Code_Aster

Titre : ERREU10 - Validation de l'arrêt pour instabilité d[...]
Responsable : Nicolas GREFFET

Version default

Date : 16/03/2012 Page : 1/2
Clé : V1.01.308   Révision : 8665

ERREU10 - Validation of the stop for instability in STAT_NON_LINE

Summarized:

This test validates the management of the stop on detection of instability in STAT_NON_LINE. For that one takes as a starting point the benchmark SSLL105 where an instability of type buckling is observed.

Code_Aster

Titre : ERREU10 - Validation de l'arrêt pour instabilité d[...]
Responsable : Nicolas GREFFET

Version default

Date : 16/03/2012 Page : 2/2
Clé : V1.01.308   Révision : 8665

1   Principle of the test

This test comprises only one modelization where one reiterates one of the resolutions nonlinear of benchmark SSLL105D.

At the time of the call to STAT_NON_LINE, an instability of buckling occurs and one will check here that the associated exception is well intercepted and that the test finishes properly: the base being correctly closed and would be thus exploitable in poursuite.

This mode of stop on instability, that it is in STAT_NON_LINE or DYNA_NON_LINE, starts by declaring in DEFI_LIST_INST an event of the type "INSTABILITY" associated with action "ARRET". Without this specific argument, the code, in its by default mode, will try to continue computation even in the presence of instability: the nonlinear algorithm follows a branch of solution then.

In practice, one will test the three possibilities of criterion of instability, which are defined *via* associated value to the key word SIGNE under CRIT_STAB in STAT_NON_LINE [U4.51.03].

The critical load, during nonlinear computation, initially is lower than -2 and increases to become higher than -1: there is thus well an instability by negative values.

Thus if the stopping criteria regard as unstable any computed value ranging between -1 and 1 (SIGNE = "POSITIF_NEGATIF") then computation must stop well because of the event "INSTABILITY" of DEFI_LIST_INST.

If this criterion considers unstable the critical loads ranging between -1 and 0 (SIGNE = "NEGATIF"), one will have also the same type of stop.

On the other hand, one tests that if the stopping criteria are based on the interval of instability 0 to 1 (SIGNE = "POSITIF"), then nonlinear computation must continue until the end of its list of times.