OpenIPSL

A Modelica Library for Power Systems Simulation

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Preparatory work – aka *homework*!

Please follow these slides before taking part in the Workshop/Tutorial/Seminar.

Requirements

Requirements for the workshop are:

We have only tested our tutorial for the following configurations.

Windows:

- PC with installed Windows 7 or later
- Installation of OpenModelica

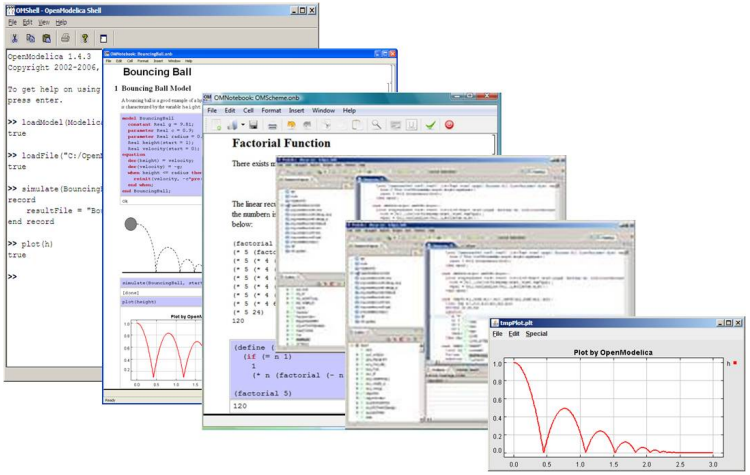
Mac:

- OSX El Capitan
- Installation of OpenModelica (binaries!)
- Xcode (Version 8.0)

Getting Started with OpenModelica and OpenIPSL

This presentation is a 2-part guide containing the preparatory work needed to carry out the *hands-on examples* of the Modelica and OpenIPSL workshop/tutorial/seminar.

- Part 1: Setting up OpenModelica
- Part 2: Setting up OpenIPSL 



Part 1

Setting up OpenModelica

Installation of OpenModelica

Instructions:

- Download the installation package
  - Windows:
    - https://www.openmodelica.org/download/download-windows
    - 1.9.6: https://build.openmodelica.org/omc/builds/windows/releases/1.9.6/OpenModelica-v1.9.6.exe
    - 1.9.11:
    - https://build.openmodelica.org/omc/builds/windows/releases/1.11.0/
  - Mac:
    - 1.9.6: https://build.openmodelica.org/omc/builds/mac/binaries/latest-release-1.9.6.mpkg

- Launch the Installation package and follow the instructions with default options

Note!

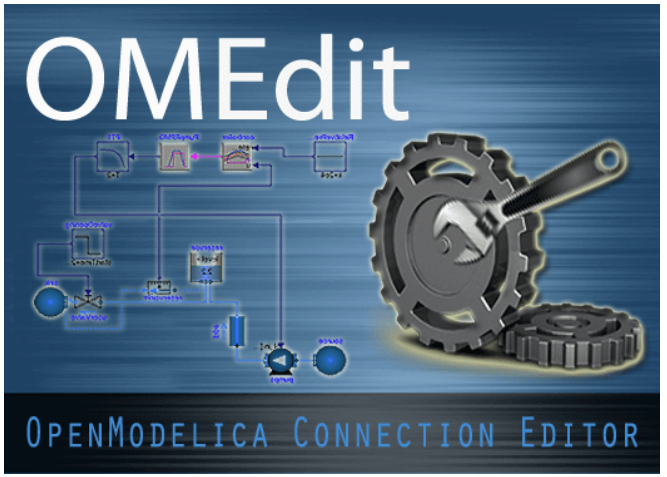
Compatibilty with OpenIPSL is checked for OpenModelica versions 1.9.6 (Mac and Windows) and 1.9.11 (on Windows)

No MAC OSX or Windows OS – No Problem!

- OpenModelica is available for GNU/Linux distributions here:
  - https://www.openmodelica.org/download/download-linux
  - **Note:** the compatibility of OpenIPSL has not been tested under these OS distributions

- Virtual Machine:
  - OpenModelica can be installed through pre-built Virtual Machines containing all the libraries and clients that come with OpenModelica.
  - See instructions here:
  - https://www.openmodelica.org/download/virtual-machine
  - **Note:** the compatibility of OpenIPSL has not been tested under these VM configurations.

