Installation

Supported operating systems

TauREx runs well on Mac and Linux systems. It has never been tested on Windows systems.

Install Python and additional packages

The easiest way to install all the relevant Python packages to run TauREx is to get Anaconda (https://www.continuum.io/downloads). I is a distribution of Python that includes over 100 of the most popular Python packages for data science.

> TauREx runs both on Python 2.7 and 3, but Python 3 is needed to run the highest resolution (line-by-line) spectra.

In case you want to install each package independently, you will need at least the following libraries:

`numpy, scipy, matplotlib, cython, pymultinest`

Install relevant compilers

If you don't have them installed, you can install gcc and cmake on a Mac using macports. You will need them to install the multinest library.

Mac OS

```
sudo port install gcc5
sudo port select --set gcc mp-gcc5
sudo port install cmake
```

Make sure the latest version of gcc is installed on your system (*do not install 4.8 as that has a bug w.r.t. some lapack libraries*). Anythir above version 4.9 is fine.& gcc 5 or above is recommended and everything will be linked to this from here on.

Linux (e.g. Ubuntu)

```
sudo apt-get install gcc
sudo apt-get install cmake
```

Similar commands are available for other distributions, e.g. using `yum`

Install LAPACK and BLAS libraries

These libraries are needed to install multinest.

Mac OS

```
sudo port install openblas +gcc5
```

Linux

```
sudo apt-get install lapack blas
```

Install openmpi

Mac OS

```
sudo port install openmpi +gcc5
sudo port select --set mpi openmpi-mp-fortran
```

Linux

```
sudo apt-get install open-mpi
```

Install multinest library

First download multinest from here (https://ccpforge.cse.rl.ac.uk/gf/project/multinest/) (you will need to register to access the downloa page).Make sure you download the cmake installation version (`MultiNest_v3.10_CMake.tar.gz` (https://ccpforge.cse.rl.ac.uk/gf/account/?action=Login&redirect=%2Fgf%2Fproject%2Fmultinest%2Ffrs%2F)). This sorts most of th makefile and unpack it somewhere. The default installation directory (unless you change it) is

`/usr/local/multinest`

which is the default installation path for the further description here. You can also choose a more local directory. Before installing, read the `README` file in the multinest folder. This should explain quite well how to do that.

Before compiling multinest,

Mac OS and Linux

```
tar -zxvf MultiNest_v3.10_CMake.tar.gz
cd MultiNest_v3.10_CMake
cd build
cmake ..
make
sudo make install
```

Change default installation path

If you want to change the default installation path:

```
cmake -DCMAKE_INSTALL_PREFIX=/path/to/local/install ..
```

If the installation directory is changed, you will need to add the installation directory to your shell's PATH variable. Please see your system's documentation for how this can be accomplished.

If you use Mac OS

On Apple machines it appears only 32-bit binaries/libraries are built by default. If you wish to have 64-bit libraries, you need to set the 64-bit compiler flags when CMake is first invoked:

```
cmake -DCMAKE_{C,CXX}_FLAGS="-arch x86_64" -DCMAKE_Fortran_FLAGS="-m64" ..
```

If you are using a Mac, you also need to soft-link the `.dylib` libraries to the `.so` version. You do not need to do that on a Linux system. Go to the folder in which you installed multinest (default is `/usr/local/multinest`). Then:

```
cd lib
sudo ln -s libmultinest.dylib libmultinest.so
sudo ln -s libmultinest_mpi.dylib libmultines_mpi.so
```

If you use Linux

If you are on a Linux system and it complains about LAPACK and BLAS, find the libblas.so.* and liblapack.so.* libraries (usually locate in /usr/lib64/). Make sure that the soft links libblas.so and liblapack.so exist. E.g.:

```
ln -s /usr/lib64/libblas.so.3.4 /usr/lib64/libblas.so
ln -s /usr/lib64/liblapack.so.3.4.2 /usr/lib64/liblapack.so
```

Update the LD_LIBRARY_PATH variable

Finally, add the multinest libraries to your LD_LIBRARY_PATH variable. Best is if you do that in your .bashrc or .bash_profile or .profile (whichever your system uses)

```
export LD_LIBRARY_PATH=/usr/local/multinest/lib:$LD_LIBRARY_PATH
```

Install PyMultinest

You can use `pip` to install pymultinest:

```
sudo pip install pymultinest
```

Download and install TauREx

We suggest to get the Github version of TauREx. It will make it easier to update to the latest version whenever bug fixes or new featur are available.

Before installing TauREx, make sure you have installed all the required external packages shown above.

Update the LD_LIBRARY_PATH variable

Finally, add the multinest libraries to your LD_LIBRARY_PATH variable. Best is if you do that in your .bashrc or .bash_profile or .profile (whichever your system uses)

```
export LD_LIBRARY_PATH=/usr/local/multinest/lib:$LD_LIBRARY_PATH
```

Clone the TauREx repo

Chose a location where to install TauREx (e.g. /apps), then clone the TauREx repository.

```
cd /apps
git clone https://github.com/ucl-exoplanets/TauREx
```

You will need your Github username and password as the repository is private. If you don't have access to the repository get in touch with us.

Compile some libraries

It is required to manually compile a few libraries before running TauREx. If you have the gcc compiler:

```
cd /apps/TauREx
sh library/compile.sh
```

If you don't use the gcc compiler, open `library/compile.sh` and modify the COMPILER and OPENMP_FLAG variables accordingl

Update TauREx

To update TauREx to the latest version:

```
cd /apps/TauREx
git reset --hard HEAD^
git pull origin develop
```

Get the absorption cross sections

The Github version of TauREx does not contain the absorption cross sections and other input files. Before running TauREx you will ne to download these relevant files. Connect to the online File Browser (https://taurex.online/dfm/private) and download the folder TauREx/Input. Then move this folder inside your TauREx installation path.

- ‹ Install required packages (/node/4)
- Up (/node/3)

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