

class.c

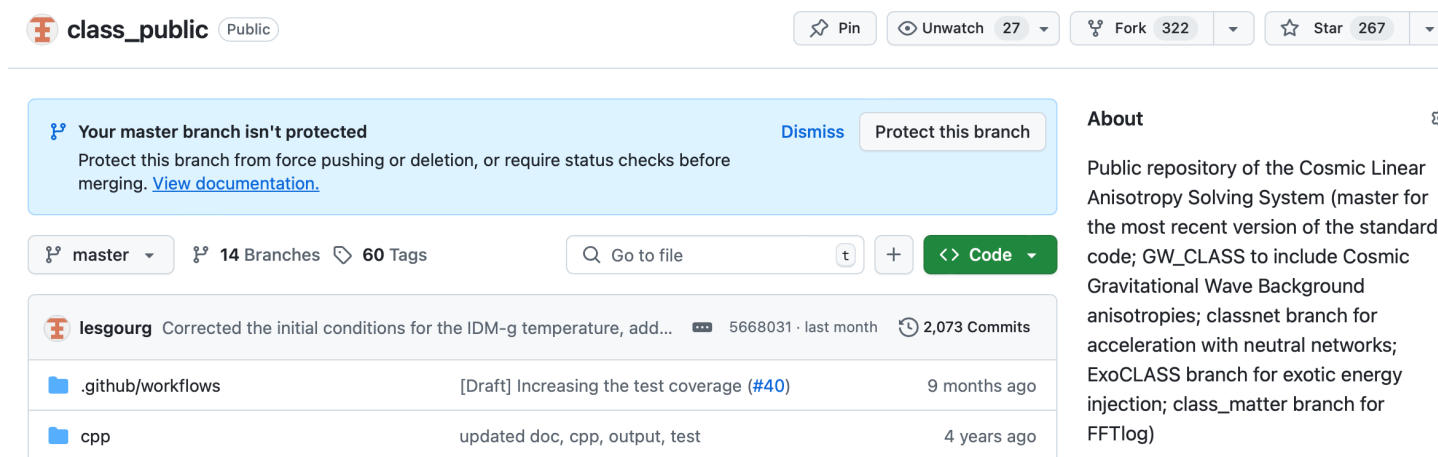


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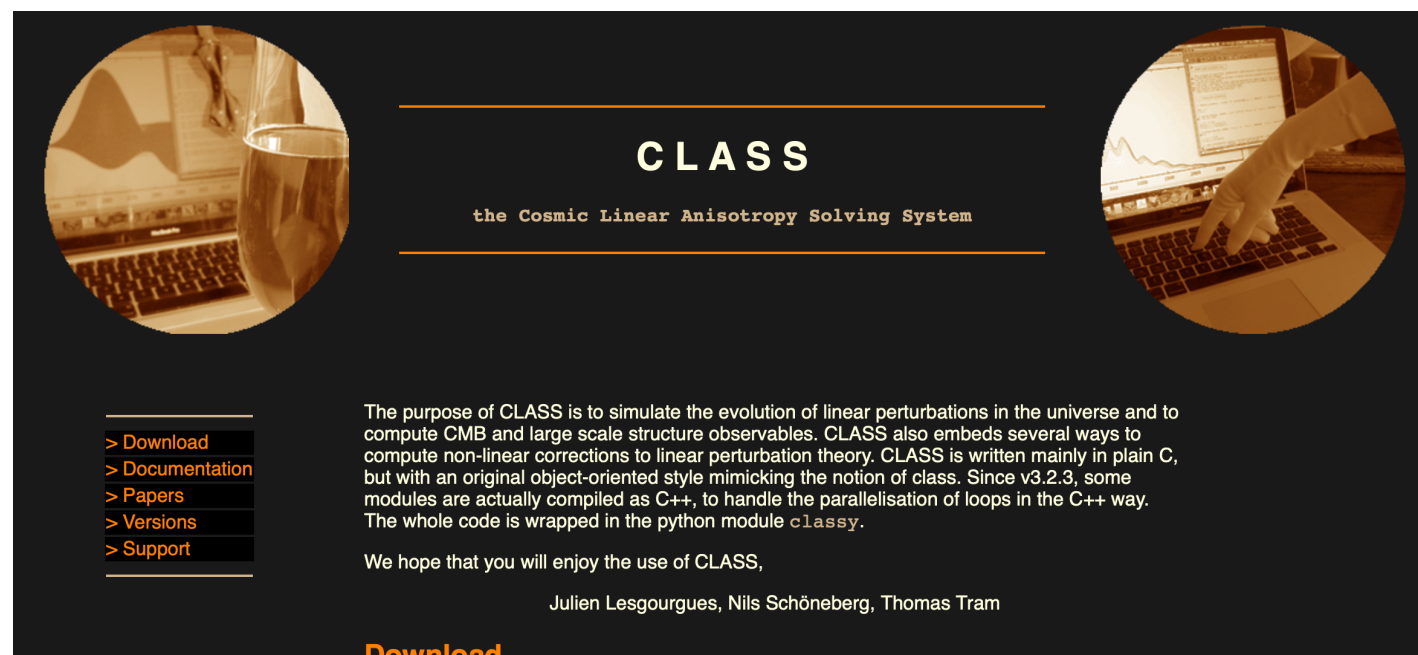