Check of OpenModelica

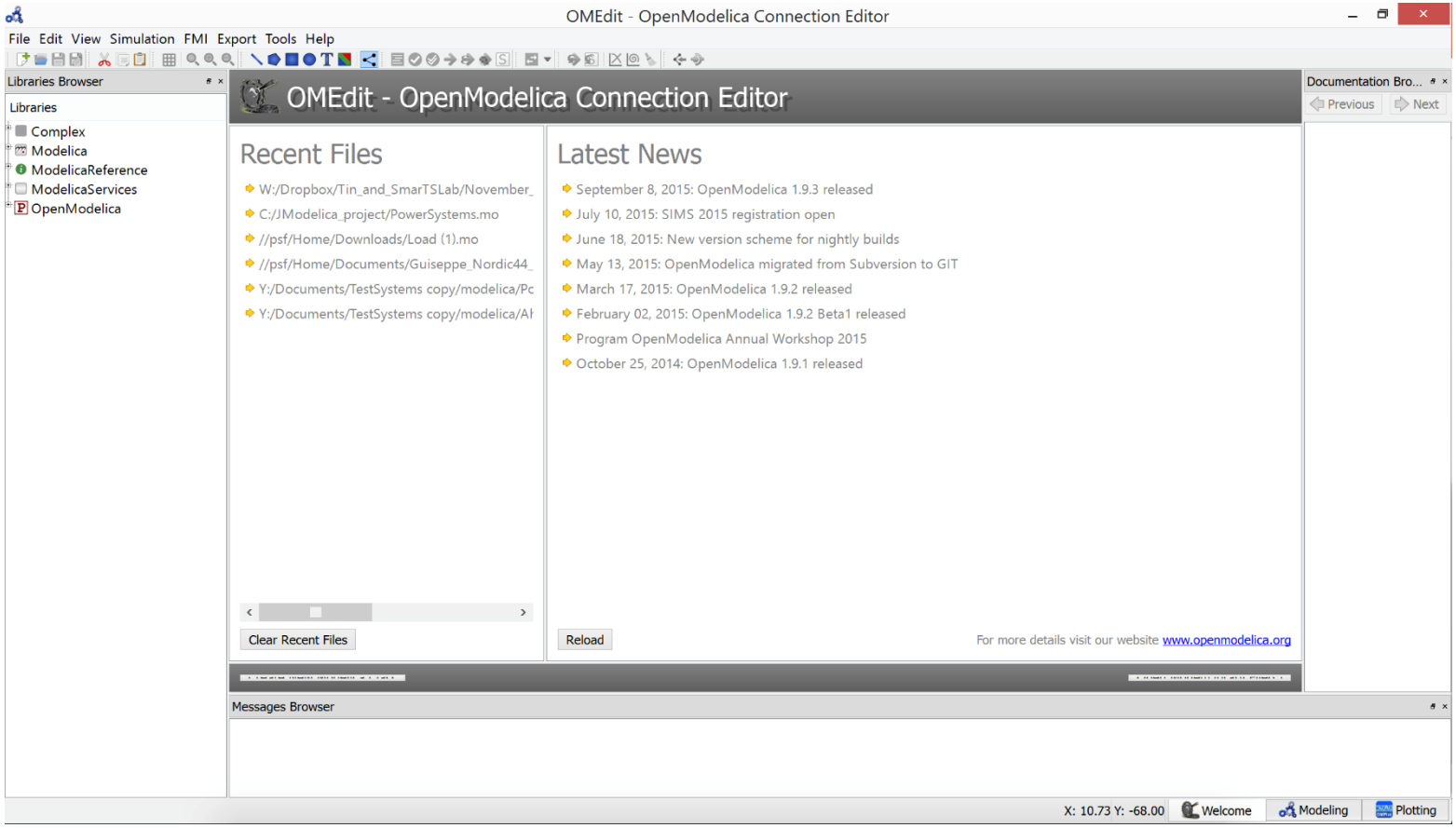


Tasks to check OpenModelica is correctly installed on your computer:

- Start OpenModelica Connection Editor (OMEdit)
- In the Libraries Browser navigate to Modelica.Blocks.Examples.PIDController
- Select Runge Kutta as a solver and simulate the model
- In the “Plotting” view, plot variable speedSensor.w

