

# Saturne 2.2 coupled with syrthes 3.4 under Ubuntu 12.04 LTS

## ***Preparing your Ubuntu distro:***

Install Ubuntu 12.04 on your pc

run updates, remember to activate the option "not supported updates (precise-backports)" and reboot

from Software Center install : Synaptic package manager

from Synaptic package manager install : nautilus-open-terminal

Restart Nautilus : open a terminal (ctrl+alt+t) = ***killall nautilus***

Now if you right-click on a folder you can launch the terminal directly into the folder (avoiding boring cd /...)

## ***Preparing Saturne 2.2 Environment***

Download Code\_Saturne 2.2 from <http://code-saturne.org/cms/download/2.2>

extract the content (code\_saturne-2.2.1) in your home folder (/home/user/) where user is your ubuntu username

create a folder in /home/user/ called saturne2.2 , we will compile saturne here

## **Syrthes 3.4.3**

install syrthes 3.4.3 directly from synaptic

## **Saturne libraries**

from synaptic install in order (including subpackages required):

pyqt4-dev-tools

zlib1g

zlib1g-dev

mpi-default-bin

mpi-default-dev

libblas-dev

libxml2-dev

libparmetis3.1  
libparmetis-dev

scotch  
ptscotch  
libscotch-dev  
libptscotch-dev

libhdf5-openmpi-dev

libcgns-dev  
cgns-convert

libmed-dev  
libmedc-dev  
libmedimport-dev

## **Compile Saturne**

open a terminal in /home/user/saturne2.2 and digit

***/home/user/code\_saturne-2.2.1/configure --with-syrthes=/usr/lib/syrthes***

if your ending lines are like these :

***Zlib (gzipped file) support: yes***  
***MPI (Message Passing Interface) support: yes***  
***MPI I/O support: yes***  
***MPI2 one-sided communication support: yes***  
***OpenMP support: no***  
***BLAS (Basic Linear Algebra Subprograms) support: yes***  
***Libxml2 (XML Reader) support: yes***  
***ParMETIS (Parallel Graph Partitioning) support: yes***  
***PT-SCOTCH (Parallel Graph Partitioning) support: yes***  
***ADF support: no***  
***CCM support: no***  
***HDF (Hierarchical Data Format) support: yes***  
***CGNS (CFD General Notation System) support: yes***  
***MED (Model for Exchange of Data) support: yes***  
***MED MPI I/O support: no***  
***MEDCoupling support: no***  
***SALOME GUI support: yes***  
***SALOME Kernel support: no***  
***Dynamic loader support (for YACS): yes***  
***SYRTHES 3 coupling support: yes***

**Warning: CGNS version used is 2.5, which is deprecated.  
in future versions, CGNS >= 3.1 will be required.**

you can now digit (it may take long) :

**make**

and next :

**sudo make install**

Congratulations you successfully installed Saturne 2.2 coupled with syrthes 3.4

## **How to create a coupled case**

Open a terminal (ctrl+alt+t) and digit:

**code\_saturne create -s studyname -c fluid --syrthes=solid**

now in your home directory you can find the directory studyname.

Put your meshes in the MESH folder, then you can edit by gui your CFD domain opening a terminal in /home/user/studyname/fluid/DATA/ and running:

**./SaturneGUI**

create a new file and setup your CFD case.

Than for the syrthes part copy the reference files (syrthes.data, syrthes.env and syrthes.ray if needed) located in /home/user/studyname/solid/DATA/REFERENCE/ into /home/user/studyname/solid/DATA/ and start to edit them to setup the solid case.

Now launch the case running

**./runcase\_coupling**

from /home/user/studyname/

This tutorial has been written by Andrea “pisolino” (andrea.pisa@polito.it) and Andrea “biko86” collecting all the tips and helps inside the forum <http://code-saturne.org/forum>. A special thank to Yvan Fournier for the support.

Feel free to improve this step by step guide and sorry for our poor english.

A better tutorial on how to setup a case will follow into the future.