JL, Thomas Tram, Nils Schöneberg (+community)

A few links

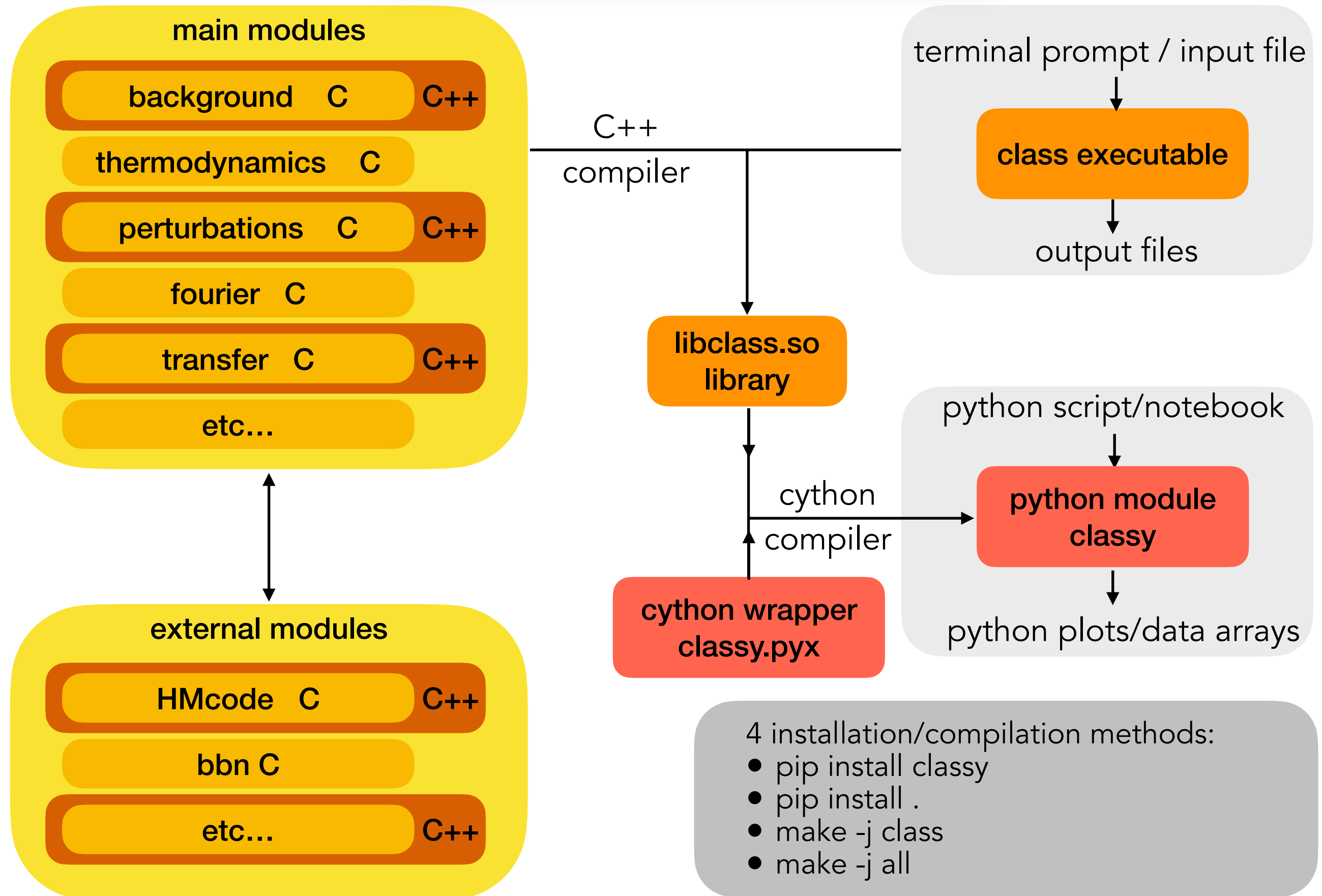
- CLASS defined as a python module on pipy repository
- https://github.com/lesgourg/class_public/ contains master branch (and other public branches)



- <http://class-code.net/> contains latest class_public-x.y.z.tar.gz + info, links to docs, wiki, articles



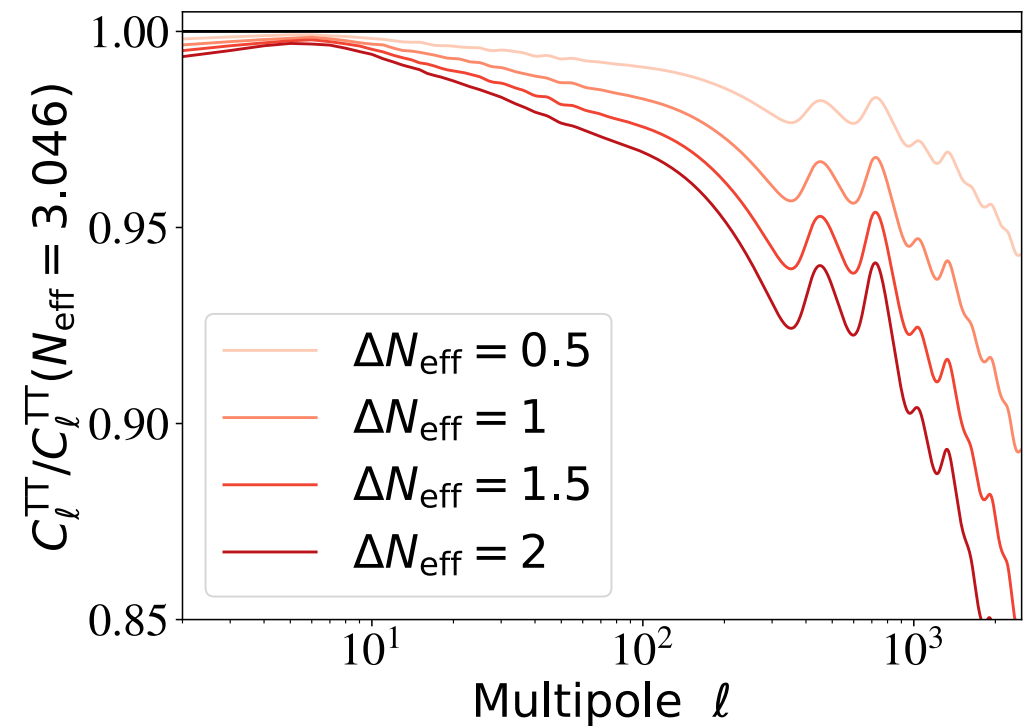
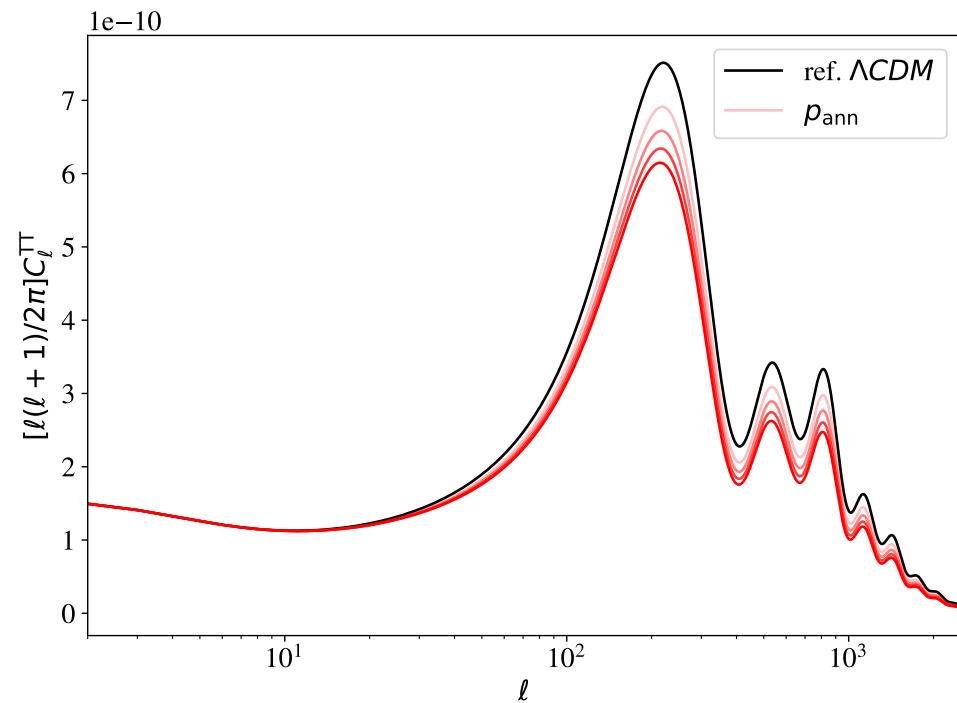
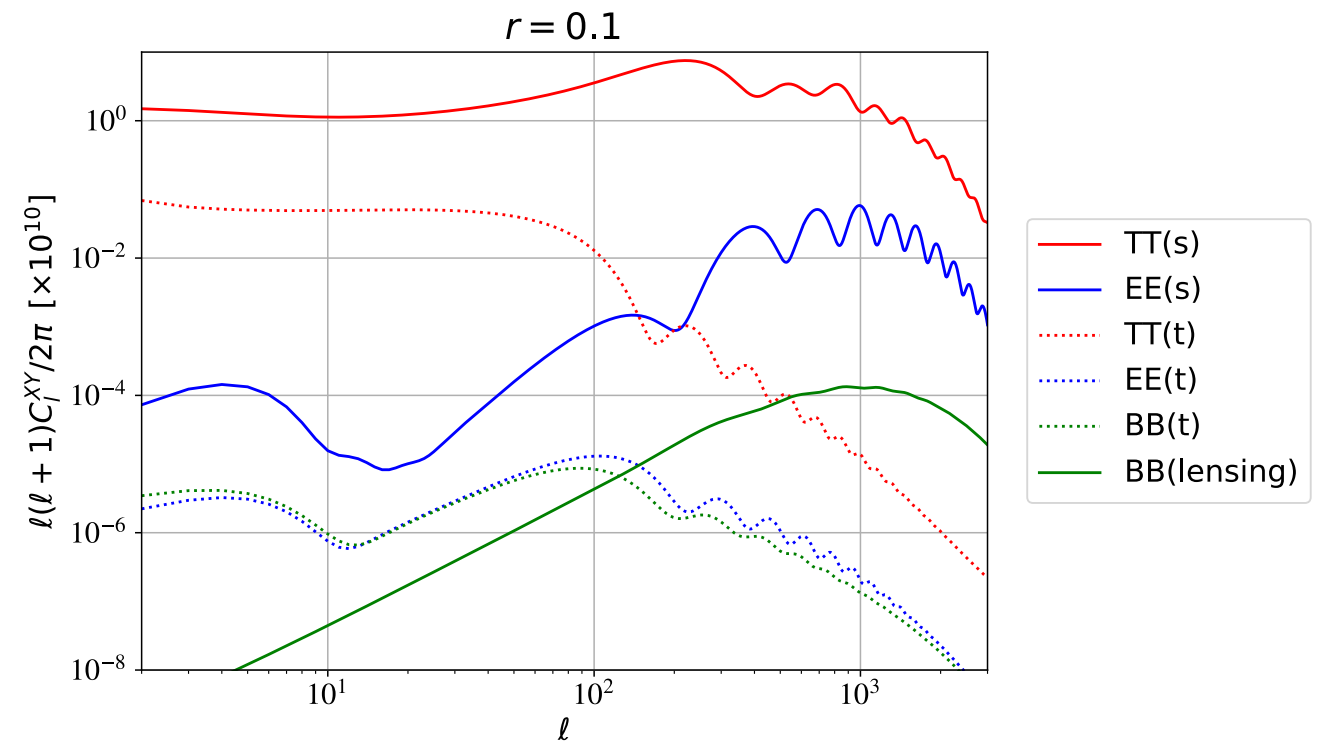
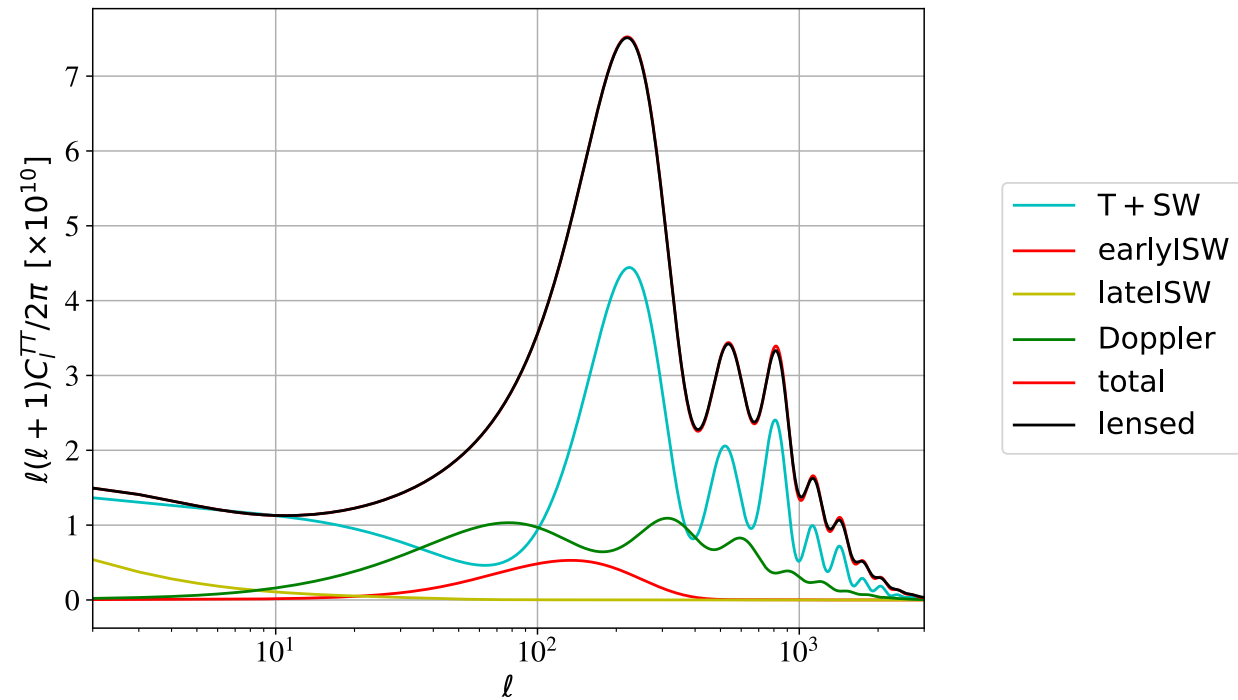
