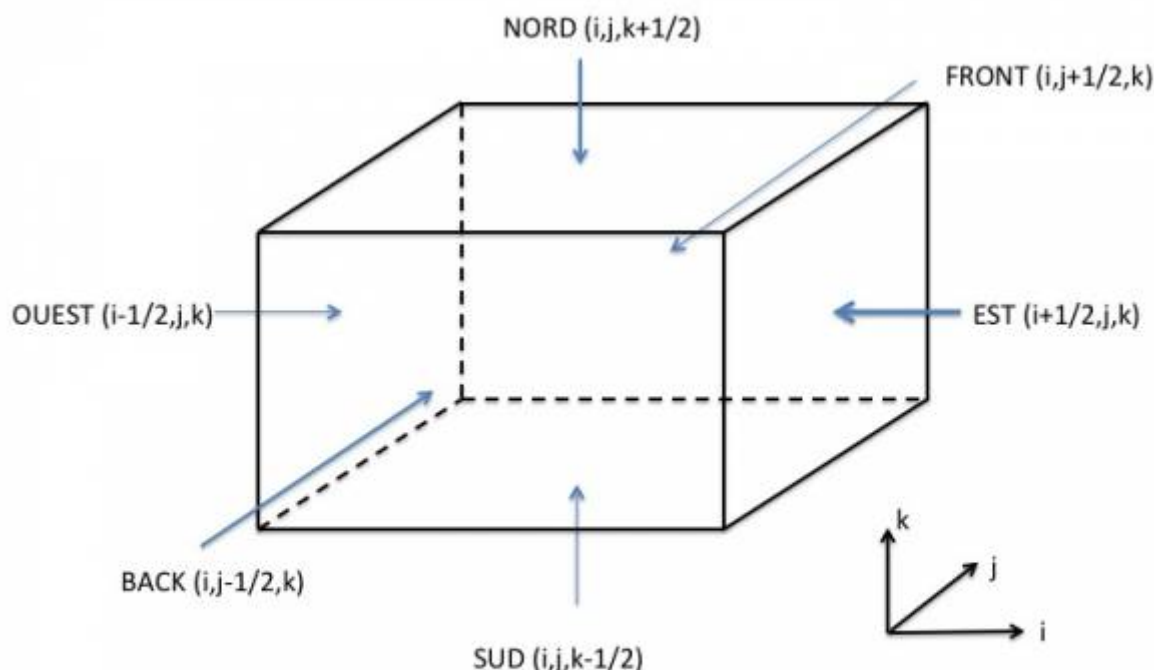


Namelist "Species_Wall_Boundary_Condition_Setup"

Not for the release SUNFLUIDH_EDU .

This data setup allows the user to handle the boundary conditions applied to the species mass fractions. Walls are identified according to the orientation of their normal vector from the adjacent fluid-cell. They are named as :

- WEST : if the wall is located at the $i-1/2$ face-cell (in regard to a fluid-cell)
- EAST : if the wall is located at the $i+1/2$ face-cell.
- BACK : if the wall is located at the $j-1/2$ face-cell.
- FRONT : if the wall is located at the $j+1/2$ face-cell.
- SOUTH : if the wall is located at the $k-1/2$ face-cell.
- NORTH : if the wall is located at the $k+1/2$ face-cell.



A data set can be attributed to the walls of several solid bodies. [Some examples are given here](#) .

Full data set of the namelist

```
&Species_Wall_Boundary_Condition_Setup
Wall_BC_DataSetName      ="Set1",
West_Species_BC_Option   = 1      , East_Species_BC_Option   = 1      ,
Back_Species_BC_Option   = 1      , Front_Species_BC_Option = 1      ,
South_Species_BC_Option  = 1      , North_Species_BC_Option = 1      ,
```

```
West_Species_BC_Value(:)= 0.0 , East_Species_BC_Value(:)= 0.0 ,  
Back_Species_BC_Value(:)= 0.0 , Front_Species_BC_Value(:)= 0.0 ,  
South_Species_BC_Value(:)= 0.0 , North_Species_BC_Value(:)= 0.0 /
```



- If **the usual “zero mass flux” conditions are applied for all walls**, this namelist can be omitted in the data file. The code use this boundary condition for any wall by default.
- This namelist can be pooled with other ones of same type (for the temperature or velocity components) to form a wall boundary condition setup.

*Find [here](#) how to construct the wall boundary conditions and some examples.**

Definition of the data set



For a sake of clarity, the data are defined for the the “WEST” wall only. The user can easily define the boundary conditions related to the other walls and velocity components by substituting the relevant character strings in the name of variables.

Wall_BC_DataSetName

- Type : character string
- Name of the data set associated to the wall boundary conditions for the species mass fraction or concentration. This name is used as an identifier in order distinguish the different sets of the wall boundary condition defined in the data file. The naming convention adopted is “Set” adjoined with a number : for example “Set1” for the first set, “Set2” for the second one, and so on ...
- By default “Set1” is always linked with the walls of domain ends (when they exist). Of course, it can be also linked with any other solid body.
- The same name must be used in the namelists [Heat_Wall_Boundary_Condition_Setup](#) (for heat boundary conditions) and [Velocity_Wall_Boundary_Condition_Setup](#) (for velocity boundary conditions), for building a full wall data set . The user finds [here](#) some examples about wall boundary conditions).
- Default value= none

WEST_Species_BC_Option

- Type : integer value
- Select the type of the boundary condition applied to the species mass fraction and linked to the

WEST wall. The available options are :

- 0 : Fixed value
- 1 : Zero mass flux
- Default value = 1

WEST_Species_BC_Value

- Type : array of real values.
- The size of the array is defined by the species number.
It contains the reference value of the species mass fraction.
These data are only relevant whether WEST_Species_Option= 0.
- Default value = none

End_of_Data_Block

- Type : boolean value
- Specify the end of the namelist or a group of this type of namelist (if true).

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