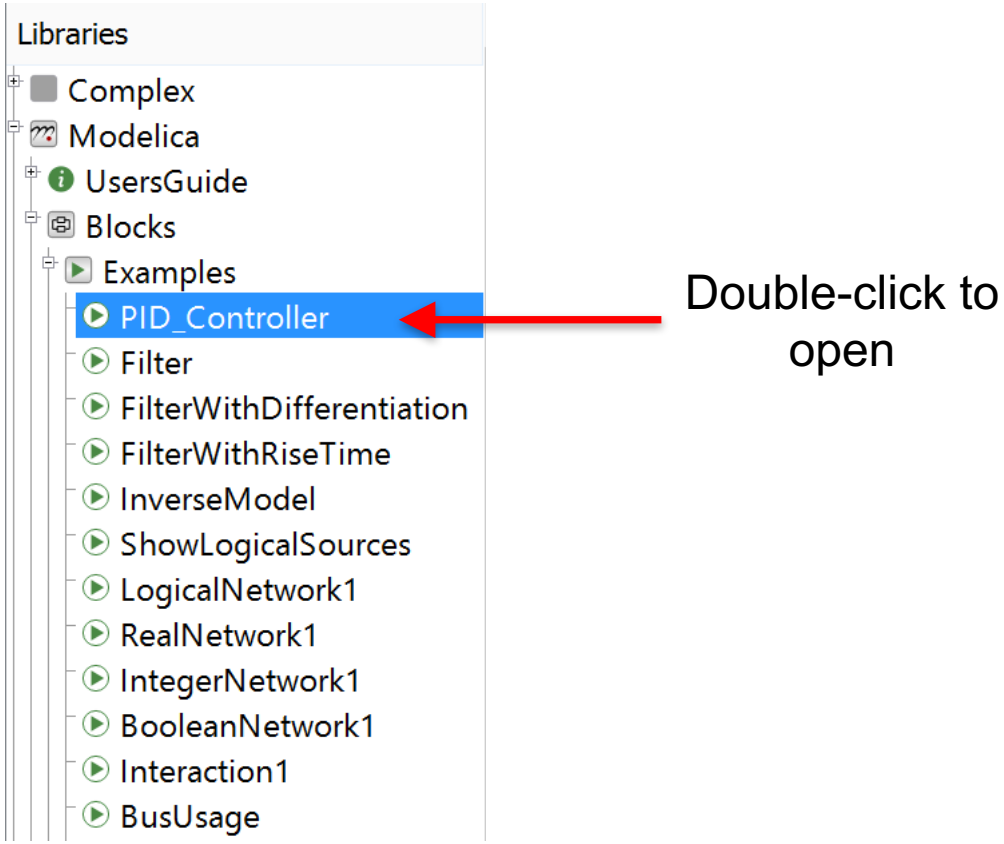
Check of OpenModelica – Step 1

Upon launch, the Connection Editor will present the following window



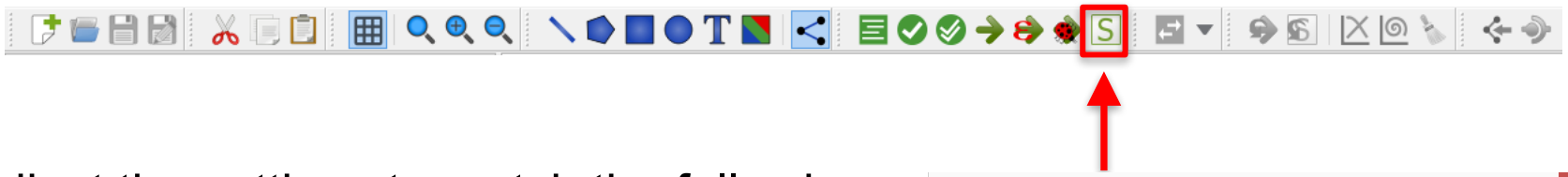
Check of OpenModelica – Step 2

Browse the Modelica library to find the PID_Controller and open it

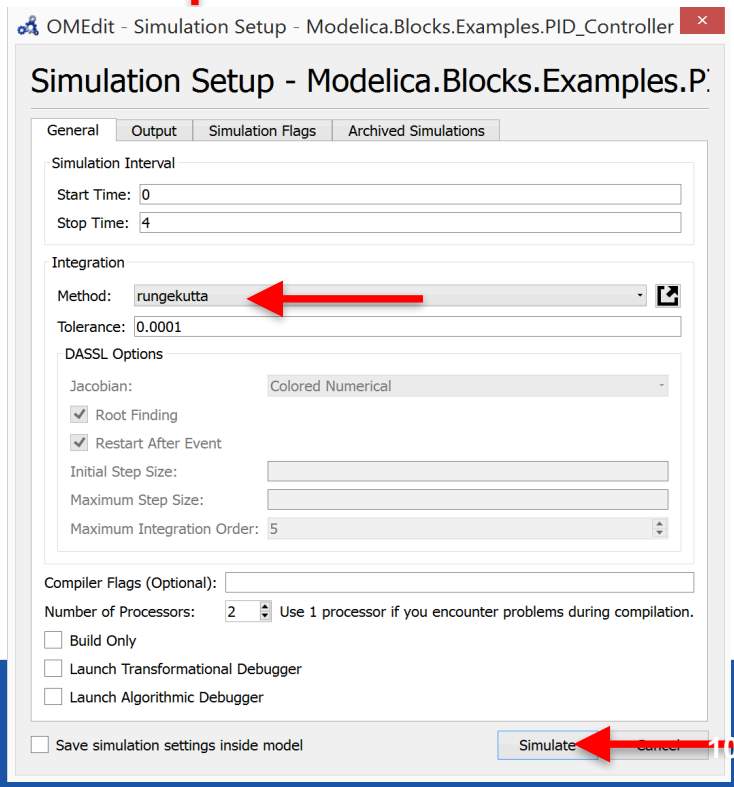


Check of OpenModelica – Step 3

Simulation settings are accessed on the toolbar:



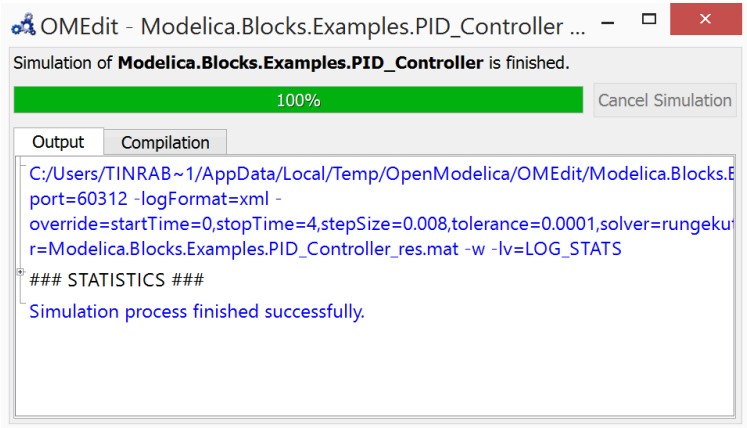
Adjust the settings to match the followings :



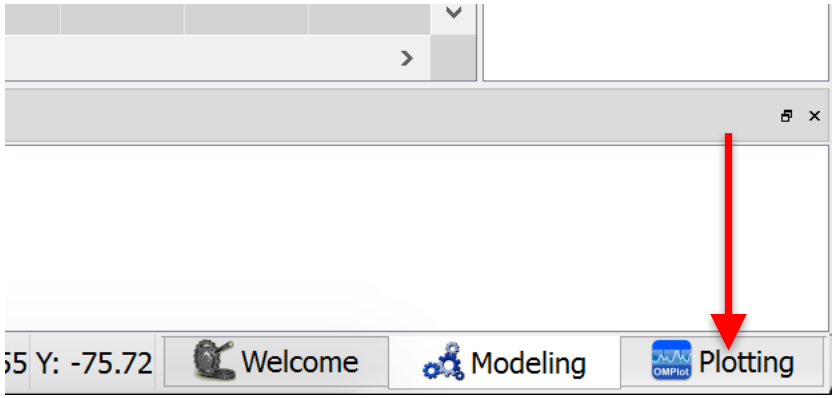
Click on **Simulate** to launch the simulation

Check of OpenModelica – Step 4a

Once the simulation is completed (100 %):

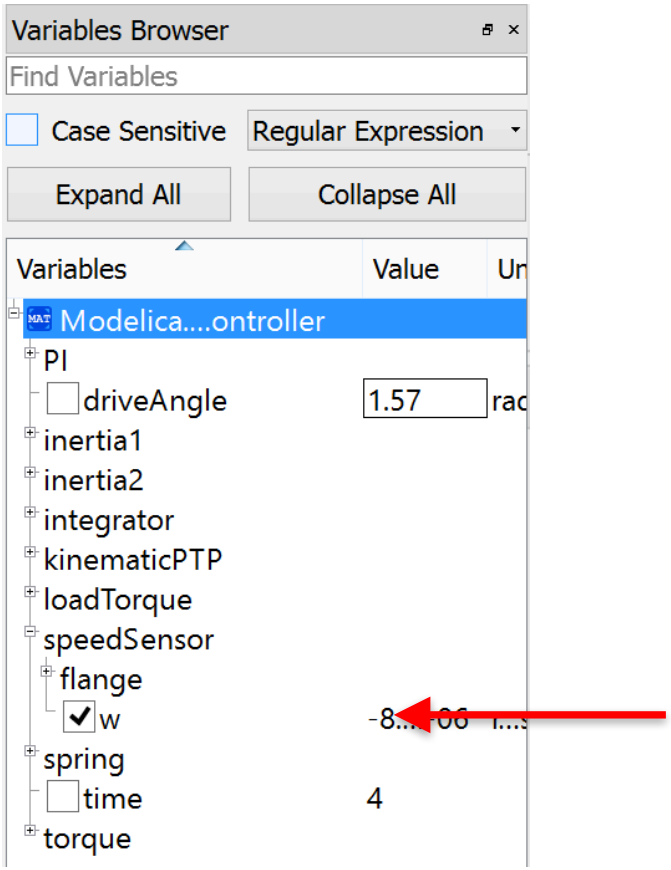


- Access the plotting facility by clicking on the **Plotting** tab in the lower right corner of the screen

