
Procedure TEST_FONCTION

1 Drank

To extract a numerical value or an attribute from a function for comparison with a value of reference. The function is a data structure of the standard `function` or `three-dimensions function`.

This procedure writes then a conventional message "OK" (if it is good) or "NOOK" (if not).

It does not stop the execution if the test is not checked; this makes it possible systematically to use it either for the tests of validation, or to extract and print a value of a function or a three-dimensions function for a particular value of a parameter.

This command is used primarily by the cases tests to validate the NON-regression of the results.

2 Syntax

```
TEST_FONCTION      (
    ♦/ VALEUR = _F ( ♦FONCTION =f,                / [function]
                  / [fonction_C]
                  ♦NOM_PARA =lnom,                [l_Kn]
                  ♦VALE_PARA will =lpara          ,
    [l_R]

    # Definition of the value of reference:
    # to see TEST_RESU [u4.92.01]
    ),

    /ATTRIBUT =_F ( ♦FONCTION =f,                / [function]
                  / [fonction_C]
                  ♦PARA =reel,                    [R]
                  ♦ | PREC_PARA =/PREC,            [R]
                  /1.0E-3,                          [DEFAULT]
                  | CRIT_PARA = "RELATIF",         [DEFAULT]
                  / "ABSOLU",
                  ♦ATTR = "NOM_PARA",
                  / "NOM_RESU",
                  / "PROL_DROITE",
                  / "PROL_GAUCHE",
                  / "INTERPOL",
                  / "PROL_GAUCHE_FONC",
                  / "PROL_DROITE_FONC",
                  / "INTERPOL_FONC",
                  / "NOM_PARA_FONC",
                  ♦ATTR_REFE =attr,                [kN]
                  ♦LEGENDE=legende,                [kN]
                  ♦REFERENCE = "ANALYTIQUE",
                  / "SOURCE_EXTERNE",
                  / "AUTRE_ASTER",
    ),

    ♦TEST_NOOK = / "NON",                          [DEFAULT]
                / "OUI",
    )
```

the functions are either with actual values [function], or with complex values [fonction_C].

3 Operands

3.1 Key word VALEUR

◆VALEUR =

Key word factor to test a value of a function or a three-dimensions function.

3.1.1 Operand FONCTION

◆FONCTION = F

Name of the function (with a parameter) or three-dimensions function (with two parameters) on which is carried out the operation.

3.1.2 Operand NOM_PARA

◇NOM_PARA = lnom

In the case of a function, this key word is not treated.

In the case of a three-dimensions function, the user will give 2 names of parameter: the first defining the parameter of the three-dimensions function, the second defining the parameter of the function which one wants to test (see command `DEFI_NAPPE [U4.31.03]`).

3.1.3 Operand VALE_PARA

◆VALE_PARA = will lpara

In the case of a function, the user gives the value of the parameter for which the value of the function is tested.

In the case of a three-dimensions function, the user gives the 2 values corresponding to the names of the two parameters (that of the three-dimensions function and that of the function).

3.1.4 Key words common to commands TEST_XXX

the definition of the values of non regression and reference, as well as acceptable tolerances, the comparison criterion is detailed in documentation [u4.92.01] of the command `TEST_RESU`.

Specificities of `TEST_FONCTION` are:

- no whole values or character strings,
- not of tolerance on the value of the parameter (`TOLE_MACHINE` and `CRITERE` take only one value).

3.2 Key word ATTRIBUT

/ATTRIBUT =

Key word factor to test an attribute of a function or a three-dimensions function.

3.2.1 Operand FONCTION

◆FONCTION = F

Name of the function or the three-dimensions function on which the operation is carried out.

3.2.2 Operand PARA

◇PARA = real

In the case of a function, this key word is not necessary.

In the case of a three-dimensions function, the user gives the value of the parameter to recover the function in order to test the attribute.

3.2.3 Operands PREC_PARA / CRIT_PARA

◇PREC_PARA = prec

One searches the function defined by the value of the parameter in an interval defined by the absolute or relative position:

"inst ± prec" (confer CRITERE [§3.2.3]).

By default prec = 1.0D-3.

◇CRIT_PARA =

"RELATIF" : the interval of search is: [inst (1-PREC), inst (1+prec)]

"ABSOLU" : the interval of search is: [INST-PREC, inst+prec]

3.2.4 Operand ATTR

◆ATTR =

Name of the attribute to be tested. For the meaning of the attributes to refer to DEFI_FONCTION [U4.31.02] or DEFI_NAPPE [U4.31.03].

3.2.5 Operand ATTR_REFE

◆ATTR_REFE = attr

Attribute of reference. For the meaning of the attributes to refer to DEFI_FONCTION [U4.31.02] or DEFI_NAPPE [U4.31.03].

3.3 Operand TEST_NOOK

◇TEST_NOOK =

This option, to use with precaution, makes it possible to simulate that the attributes of a function (in particular to limit its field of definition) will be well interpreted.

Example:

On a function with PROL_GAUCHE = "EXCLUDED", if one tests the function with a value of parameter lower than the value of the lower limit of the interval of definition of the function, one should obtain an error.

With TEST_NOOK = "OUI", TEST_FONCTION returns result "the OK".

4 Checking

4.1 examples of a three-dimensions function

```
df1=DEFI_FONCTION      ( NOM_PARA = "INST", NOM_RESU = "DEPL",
                        VALE = (0. , 0. , 1. , 1. , 2. , 2. , 3. , 3. ,
4. , 4. ) )
df2=DEFI_FONCTION      ( NOM_PARA = "INST", NOM_RESU = "DEPL",
                        VALE = (3. , 3. , 4. , 4. , 5. , 5. ) )
dn1=DEFI_NAPPE         ( NOM_PARA = "AMOR", NOM_RESU = "DEPL",
                        VALE = (0.01, 0.02),
                        FONCTION = (df1, df2 ) )

TEST_FONCTION (

# one checks attribute "NOM_PARA" of the function df1 in the three-dimensions function dn1
  ATTRIBUT = _F ( FONCTION =dn1 ,
                 PARA = 0.01, #0.01 reached df1
                 ATTR = "NOM_PARA_FONC",
                 ATTR_REFE = "INST" ),
# one checks attribute "NOM_PARA" of the three-dimensions function dn1
  _F ( FONCTION =dn1 ,
      ATTR = "NOM_PARA",
      ATTR_REFE = "AMOR" ) ),
# one checks a value of the three-dimensions function dn1 (in practice on the function df1)
  VALEUR =_F ( FONCTION =dn1 ,
              NOM_PARA = ("AMOR", "INST" ),
              VALE_PARA = (0.01,1 . ),
              VALE_REFE = 1. )
)
```

4.2 Checking of a function

```
lil=DEFI_LISTE_REEL ( DEBUT=0.,
                    INTERVALLE=_F (JUSQU_A=2*pi, PAS=2*pi/20), )

f1=FORMULE ( NOM_PARA=' INST',
            VALE=' sin (INST) + cos (INST) ',)

fonc=CALC_FONC_INTERP ( FONCTION=f1,
                       LIST_PARA=lil,
                       NOM_RESU=" DEPL",
                       INTERPOL=' LIN', )

TEST_FONCTION (
# one tests an attribute of function
  ATTRIBUT=_F ( FONCTION=fonc,
              ATTR=' INTERPOL',
              ATTR_REFE=' LIN LIN',),
# one test a value of function
  VALEUR=_F ( FONCTION=fonc,
            VALE_PARA=pi,
            REFERENCE=' ANALYTIQUE',
            VALE_CALC=-1.,
            VALE_REFE=sin (pi) +cos (pi), , )
)
```