechanics estimated on element
ERRE_R	NUEST	relative error in mechanics estimated on element
ERRE_R	SIGCAL	normalizes energy of the stresses on element
ERRE_R	TERMRE	absolute error of the voluminal term in mechanics estimated on element
ERRE_R	TERMR2	relative error of the voluminal term in mechanics estimated on element
ERRE_R	TERMNO	absolute error of the normal term in mechanics and thermal estimated on element
ERRE_R	TERMN2	relative error of the normal term in mechanics estimated on element
ERRE_R	TERMSA	absolute error of the term of jump in mechanics and thermal estimated on element
ERRE_R	TERMS2	relative error of the term of jump in mechanics and in thermal estimated on element
ERRE_R	TERMS1	term of normalization of the term of jump in thermal
ERRE_R	ERTABS	absolute error for thermal
ERRE_R	ERTREL	relative error for thermal
ERRE_R	TERMVO	absolute error of the voluminal term in thermal estimated on element
ERRE_R	TERMV2	relative error of the voluminal term in thermal estimated on element
ERRE_R	TERMV1	term of normalization of the voluminal term in thermal
ERRE_R	TERMFL	absolute error of the term of flow in thermal estimated on element
ERRE_R	TERMF2	relative error of the term of flow in thermal estimated on element
ERRE_R	TERMF1	term of normalization of the term of flow in thermal
ERRE_R	TERMEC	absolute error of the term of exchange in thermal estimated on element
ERRE_R	TERME2	relative error of the term of exchange in thermal estimated on element
ERRE_R	TERME1	term of normalization of the term of exchange in thermal
ERRE_R	ESTERG1	1st estimate of total error (stability)
ERRE_R	ESTERG2	2nd estimate of total error (duality)
ERRE_R	ERHMME_L	error in residue in space for hm - mechanical equation the - local one in time
ERRE_R	ERHMMEDL	error in residue in space for hm - derived mechanical equation the - local one in time
ERRE_R	ERHMHY_L	error in residue in space for hm - hydraulic equation the - local one in time for the steady one - indicator not boosté
ERRE_R	ERHMME_G	error in residue in space for hm - mechanical equation - total in time
ERRE_R	ERHMMEDG	error in residue spaces some for hm - derived mechanical equation the - total one in time
ERRE_R	ERHMHY_G	error in residue in space for hm - hydraulic equation the - total one in time for the steady one - indicator boosté
ERRE_R	ERRETPS	error in residue in time
ERRE_R	TAILLE	cuts meshes
FACY_R	Type: R	Quantity related to fatigue with great numbers of cycles, multiaxial loading
FACY_R	DTAUM1	first value of the half-amplitude max of the shears in critical plane
FACY_R	VNM1X, Y,	components of the normal vector to the critical plane corresponding to

	Z	$dtaum1$
FACY_R	SINMAX1	normal maximum stress with the critical plane corresponding to $dtaum1$
stress	FACY_R	SINMOY1 mean norm with the critical plane corresponding to $dtaum1$
FACY_R	EPNMAX1	normal maximum strain with the critical plane corresponding to $dtaum1$
FACY_R	EPNMOY1	normal average strain with the critical plane corresponding to $dtaum1$
FACY_R	SIGEQ1	equivalent stress associated with $dtaum1$
FACY_R	NBRUP1	many cycles before fracture, function of sigeq1 and a curve of Wöhler
FACY_R	ENDO1	damage associated with $nbrup1$ ($endo1=1/nbrup1$)
FACY_R	DTAUM2	second value with the half-amplitude max with the shears in critical plane
FACY_R	VNM2X, Y, Z	components of the normal vector to the critical plane corresponding to $dtaum2$
FACY_R	…	…
FACY_R	ENDO2	damage associated with $nbrup2$ ($endo2=1/nbrup2$)
FLUX_R	Type: R	vectorial Flux of heat in a material point of the continuous field: $\Phi=-\lambda\nabla T$
Following	FLUX_R	FLUX component OX of Φ
following	FLUX_R	FLUY component OY of Φ
component	FLUX_R	FLUZ following OZ of Φ
FLUX_R	FLUX_SUP	flow on a point of the higher face of shells
FLUX_R	FLUY_SUP	flow on a point of the higher face of shells
FLUX_R	FLUZ_SUP	flow on a point of the higher face of shells
FLUX_R	FLUX_INF	flow on a point of the lower face of shells
FLUX_R	FLUY_INF	flow on a point of the lower face of shells
FLUX_R	FLUZ_INF	flow on a point of the lower face of shells
G	Type: R	Rate of refund of energy and stress intensity coefficients
G	GTHETA	rate of energy restitution
G	K1	stress intensity factor $K1$
G	K2	stress intensity factor $K2$
GEOM_R	Type: R	Géométrie (of a node or a point of Gauss)
GEOM_R	X	coordinated following OX
GEOM_R	Y	coordinated according to OY
following	GEOM_R	Z coordinated OZ ($0.$ if models it is 2D)
GEOM_R	W	Weight of the point of Gauss
HYDR_R	Type: R	Field of hydration
HYDR_R	HYDR	Hydratation
INDL_R	Type: R	Indicateur of localization
INDL_R	INDICE	Critère being worth 1 if localization (and 0 if not: $det\ NHN>0$)
INDL_R	DIR1	Première direction of localization
INDL_R	DIR2	Deuxième direction of localization
INDL_R	DIR3	Troisième direction of localization
INDL_R	DIR4	Quatrième direction of localization
INFC_R	Type: R	Informations relating to indicating
contact	INFC_R	CONT of contact
INFC_R	CLEARANCE	clearance between the slave node and the mesh Master associated
INFC_R	RN	multiplier with Lagrange and norm of RN
INFC_R	RNX, Y, Z	components of the force vector due to contact
INFC_R	GLIX	normalizes tangent displacement in x for each connection