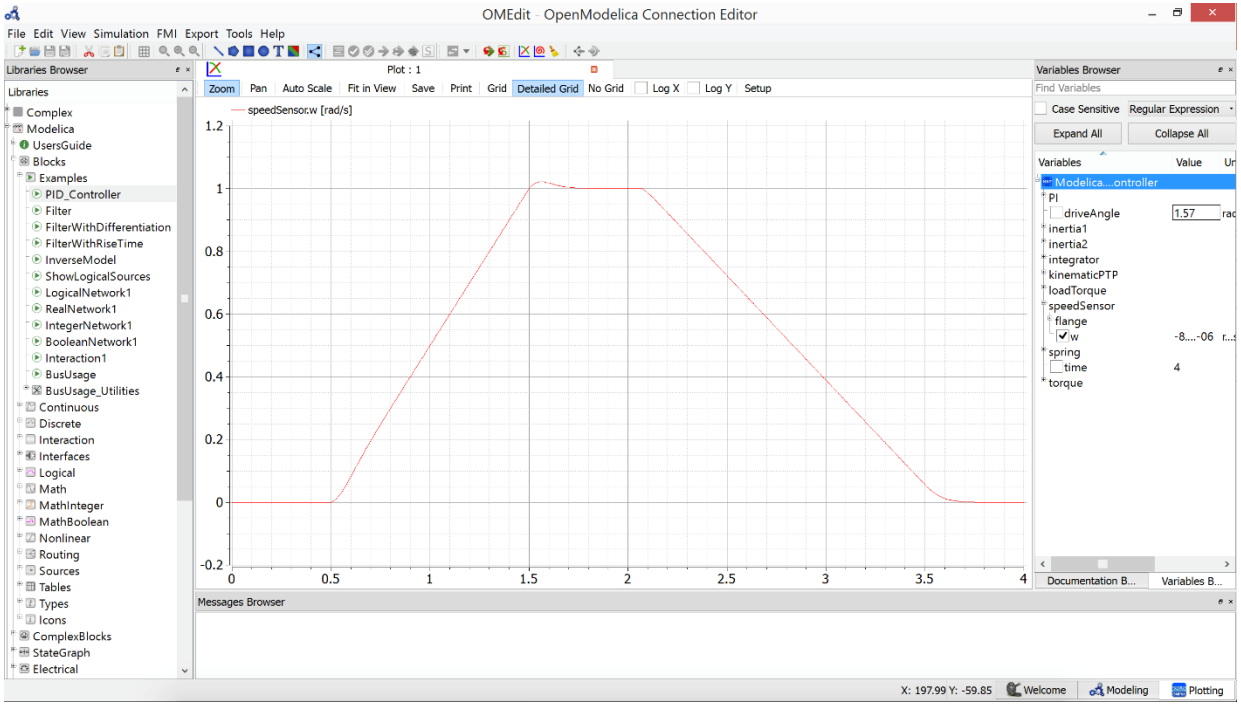


Check of OpenModelica – Step 4b

In the plotting facility, browse the variable to find the rotational speed **w**



Check of OpenModelica – Final Result



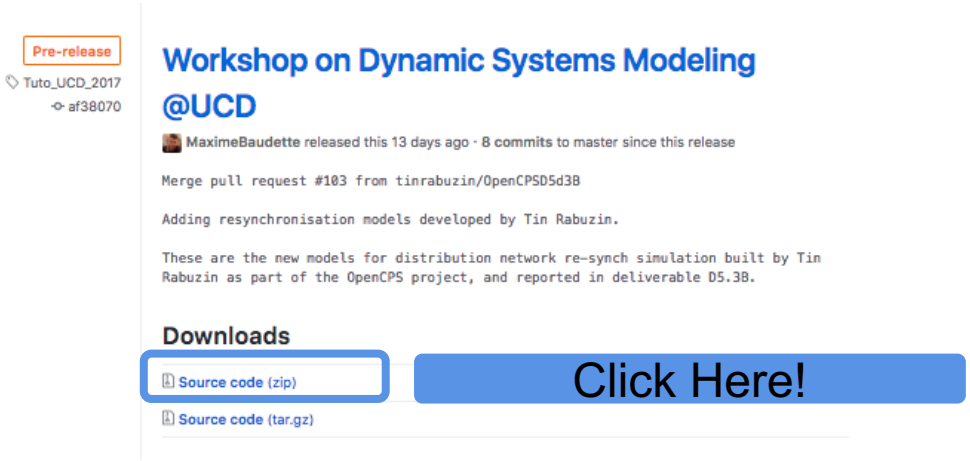
If your screen looks like this, you're ready to go!

Part 2

Setting up OpenIPSL

Download OpenIPSL!

Go to our Github repo:
https://github.com/SmarTS-Lab/OpenIPSL/releases/tag/Tuto_UCD_2017



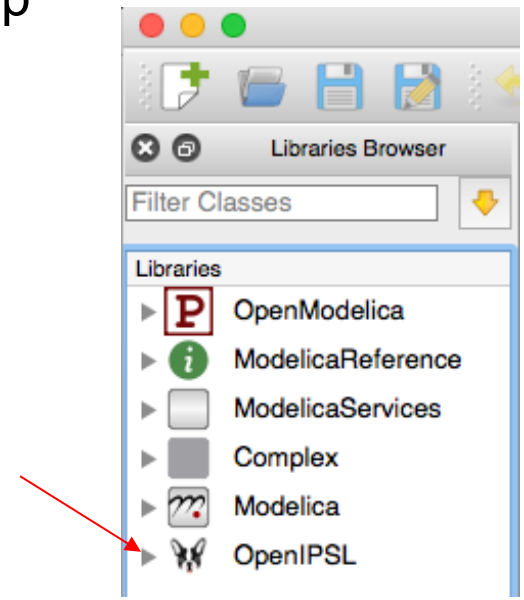
Note: A dedicated package will be prepared for the tutorial and uploaded soon.
Please download (again!) the package on the day of the tutorial so that you have the most up to date files.

