

Data-processing description of CALC_MISS

Summary:

This document describes the data-processing architecture of the macro-order CALC_MISS. The order breaks up into two principal stages which one finds in his architecture: a first where one calls on MISS3D and a second in which one carries out a postprocessing of results MISS3D with orders of Code_Aster.

1 Modules of CALC_MISS

The entrance point of CALC_MISS is `calc_miss_ops` (in `calc_miss_ops.py`)

This method is very simple.

First of all, one stores the parameters provided by the user. It is simply a question of storing the values of the keywords, of supplementing them with others to simplify the future treatments and of adding checks of coherence to it. It is the work of the authority `MISS_PARAMETER` (defined in `miss_utils.py`).

Then, according to the parameters, one creates an object derived from `CALCUL_MISS` (of `miss_calcul.py`) who describes the tasks carried out by CALC_MISS (cf. §2).

Notice

The keyword "postprocessing" can lend to confusion: it is here about a "postprocessing" of the resolution made by MISS3D, it is thus the finalization of the calculation of ISS in Code_Aster.

2 Object of the type CALCUL_MISS

It is the function `CalculMissFactory` who creates, according to `TYPE_RESU`, the object which organizes the treatment carried out by CALC_MISS. Currently, there are two possible types:

- `CALCUL_MISS_IMPE` : draft the call to MISS3D for the calculation of the impedances and connects possibly a postprocessing,
- `CALCUL_MISS_POST` : draft an execution without call to MISS3D, only postprocessing is launched.

Systematically, these 3 tasks are connected:

- `prepare_donnees ()`
- `carry out ()`
- `post_traitement ()`

In the case of a call to MISS3D, the method `prepare_donnees` has as a role to produce the data files which will be read by MISS3D. These files are created starting from the results printed by `IMPR_MACR_ELEM`, which is reprocessed by using the dedicated functions of the modules `miss_fichier_sol` (writing of the characteristics of the ground), `miss_fichier_interf` (writing of the grid, the static and dynamic modes, the command file MISS), `miss_fichier_option` (writing of the options of calculation MISS).

Notice

Today one reads again in CALC_MISS the file produced by IMPR_MACR_ELEM. One could optimize this stage while producing, directly in IMPR_MACR_ELEM, two files containing the grid of the interface on the one hand and the modes static and dynamic on the other hand.

Method `carry out`, as its name indicates it, MISS3D carries out by using the prepared files.

Method `post_traitement` recover the files produced by MISS3D in order to deposit them in the repertoire of execution of Code_Aster under the numbers of logical unit provided by the user, then carries out "postprocessing" (cf. §3).

In the case of postprocessing alone (`CALCUL_MISS_POST`), methods `prepare_donnees` and `carry out` do not do anything, and the files were obtained before and are provided by the user.

3 Object of the type POST_MISS

In the method `post_traitement` object `CALCUL_MISS`, one calls on the function `PostMissFactory` for created the object of a type derived from `POST_MISS` (in `miss_post.py`) according to the choices of the user.

The types available are:

- `POST_MISS_HARM` : calculate the answer (displacement, speed, acceleration) harmonic of the structure,
- `POST_MISS_TRAN` : calculate the transitory answer,
- `POST_MISS_TAB` : calculate the answers harmonic and transient, and the spectrum of oscillator in certain places,
- `POST_MISS_FICHER` : nothing is done (the files resulting from `MISS3D` are recovered by the user).

The documentation of use of `CALC_MISS` [U7.03.12] the type of treatment carried out details.

Systematically, these 3 tasks are connected:

- `argument ()`
- `carry out ()`
- `exit ()`

Method `argument` check the data input, proceeds to initializations and prepares the objects necessary to the future treatments (such as for example, the interpolation of the accélérogrammes provided on a common list of moments and with constant step).

Method `carry out` carry out projections of the matrices of mass and rigidity, second members in the event of harmonic loading, then connects the orders `DYNA_LINE_HARM` for each frequency of calculation.

Method `exit` prepare and produces the concepts of exit.

`POST_MISS_HARM` is a specialization of `POST_MISS_TRAN` in order to stop the treatment earlier. Method `exit` of `POST_MISS_TRAN` call for example `REST_SPEC_TEMP` to calculate the transitory answer; that of `POST_MISS_TAB` being satisfied to produce the table result.