ChiralForce

This repository contains a Python script `fields.py` together with two interactive Jupyter notebooks:

- `force_basis.ipynb` capable of reproducing twelve plots of force densities for any material parameters and for any mode near a cylindrical dielectric fibre
- `particles.ipynb` capable of calculating and ploting the force fields for spherical chiral particles

Dependencies

This code requires python package manager such as Anaconda, Miniconda or Micromamba and packages listed in the file environment.yaml. These packages are namely:

- astropy
- jupyter
- matplotlib (version 3.7)
- numpy
- python (version 3.10.10)
- scipy
- tqdm
- texlive (UNIX) or miktex (Windows)

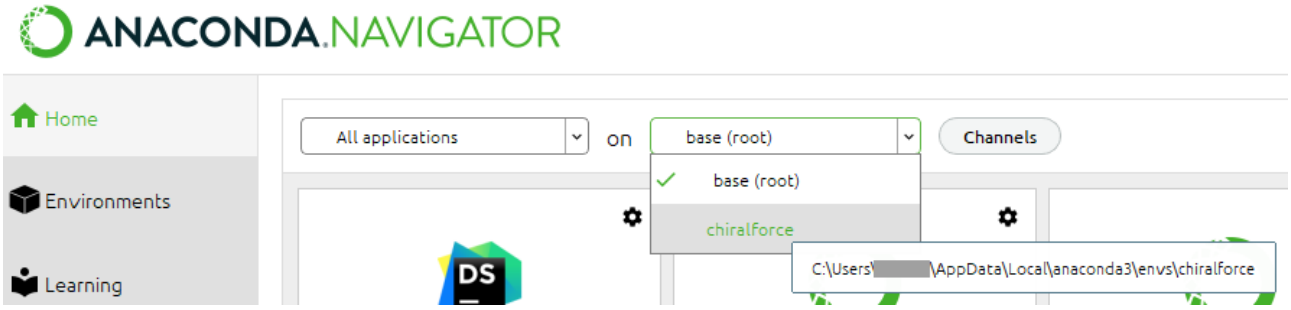
Setting up the environment

- Install Miniconda (or equivalent) and when finished open Anaconda Prompt
- Run the following command in the directory containing yaml file replacing word `environment` with (`unix` / `windows`):

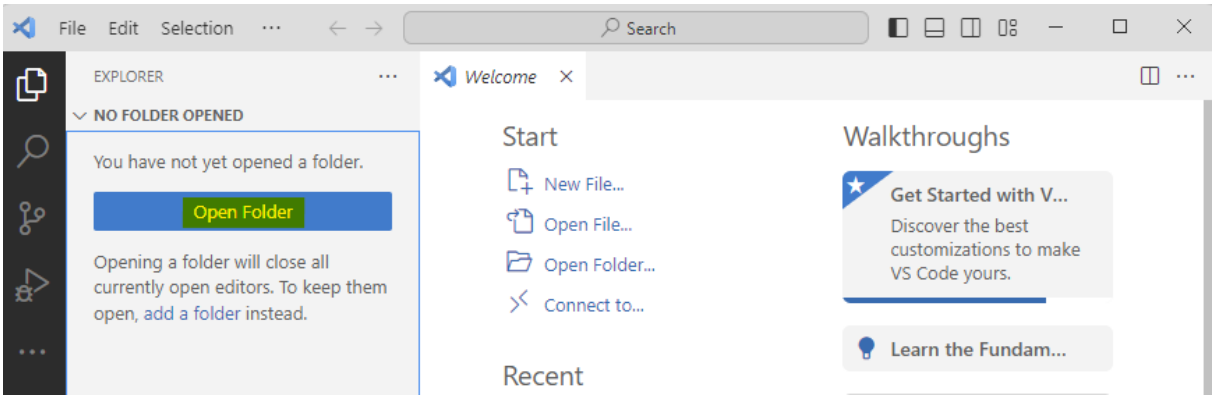
```
conda env create -f environment.yaml
```

this command creates an environment called `chiralforce` and installs all the required packages.

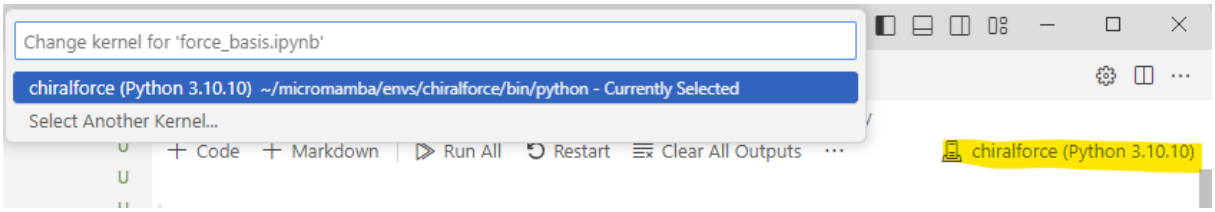
- Now open your favourite IDE (Visual Studio Code, JupyterLab, ...)
  - When using anaconda navigator select the environment `chiralforce`



  - When using Visual Studio Code:
    - make sure to open the folder ChiralForce-main in the explorer



    - choose the `chiralforce` kernel before running any notebook



- Open and run force_basis.ipynb or particles.ipynb