

# Chrono::SolidWorks

#### Add-In for Pre-Processing in SolidWorks





## Chrono::SolidWorks

- Chrono:: SolidWorks is an experimental add-in for SolidWorks, it provides a pre-processing GUI
- Developed in C# for SolidWorks API (based on COM architecture)
- Exports models: translates SW parts + constraints into Chrono bodies + links
- Exports the Chrono model as a .py file (requires Chrono::Python unit to parse it from your C++ program)
- Prerequisites
  - SolidWorks (v. 2013 or later) must be installed on your workstation
  - Chrono::PyEngine (*python* API) must be built/installed
  - Chrono (C++ API) is optional







#### Add-in installation

METHOD A (easiest, preferred)

- Download the latest installer from <a href="http://www.projectchrono.org/download/">http://www.projectchrono.org/download/</a>
- Install it (it should detect you SolidWorks installation)





## Add-in installation

#### METHOD B

- Clone the C# source from GIT: https://github.com/projectchrono/chrono-solidworks
- Open VisualStudio as administrator
- Load the .sln in VisualStudio
- Set the Output path to your SolidWorks binaries in the Build tab:
- You may need to edit the dll paths by hand in the References editor:
- Run "Build/Build solution" menu, (Note: at the end of build, the add-in assembly will be automatically installed to your SolidWorks)

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## Add-in installation

Check if the add-in is correctly installed:

• See if this panel is visible:

• If not, check if the add-in is registered and actived, using the menu "Tools/Add-ins.."





Create falling columns



• Make a part in SolidWorks:



• Make a simplified collision shape: a cylinder.

It is 'overlapping' to the visualization surface (use the 'solid body' feature of SolidWorks)







• Select the cylinder as collision shape using the SolidWorks Chrono Add-In panel:













- Same procedure for capitols, where the collision shape is one or more simplified primitives
  - Cube
  - Sphere
  - Cylinder
  - ...



• Replicate parts:







• Export to Python file:





- Import the .py file from your C++ program
- Modify object properties, if needed (ex. friction coeff.)
- Add additional objects, if needed (ex a ChLink to make earthquakes)
- Run the Chrono simulation and postprocess the results





#### Notes:

 Mass properties are automatically computed and exported from SolidWorks

 Most relevant mate constraints are exported as ChLink objects in Chrono