Overall architecture of CLASS



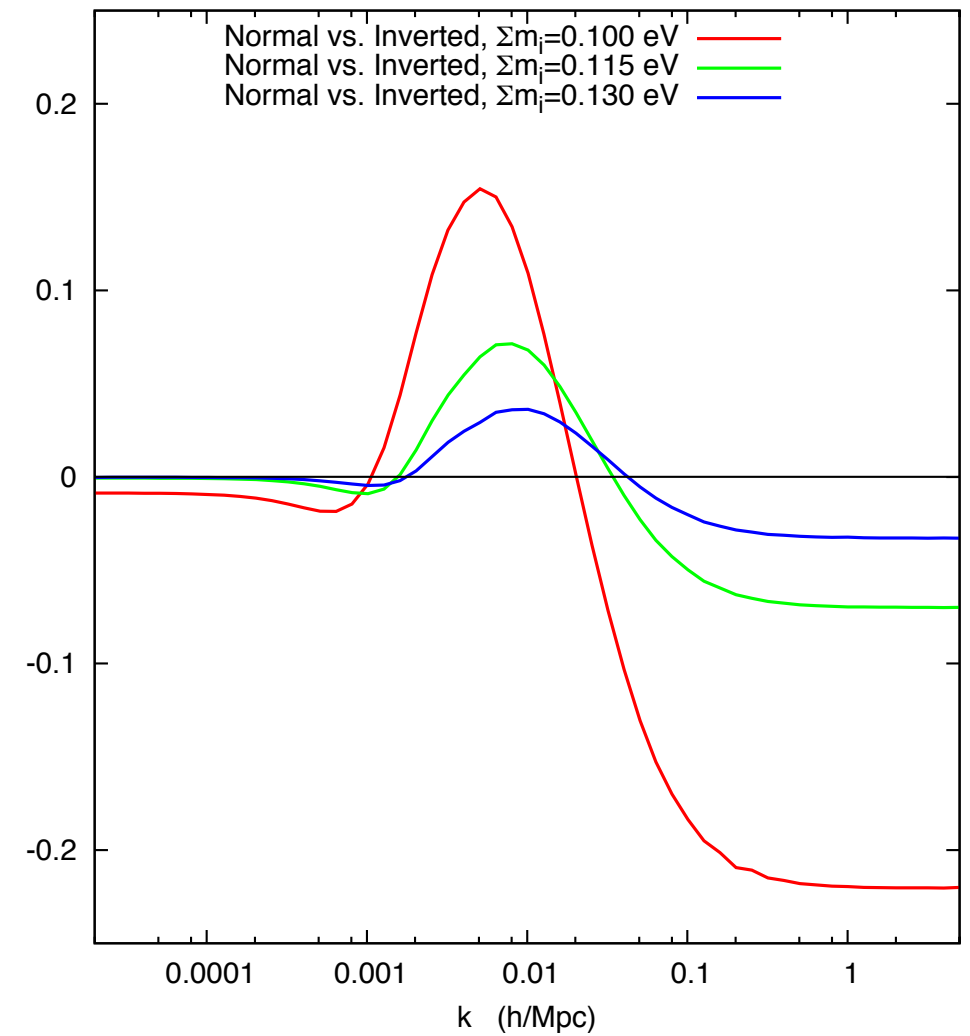
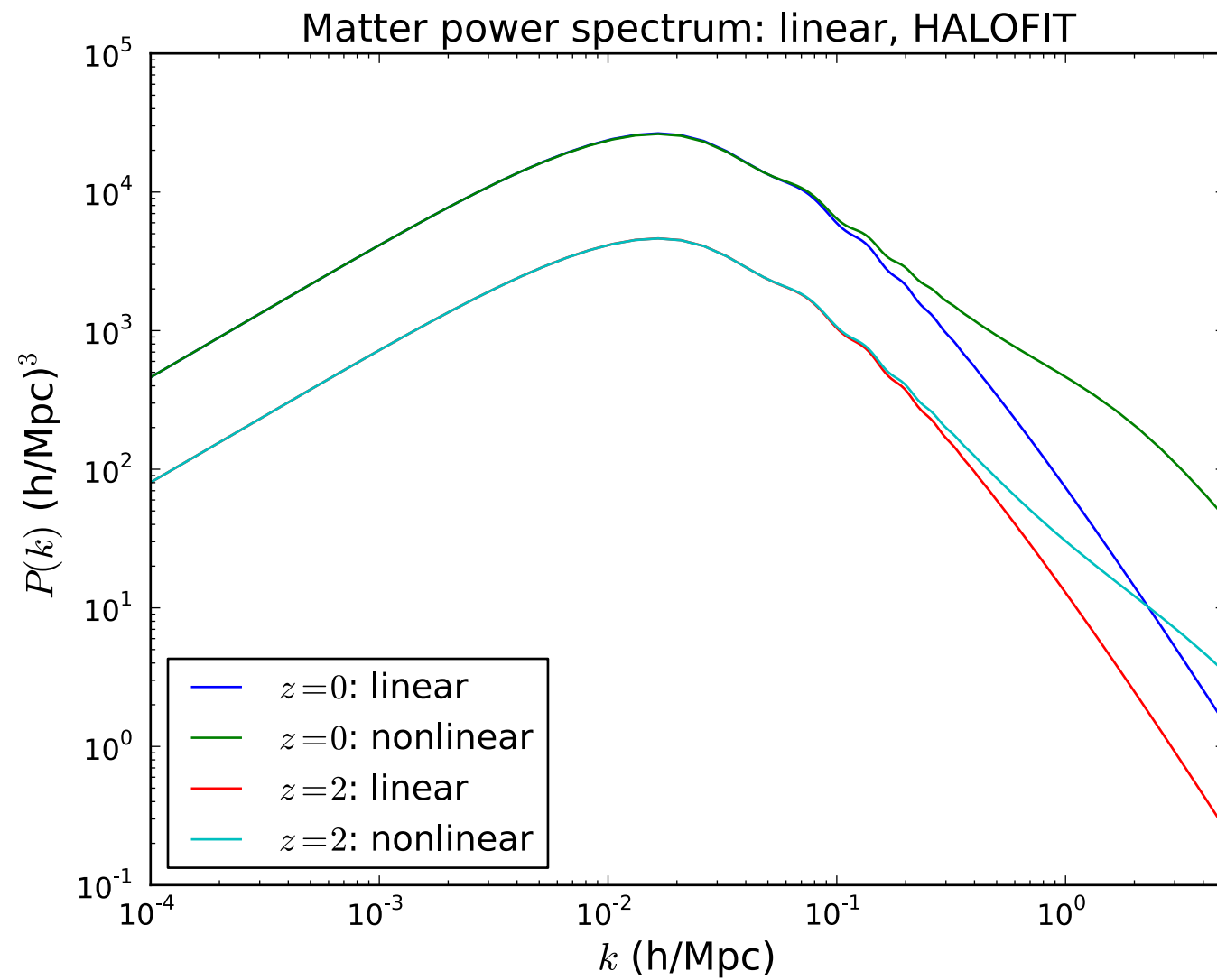
Basic runs

- Run with one of :
 - `./class default.ini`