The dedicated package will also be available on a USB stick that we can circulate on the day of the tutorial.

Load the OpenIPSL to OMEdit

External libraries, e.g. OpenIPSL, must be loaded in OMEdit to be used:

- Unzip the package downloaded at the previous step
- Open OpenModelica Connection Editor (OMEdit)
- Go to **File/Load Library**
- Browse to the location of the unzipped folder
- Choose the **/OpenIPSL** folder



- The icon with the OpenIPSL puppy should appear

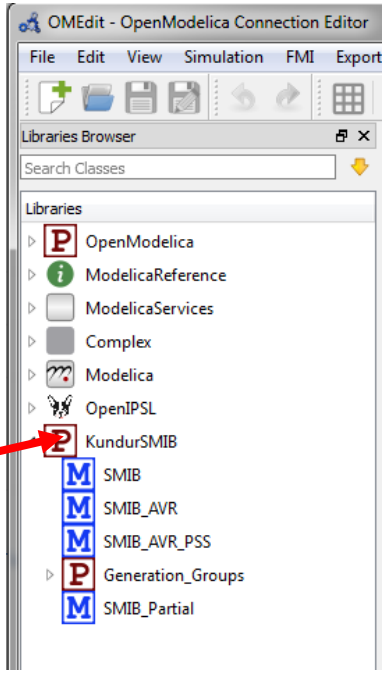
- *Alternatively:*
- Drag & drop the **package.mo** file to the **Library Browser** in OMEdit.

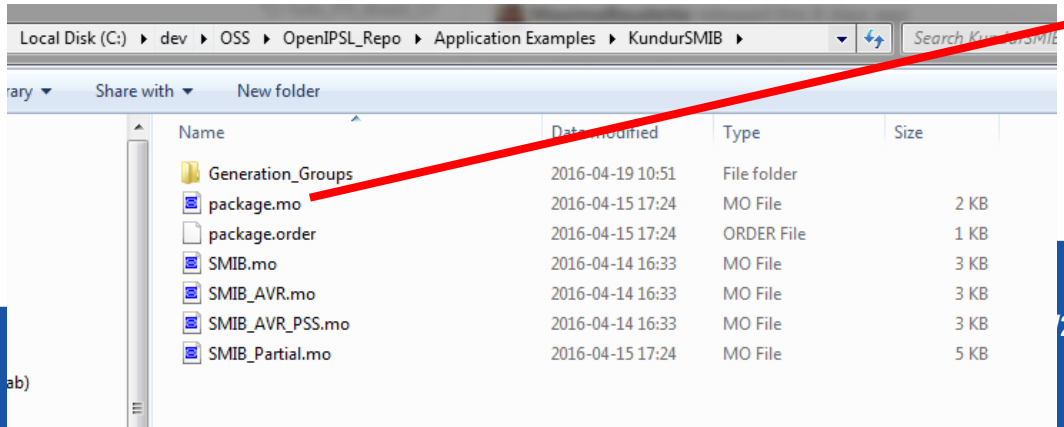
Load an Application Example to OMEdit

Once the OpenIPSL is loaded (see previous slide) in OMEdit, you can load an “Application Example”:

- Go to **Open Model/Library File(s)**
- Browse to the location of the unzipped folder
- Go to the **/Application Examples/KundurSMIB** folder, and select **package.mo**

