User Manual for PolyHarmonics

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August 12, 2015

Contents

1 Introduction

1.1 Purpose of Document

This document is designed to assist with installation and setup of PolyHarmonics on Python version 2.7.

2 Installation

The following section provides an overview of what needs to be installed before PolyHarmonics will function.

2.1 Python

PolyHarmonics is designed to function on Python version 2.7, as such Python must be installed and updated to this version in order for the software to run properly.

2.2 Required Modules

The following modules do not come with Python 2.7 by default and must be installed separately.

- NumPy: Provides support for large multi-dimensional arrays and many high level mathematical functions.
- SciPy: Builds on NumPy with modules for optimization and many commonly used functions in scientific computing.
- Matplotlib: A Python 2D plotting library.
- Pywt: Used for wavelet transforms, also known as PyWavelets.
- npTDMS: Required in order to read TDMS files.

[The following section is debatable whether it should be kept in, however without these extra details it will be difficult to install the modules properly. Additionally these steps have only been tested on windows but I believe they will hold for all 3 main operating systems. —ND]

2.3 Installation Steps

In order to install the modules properly follow these steps:

- From a command line enter the command: pip install update
- From either a Python shell or command line running Python run the following command: import pip; print(pip.pep425tags.get_supported())

  Take note of the first entry as this will be used to install the proper modules for your system.
- On the following link download each required modules according to the first entry returned from the previous step.
  http://www.lfd.uci.edu/~gohlke/pythonlibs/

  For example, if the first entry returned from the python command was ('cp34', 'none', 'win32') you would want the NumPy the file called "numpy1.9.2+mklcp34nonewin32.whl". Download the proper version of each required module and place it within the Python/Tools/Scripts folder.
- Navigate a command window to the Python/Tools/scripts folder and run the command: pip install your-package.whl
  Where your-package is the name of the file previously downloaded.

[Right now this is worded very informally, I will need to go back and change the wording. Additional testing would be optimal on any system besides windows, I can confirm this process works for both windows 7 and 8. There is also the issue of the libraries being downloaded from a source other than the actual Python source, if this is unacceptable this portion can easily be omitted. —ND]

3 Using PolyHarmonics

3.1 Running

Once the specified modules have been properly installed PolyHarmonics can be run by opening the .py file and choosing run.
When prompted input the starting frequency, the stopping frequency and the step between each frequency that was used to test. Then select the directory which contains the folder you wish to use as input. All plots and text files the system outputs will go into this folder.