 - `python scripts/warmup.py`
 - `jupyter notebook notebooks/warmup.ipynb`
- Syntax for all **input parameters** detailed in **explanatory.ini**
- Input file: `omega_b = 0.02238`
`output = tCl, pCl`
- python: `xxx.set({'omega_b': '0.02238', 'output': 'tCl, pCl'})`
- demo with **notebooks/warmup.ipynb**

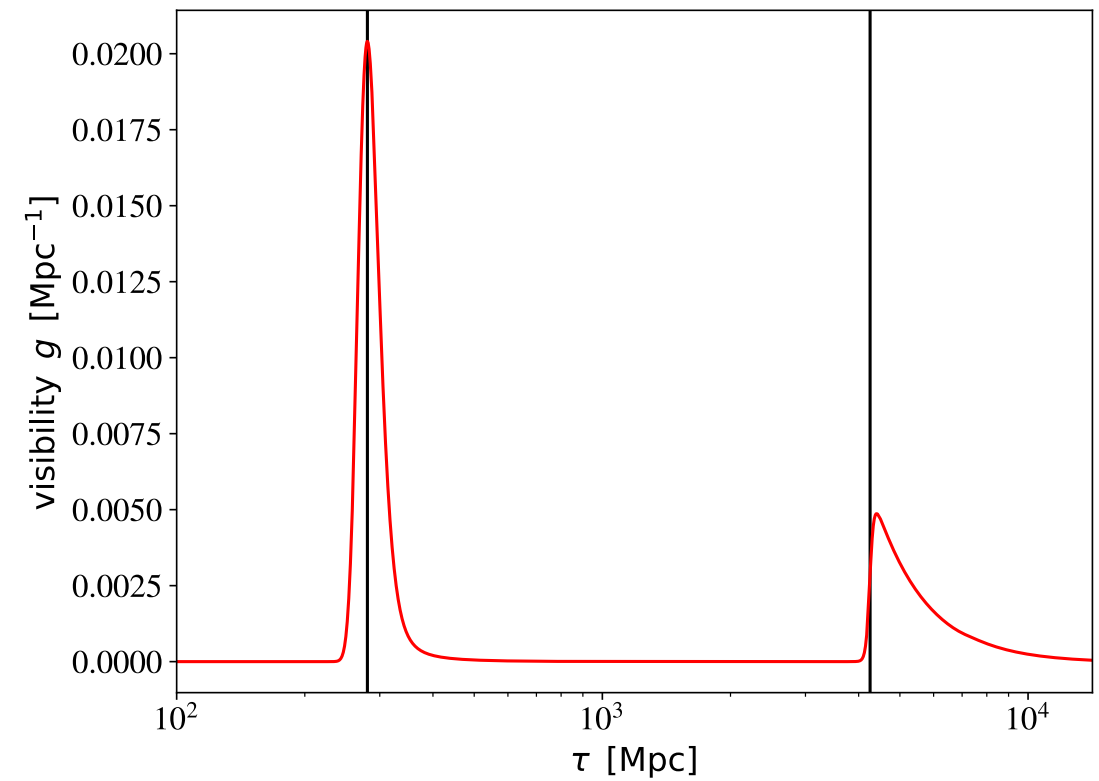