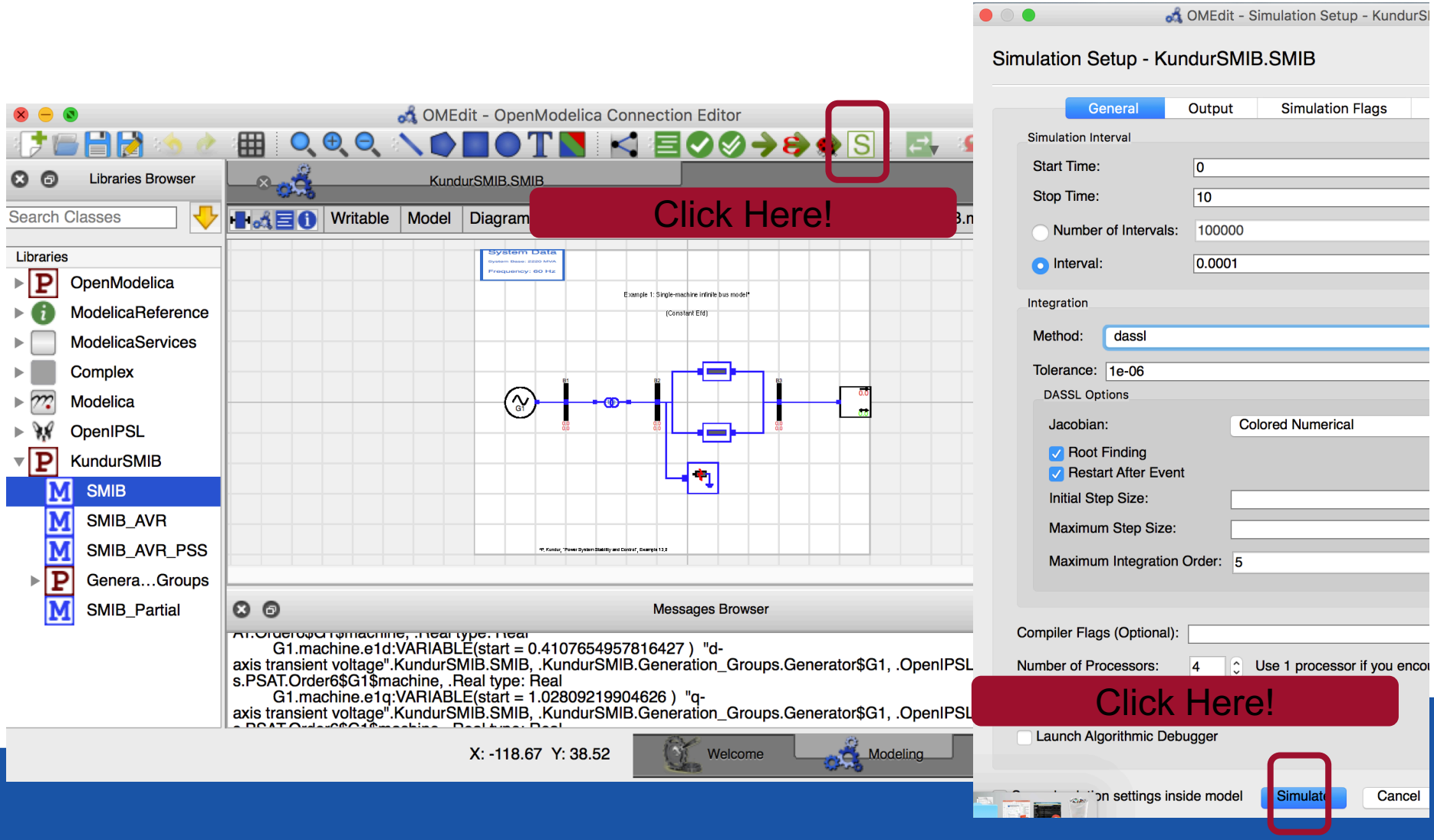
- Alternative:
- Drag & drop the **package.mo** file to the **Library Browser** in OMEdit.





