

1. Setup Ubuntu WSL in Windows 10
 - a. Enable WSL - navigate through Windows Settings (! This will require a system restart !)
 - i. <https://winaero.com/blog/enable-wsl-windows-10-fall-creators-update/>
 - ii. Settings ->Apps->Apps & Features->Programs and Features->Turn Windows features on or off->Windows Subsystem for Linux (toggle it on)
 - b. OR - enable WSL
 - i. Type "Turn Windows features on or off" into Windows search bar
 - ii. Toggle on "Windows Subsystem for Linux"
 - c. Download and Install Ubuntu 18.04 from Microsoft Store (called Ubuntu or Ubuntu 18.04 LTS)
 - i. If you ever need to access Ubuntu files from your Windows side, here is the default root directory path: (replace <username> with your username)
 1. ||
C:/Users/<username>/AppData/Local/Packages/<CanonicalGroup Limited.Ubuntu18.04onWindows_79rhkp1fndgsc>/LocalState/rootfs/home/ ||
2. Open Ubuntu WSL
 - a. The following double bar || || separators indicate commands to be entered into the linux command line.
3. Get Required Packages (this may take several minutes; your account must be on the sudoers list to run 'sudo' commands)
 - a. Make sure that your versions of "apt" and "apt-get" are current.
 - i. || sudo apt upgrade ||
 - ii. || sudo apt-get update ||
 - b. || sudo apt install g++ ||
 - c. || sudo apt install cmake ||
 - d. || sudo apt install libhdf5-dev ||
4. Checkout OpenMC repo
 - a. || git clone <https://github.com/openmc-dev/openmc.git> ||
 - b. || cd openmc ||
 - c. || git checkout master ||
 - d. || mkdir build && cd build ||
 - e. || cmake .. ||
 - f. || make ||
 - g. || sudo make install ||
5. Setup Python api (commands including 'python3' or 'pip3' may need to be switched to 'python' or 'pip')
 - a. Python 3 is already installed with Ubuntu 18.04
 - b. || sudo apt install python3-pip ||
 - c. Get required packages
 - i. || pip3 install numpy ||
 - ii. || pip3 install scipy ||

- iii. || pip3 install pandas ||
- iv. || pip3 install h5py ||
- v. || pip3 install matplotlib ||
- vi. || pip3 install uncertainties ||
- vii. || pip3 install lxml ||
- viii. || cd ~/openmc/ ||
- ix. || pip3 install . ||

6. Set Environmental Variable

- a. || vi ~/.bashrc ||
- b. Add the line to the bottom of your .bashrc:
 - i. Press “shift + g + g” to jump to the last line of the file
 - ii. Press “i” to enter edit mode
 - iii. Paste the following line: (replace <username> with your username)
 - 1. || alias openmc="/home/<username>/openmc/build/bin/openmc" ||
 - iv. Press “escape”
 - v. Type || :wq || to save and exit.

7. Configure Cross Section Libraries

- a. Download official library (1.6 gb):
<https://anl.box.com/shared/static/9igk353zpy8fn9ttvtrggzvw1vtejoz6.xz>
- b. (From Ubuntu Terminal) Navigate to your Windows-side Downloads folder, unzip to desired directory. (replace <username> with your username)
 - i. || mkdir ~/openmc/Cross_Section_Libraries/ ||
 - ii. || cd ~/.../mnt/c/Users/<username>/Downloads ||
 - iii. || tar -xf endfb71.tar.xz -C ~/openmc/Cross_Section_Libraries/ ||
- c. Setup Environmental Variable
 - i. || vi ~/.bashrc ||
 - ii. Add the line to the bottom of your .bashrc:
 - 1. Press “shift + g + g” to jump to the last line of the file
 - 2. Press “i” to enter edit mode
 - 3. Paste the following line: (replace <username> with your username)
 - a. || export
 OPENMC_CROSS_SECTIONS=/home/<username>/openmc/Cross_Section_Libraries/endfb71_hdf5/cross_sections.xml ||
 - 4. Press “escape”
 - 5. Type || :wq || to save and exit.

8. Configure Depletion ‘.xml’s

- a. Download Depletion chains
 - i. Thermal Spectrum:
<https://anl.box.com/shared/static/1ndcrc1j042nkdpfobp5ebsyxghziisc.xml>
 - ii. Fast Spectrum:
<https://anl.box.com/shared/static/bb7sfrf6pyyoa5zoa2sxiuy7mvn5kza.xml>

b. You should still be in your Windows-side Downloads folder, so simply enter the following commands:

- i. `|| mv ./chain_endfb71_pwr.xml
~/openmc/Cross_Section_Libraries/endfb71_hdf5/ ||`
- ii. `|| mv ./chain_endfb71_sfr.xml
~/openmc/Cross_Section_Libraries/endfb71_hdf5/ ||`

9. Install Jupyter

a. `|| pip3 install jupyter ||`

b. Add alias to `.bashrc`

i. Add the line to the bottom of your `.bashrc`:

1. `|| vi ~/.bashrc`
2. Press “shift + g + g” to jump to the last line of the file
3. Press “i” to enter edit mode
4. Paste the following line: (replace `<username>` with your username)

a. `|| alias
jupyter-notebook="/home/<username>/local/bin/jupyter-notebook --no-browser" ||`

5. Press “escape”

6. Type `|| :wq ||` to save and exit.

ii. Type `|| :wq ||` to save and exit

c. `|| source ~/.bashrc ||`

d. To access Jupyter Notebook, navigate to your OpenMC root directory and type:

i. `|| jupyter-notebook ||`

ii. You will see the following message:

1. “To access the notebook, open this file in a browser: (FILE) Or copy and paste one of these URLs: (URL) or (URL)”
2. (ignore any errors) Copy and paste the URL into your browser as directed.