INFC_R	GLIY	normalizes tangent displacement in y for each connection
INFC_R	GLI	normalizes tangent displacement for each component
connection	INFC_R	RTAX x of the forces of adherent nodes
INFC_R	RTAY	component y of the forces of adherent nodes
INFC_R	RTAZ	component z of the forces of adherent nodes
INFC_R	RTGX	component x of the forces of slipping nodes
INFC_R	RTGY	component y of the forces of slipping nodes
INFC_R	RTGZ	component z of the forces of the nodes slipping
INFC_R	X-ray	component x of the sum rn rtg and rta
INFC_R	RY	component y of the sum rn rtg and rta
INFC_R	RZ	component z of the sum rn rtg and rta
INFC_R	R	normalizes r_tot

PRES_C	Type: C	See Standard
PRES_R	PRES_R: R	Loading surface applied to a mechanical model (PRES, CISA) Inconnue of a problem of acoustics: (pressure, velocity of the fluid)
PRES_R	PRES	value of pressure
PRES_R	CISA	shears applied to edge of a model 2D
PRES_R	VX	velocity of the fluid following OX
PRES_R	VY	velocity of the fluid following OY
PRES_R	VZ	velocity of the fluid following OZ
PRES_R	LAGR	parameter of Lagrange due to the dualisation of boundary conditions
RCCM_R	Type: R	Quantities for the RCCM B3600
RCCM_R	C1	value stress index
RCCM_R	C2	value stress index
RCCM_R	C3	value stress index
RCCM_R	K1	value stress index
RCCM_R	K2	value stress index
RCCM_R	K3	value standard
stress index	RCCM_R	TYPE of mesh
RCCM_R	E	elasticity modulus with temperature of computation
RCCM_R	E_AMBI	elasticity modulus with ambient temperature
RCCM_R	NU	Poisson's ratio to ambient temperature
RCCM_R	ALPHA	coefficient of thermal expansion with ambient temperature
RCCM_R	E_REFE	modulus Young of reference
RCCM_R	SM	acceptable equivalent stress of material
RCCM_R	M_KE	constant of material
RCCM_R	N_KE	constant of material
RCCM_R	IY	main moment of inertia compared to Y
RCCM_R	IZ	main moment of inertia compared to Z
RCCM_R	D	diameter of pipework
RCCM_R	EP	thickness of pipework
RCCM_R	SN	amplitude of variation of linearized stresses
RCCM_R	SALT	amplitude of stress
RCCM_R	U_TOTAL	factor of standard
use	RCCM_R	TYPEKE of computation of Que : either KE_MECA, or K2_MIXTE
RICE_TRA		Quantities resulting from the computation of growth of cavities in ductility fracture
RICE_TRA	TRIAX	rate of triaxiality on mesh
RICE_TRA	RSR0	growth rate

