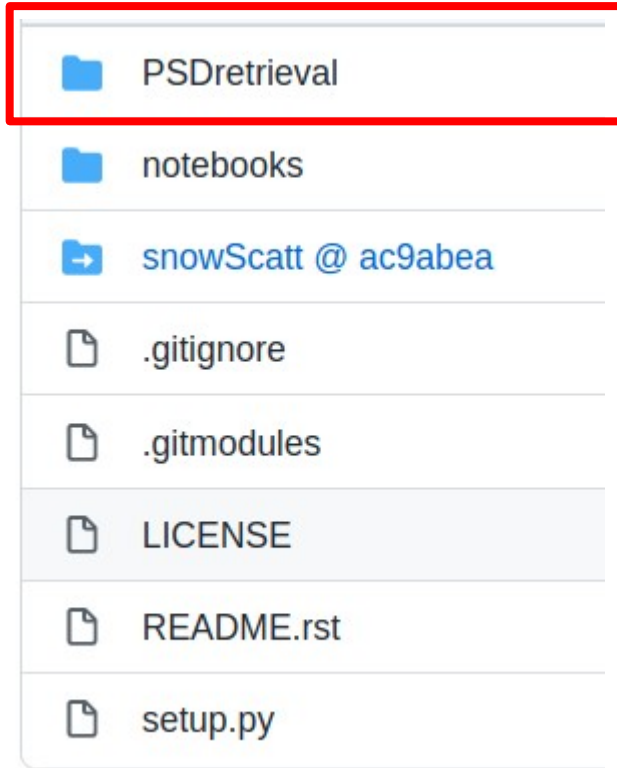# PSDretrieval

The PSDretrieval code reads the Tripex-pol spectra and estimates a PSD by:

   1. estimating vertical wind speed

   2. finding a matching particle type from snowscatt with DV-sDWR comparison

   3. dividing spectral power by backscattering cross-section
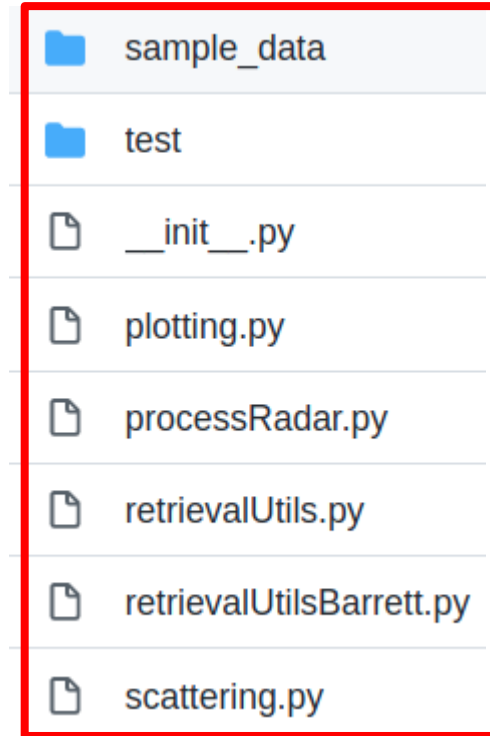   → **PSD**

Getting started

- Clone the repository: "git clone --recursive https://github.com/OPTIMICe-team/PSDretrieval.git"

- Compile and run test script: "python3 setup.py install --user && python3 PSDretrieval/test/testNEW.py"

- Check notebook at "in notebooks/ShowcaseRetrievalNew.ipynb"

- If you are working remotely you can create a tunnel first:
    - Start notebook in PSDretrieval folder on the remote machine: "jupyter-notebook"
    - Create tunnel: ssh -N -L localhost:8888:localhost:8888 mkarrer@morget& (numbers might be different; for windows maybe this link helps: https://medium.com/@aphiwatkitkitiwiriya/ssh-tunnels-and-port-forwarding-with-mobaxterm-9cafc969457b)
    - Then copy link which appeared after "jupyter-notebook" on remote into the browser

PSDretrieval package

📁	PSDretrieval	← All modules are here
📁	notebooks	← Jupyter notebooks
➡️	snowScatt @ ac9abea	← Snowscatt is integrated
📄	.gitignore	
📄	.gitmodules	
📄	LICENSE	
📄	README.rst	
📄	setup.py	

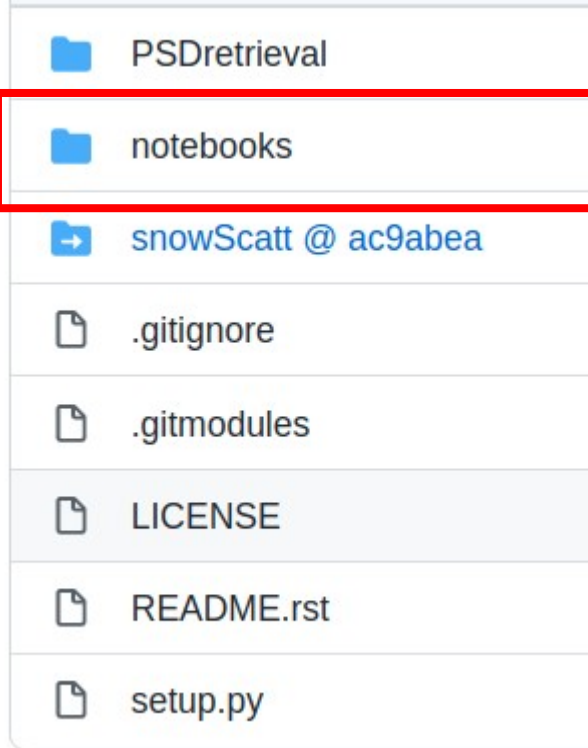|		
📁	sample_data	Contains data from 20190113; can be feed by user (reading data can take a lot of time)
📁	test	Some scripts to test the code or run without notebook
📄	__init__.py	
📄	plotting.py	Plotting routines
📄	processRadar.py	Read and process Tripex-pol data
📄	retrievalUtils.py	Core of the retrieval (finding right particle types, calculate PSD, ...)
📄	retrievalUtilsBarrett.py	
📄	scattering.py	Extract the scattering information from SnowScatt

Notebooks

📁	PSDretrieval
📁	**notebooks**
➡️	snowScatt @ ac9abea
📄	.gitignore
📄	.gitmodules
📄	LICENSE
📄	README.rst
📄	setup.py

📄	ShowcaseRetrievalNew.ipynb
📄	ShowcaseRetrievalNewPtypeFixed.ipynb
📄	compactRetrieval.ipynb

A guide through the retrieval

same as above but with manual selection of Ptype (much faster)

compactRetrieval.ipynb: full retrieval in one notebook cell

Things to try

- Apply to a dendrite case
- Plot height profile of PSDs

TODOs

- Cut spectrum using the spectral to noise ratio