

## ZZZZ365 - Validation of the transformation of a SIEF\_R (3D) towards a SIEF\_R (DKT)

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### Summary:

This test validates the transformation of a field SIEF\_R of type ELNO or NOEU calculated on voluminal elements towards surface elements.

The passage of SIEF\_R(3D) towards SIEF\_R(DKT) is realized by 2 orders:

- PROJ\_CHAMP: projection of the field SIEF\_R(3D) on the under-points of the surface elements, and that without change of reference mark of the inlet limit.
- MODI\_REPERE with the option GLOBAL\_UTIL: change of reference mark of the field as starter. The field passes from the total reference mark towards the local reference mark related to the surface elements. The orientation of the surface elements is given by AFFE\_CARA\_ELEM with the option ORIENTATION.

## 1 Principle of the test

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The validation consists with:

- to define a field of `SIEF_R` using linear formulas according to space.
- to affect the field of `SIEF_R` on a grid of voluminal elements.
- to use `PROJ_CHAMP` to project the field `SIEF_R` (3D) in order to obtain a field `SIEF_R` (`DKT_global`) on the under-points of the surface elements. Attention this field is in the same reference mark as the initial field (thus the total reference mark), it thus does not correspond to a field `SIEF_R` of surface element which must be expressed in the local reference mark.
- to compare the field `SIEF_R` (`DKT_global`) with a computed field at the under-points using the formulas previously defined, these 2 fields are expressed in the same reference mark.
- to use `MODI_REPERE` to change reference mark to the field `SIEF_R` (`DKT_global`), by putting it in the local reference mark of the surface elements and to obtain a truth `SIEF_R` (`DKT`).
- to compare the field `SIEF_R` (`DKT`) with a computed field at the under-points using the formulas previously definite but expressed in the local reference mark of the surface elements.

## 2 Modeling A

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### 2.1 Got results

The results are analytical. The tests are carried out on all the components of the fields `SIEF_R`, on the greatest absolute value of the differences between the solution calculated by *Code\_Aster* and that calculated in the command file. In theory the difference must be worthless, in practice one keeps the value by default.