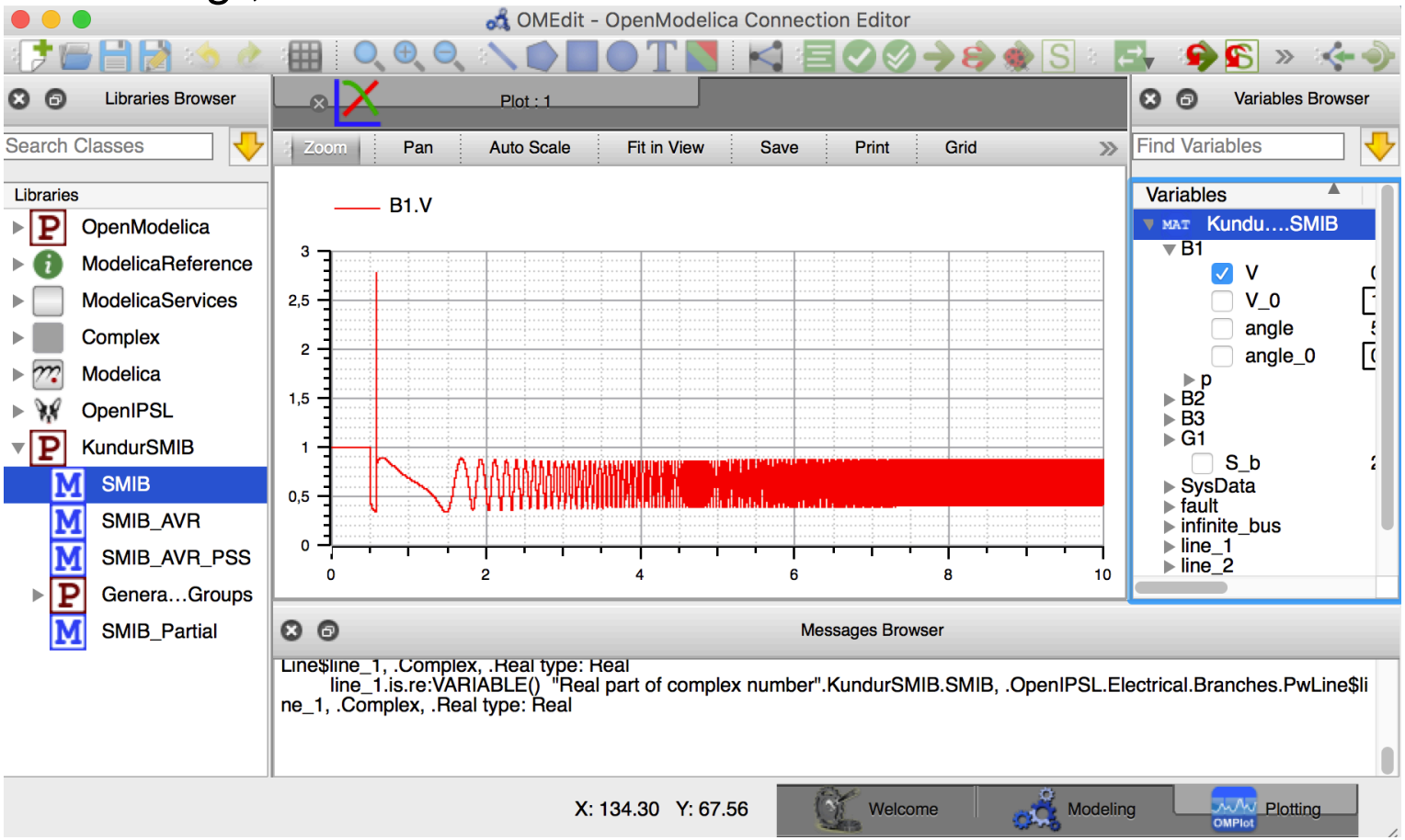
Check that it simulates

Click on “SMIB”, “Simulation Setup” and “Simulate”



Plot the results

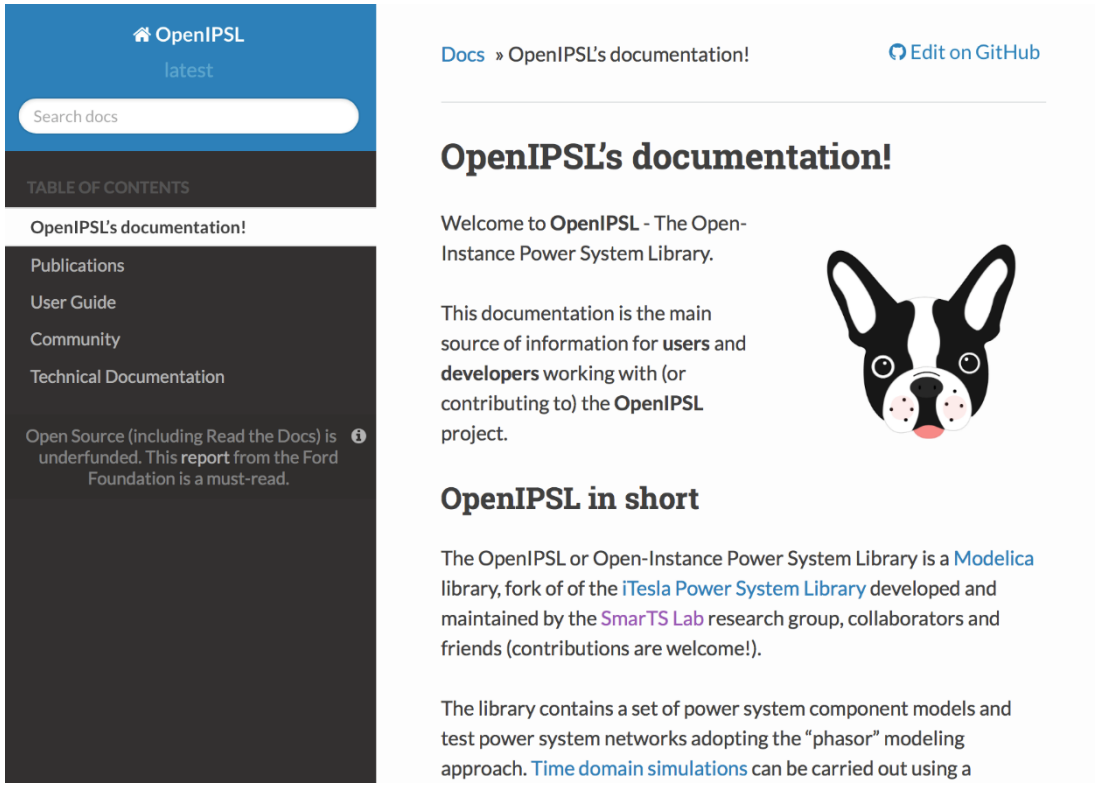
Click on “Plotting”, scroll to “B1” and select “V”



Finally, take a look a our repository and documentation!

Repository: https://github.com/SmarTS-Lab/OpenIPSL

Go to: http://openipsl.readthedocs.io/en/latest/index.html



You are ready!

See you for the workshop/tutorial/seminar!