RICE_TRA	VOLU	volume taken into account
RICE_TRA	NUMEMA	number of mesh
RICE_TRA	DEPSEQ	variation of equivalent plastic strain
SIEF_C	Type: C	See Standard
SIEF_R	SIEF_R: R	Stress state (or of internal force)
SIEF_R	SIXX	σ_{xx} forced in a continuum
SIEF_R	SIYY	σ_{yy} forced in a continuum
SIEF_R	SIZZ	σ_{zz} forced in a continuum
SIEF_R	SIXY	σ_{xy} forced in a continuum
SIEF_R	SIXZ	σ_{xz} forced in a continuum
SIEF_R	SIYZ	σ_{yz} forced in a continuum
SIEF_R	N	normal force
SIEF_R	VY	following shearing force Y (internal forces of the beams)
SIEF_R	VZ	following shearing force Z (internal forces of the beams)
SIEF_R	MT	twisting moment following X
SIEF_R	MFY	bending moment following Y
SIEF_R	MFZ	bending moment following Z
SIEF_R	BX	bi--moment (beam with warping)
SIEF_R	NXX	internal forces of internal
shells	SIEF_R	NYY forces of shells
SIEF_R	NXY	internal forces internal
shells	SIEF_R	MXX forces of shells
SIEF_R	MYY	internal forces of internal
shells	SIEF_R	MXY forces of shells
SIEF_R	QX	internal forces of internal
shells	SIEF_R	QY forces of shells
SIEF_R	QXX, QXY, QYX, QYY, QZX, QZY	generalized stresses for “ under-integrated ” element QUAD4 of modelizations C_PLAN_SI and D_PLAN_SI
SIEF_R	FX	forces for the discrete ones, beams, bars… in total reference
SIEF_R	FY	forces for the discrete ones, beams, bars… in total reference
SIEF_R	FZ	forces for the discrete ones, beams, bars… in total reference
SIEF_R	MX	forces for the discrete ones, beams, bars… in total reference
SIEF_R	MY	forces for the discrete ones, beams, bars… in total reference
SIEF_R	MZ	forces for the discrete ones, beams, bars… in total reference
SIEF_R	VMIS	von Mises stress
SIEF_R	TRESCA	forced of Tresca
SIEF_R	PRIN_1	principal stress direction 1
SIEF_R	PRIN_2	principal stress direction 2
SIEF_R	PRIN_3	principal stress direction 3
SIEF_R	VMIS_SG	von Mises stress signed by the trace of sigma
SIEF_R	SN	forced in the section of beam due to normal force
SIEF_R	SVY	forced in the section of beam due to shearing force Vy
SIEF_R	SVZ	forced in the section of beam due to shearing force Vz
SIEF_R	SMT	forced in the section of beam due to twisting moment Mx
SIEF_R	SMFY	forced in the section of beam due to bending moment My
SIEF_R	SMFZ	forced in the section of beam due to bending moment Mz
SIEF_R	TRIAX	rate of triaxiality
SIEF_R	SI_ENDO	equivalent stress of damage
SIEF_R	FSTAB [72]	forces of stabilization

SOUR_R	Type: R	Source voluminal of real type
SOUR_R	SOUR	value of the voluminal source applied to a mesh key word SOURCE of command AFFE_CHAR_THER
SOUR_R	VNOR	value the normal velocity applied to a face key word VITE_FACE of command AFFE_CHAR_MECA
SPMA_R	Type: R	Computation of the extremums of a field on a section of pipe
SPMA_R	MIN, extreme	MAX values of a field on all the points of integration of a section pipe
SPMA_R	NCOUMIN, NCOUMAX	numbers of the layers carrying out the minimum and maximum
SPMA_R	NSECMIN, NSECMAX	numbers of the sectors carrying out the minimum and maximum
SPMA_R	NPCOUMIN NPCOUMAX	numbers of the points of integration on the layers carrying out the min and max
SPMA_R	NPSECMIN NPSECMAX	numbers of the points of integration on the sectors carrying out the min and max
TEMP_C	Type: C	See Standard
TEMP_R	TEMP_F: K8	See Standard
TEMP_R	TEMP_R: R	Temperature (unknown of the thermal phenomenon)
TEMP_R	TEMP	temperature
TEMP_R	TEMP_INF	temperature on face lower (shells)
TEMP_R	TEMP_SUP	temperature on face higher (shells)
VARI_R	Type: R	Intern variables
VARI_R	V1,… Vn	the number and the meaning of the intern variables is specific to each behavior model. Refer to the reference document relating to the behavior used on the mesh considered. In the case of elements with N “subpoints” of integration, such as the shells, the pipes, the beams multi - fibers, in each point of Gauss, the number of intern variables will be equal to the product $n \times m$, m being the number of intern variables of the behavior.
Standard	VNOR_C: C	normal Velocity applied to a face of mesh (acoustic)
VNOR_C	VNOR	value normal velocity
WEIBULL	Type: R	Model of Beremin for forced
cleavage fracture	WEIBULL	DSIGWB of Weibull