Domain_Features

This data set defines the domain size, the grid data, the domain decomposition features (MPI parallelisation characteristics : number of MPI processes bounded to subdomains and how they are distributed over the domain) and the number of threads also used to split the domain (OpenMP parallelization).

Geometric_Layout

- Type : integer value
- This option selects the type of geometry configuration used :
    - 0 : Cartesian geometry
        - 1: Cylindrical geometry. The axis is oriented along the K-direction. The coordinate system is $r(i), \theta(j) , z(k)$
        - 2: Cylindrical geometry. The axis is oriented along the I-direction. The coordinate system is $r(j), \theta(k) , z(i)$
        - 3: Cylindrical geometry. The axis is oriented along the J-direction. The coordinate system is $r(k),\theta(i),z(j)$
        - Default value = 0

Start_Coordinate_I_Direction

- Type : real value
- Origin coordinate along the I-direction.
- Default value must be set by the user

Start_Coordinate_J_Direction

- Type : real value
- Origin coordinate along the J-direction.
- Default value must be set by the user

Start_Coordinate_K_Direction

- Type : real value
- Origin coordinate along the K-direction.
- Default value must be set by the user

End_Coordinate_I_Direction

- Type : real value
- End coordinate along the I-direction.
- Default value must be set by the user

End_Coordinate_J_Direction

- Type : real value
- End coordinate along the J-direction.
- Default value must be set by the user

End_Coordinate_K_Direction

- Type : real value
- End coordinate along the K-direction.
- Default value must be set by the user

Cells_Number_I_Direction

- Type : integer value
- Number of cells along the I-direction, excluding the ghost-cells)
- Default value= 0

Cells_Number_J_Direction

- Type : integer value
- Number of cells along the J-direction, excluding the ghost-cells)
- Default value= 0

Cells_Number_K_Direction

- Type : integer value
- Number of cells along the K-direction, excluding the ghost-cells)
- Default value= 0

Number_OMP_Threads

- integer value
- Number of Threads for OpenMP parallelization
- Default value= 1

MPI_Cartesian_Topology

- Type : Boolean value
- Select the MPI cartesian topology for the domain decomposition method (same number of subdomains along a given direction)
- Default value= .false.

MPI_Graphic_Topology

- Type : Boolean value
- Select the MPI graphic topology for the domain decomposition method (the number of subdomain along a given direction is variable)
- Default value= .false.

Total_Number_MPI_Processes

- Type : integer value
- Total number of MPI processes used in the domain decomposition method
- Default value= 1

Max_Number_MPI_Proc_I_Direction

- Type : integer value
- Number of MPI processes along the I-direction (maximum number for the graphic topology)
- Default value= 1

Max_Number_MPI_Proc_J_Direction

- Type : integer value
- Number of MPI processes along the J-direction (maximum number for the graphic topology)
- Default value= 1

Max_Number_MPI_Proc_K_Direction

- Type : integer value
- Number of MPI processes along the K-direction (maximum number for the graphic topology)
- Default value= 1

Regular_Mesh

- Type : boolean value
- if .true., the mesh size is regular along each direction and the gris is directly built by the code.
- If .false., the grid is irregular and the cell distribution is read in the specific files maillx_xxxxx.d, mailly_xxxxx.d and maillz_xxxxx.d (xxxxx corresponds to the subdomain/MPI-process number if the MPI domain-decomposition is used). These files are created from the mesh builder named meshgen.x.
- Default value= .true.