

SUNFLUIDH install from the Gitlab forge



In order to perform the versionning of the SUNFLUIDH project, the Gitlab forge of the LISN replaces the old SVN forge from the 8 July 2023.

The versionning control is henceforth ensured by git instead of svn.

The main branch of the Gitlab forge starts with the last svn version (1195). A specific branch of the project, named 'sunfluidh_svn1173b_tgcc', is related to the svn version 1173, with few minor modifications. This branch refers to the svn version used at TGCC for computing the Rayleigh-Bénard flows as part of the ANR project THERMAL.

Access to the SUNFLUIDH project on Gitlab

https://gitlab.lisn.upsaclay.fr/yann/SUNFLUIDH_PROJECT.git

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Environment of the project

At the root of the project, you will find several directories :

- **SOURCES** : This directory contains all the source files needed to compile the code. These sources files are compiled by means of the makefile file.
- **REACTIVE_FLOWS_FILES** : For multi-species (reacting) flows only. It contains setting files (*.inc) describing the physical and chemical features of various kind of species. For the case studied, a selected set of file must be copied in the directory 'SOURCES' before compiling the code. Please, contact the author for more information.
- In the directory "JOBSRIPTS_TEMPLATES" are given different shell scripts in order to run the code in batch mode on various type of computers (local cluster, IDRIS computers). These scripts must be considered as templates and must be adapted to your convenience. Three scripts are present:
 - **script_cluster_1.pbs** for the lab cluster "Grappe"
 - **script_jz_mpi_1.slurm** for the cluster Jean-Zay located at IDRIS
 - **script_irene_mpi_1.slurm** for the cluster Irene located at TGCC
- The directory **MAKEFILE_DIR** contains just one file named '**makefile**' for the compilation
- **TOOLS_PYTHON** : Python tools for post-processing (for reading the binary output files, see [Reading output files with Python \(examples\)](#))

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Compilation procedure

When the project is installed, please, follow these steps in order to compile the code :

- Go to the directory "~/SUNFLUIDH/TRUNK/DATA/MAKEFILES_DIR" and copy the file "makefile" in

the directory “~/SUNFLUIDH/TRUNK/SOURCES”

- Open the file “makefile”, choose the suitable compiler according to your system environment and define the relevant options of compilation (see ["How to configure the makefile"](#))
- Run the command “make” :The source files are compiled and an executable file is created. Its name depends on the option parameters chosen for the compilation (2D/3D, parallelization modes). It looks like “sunfluidh...x.

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How do start to work

Before starting to work with the code, find here some advises :

We suppose here your operating system is UNIX, LINUX or BSD and your shell is the BASH.

- Create a local working directory in your home directory (for instance “WORK”).
- Create and set your own data file for sunfluidh in your work directory. This data file must be named “input3d.dat” in order to be recognized by sunfluidh. You can be guided by the various examples of data files provided [here](#) .
- If your computational grid is irregular, do not forget to create the appropriate grid files with the mesh generator [Meshgen](#). If the grid is regular, sunfluidh builds the grid itself.
- Place the executable file (sunfluidh...x obtained after compiling in the directory **SOURCES**) in your work directory and run it : ./sunfluidh...x
The command to run sunfluidh must be executed in the work directory. All the result files created by the code will also be stored in the work directory.

It is often better to create a specific local directory in order to store your executable files rather than moving them from the compilation directory to the work directory. This prevents against the harmful overgrowth of executable files while more and more working directories are created over the time. For that :

- Create a specific directory in your home directory in order to store your own executable files (for instance ~/BIN)
- Move your executable files (here just sunfluidh...x) from the compilation directory to **BIN**.
- In order to executable files can be ran anywhere in your working space, you must inform your operating system where they are stored. In your local root directory (your home), open the system file named **.profile** (or **.bashrc**, or **.bashrc_profile** this depends on your operating system) and write the command line :
export PATH=“your_home_directory_path”/BIN:\$PATH
“your_home_directory_path” is just a generic name to define the access to your home from the root directory of the sytem (use the UNIX/LINUX command “pwd” in your home directory to know it).

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SUNFLUIDH

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