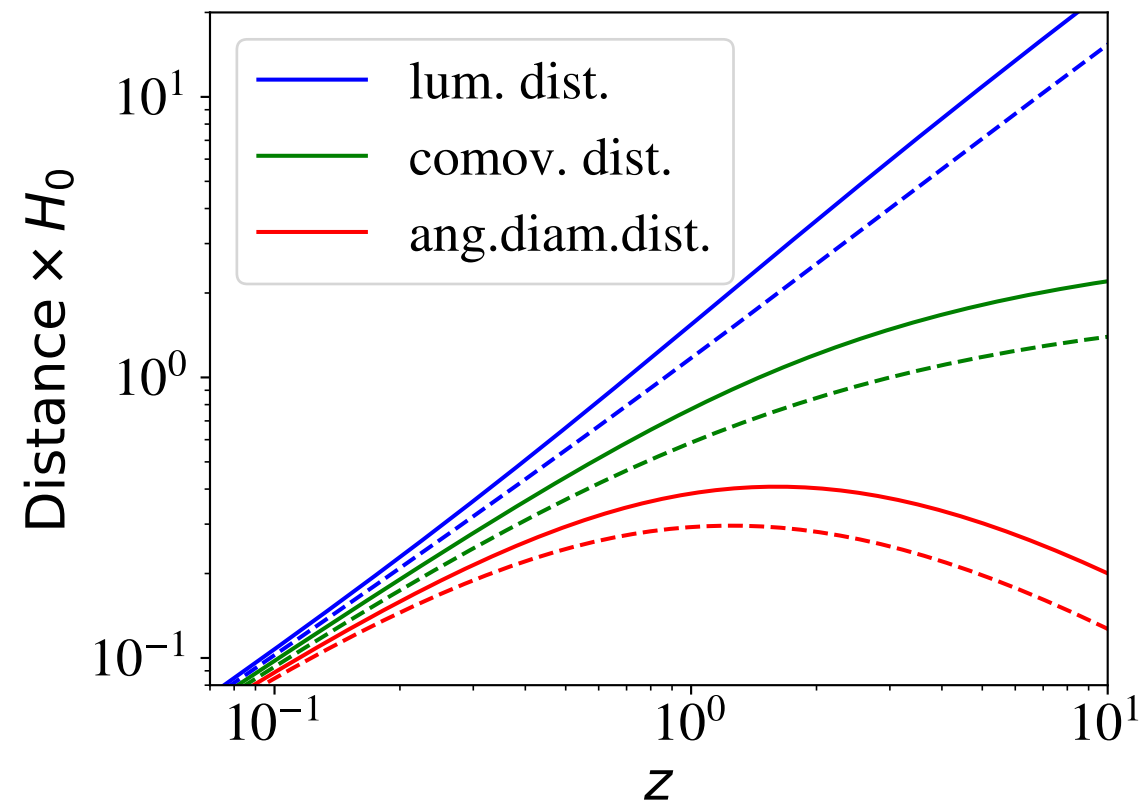
Example of output from other notebooks in notebooks/



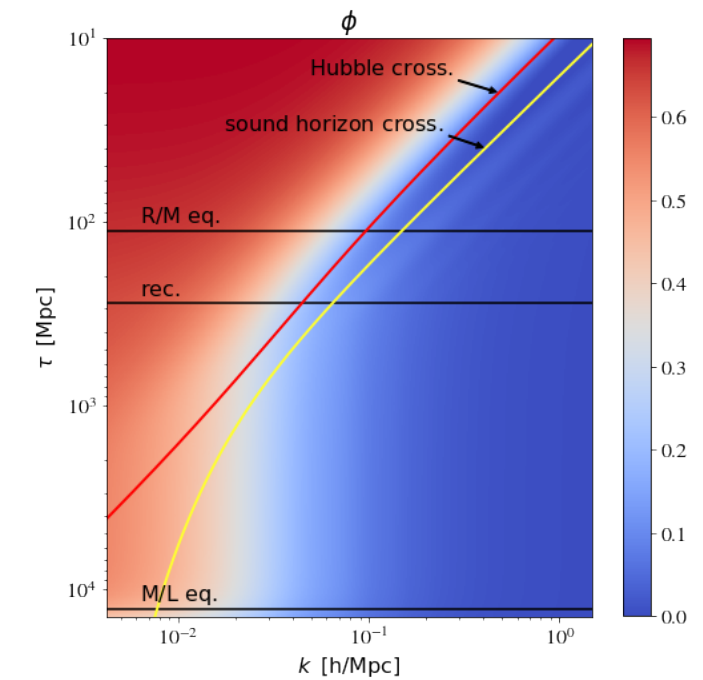
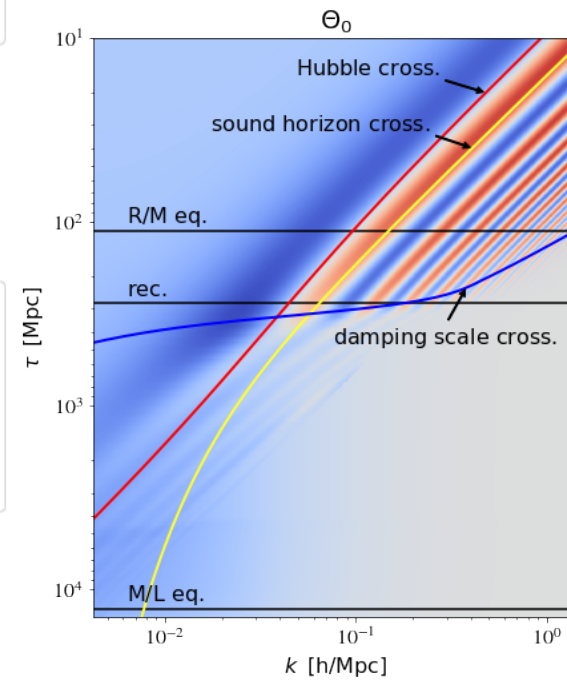
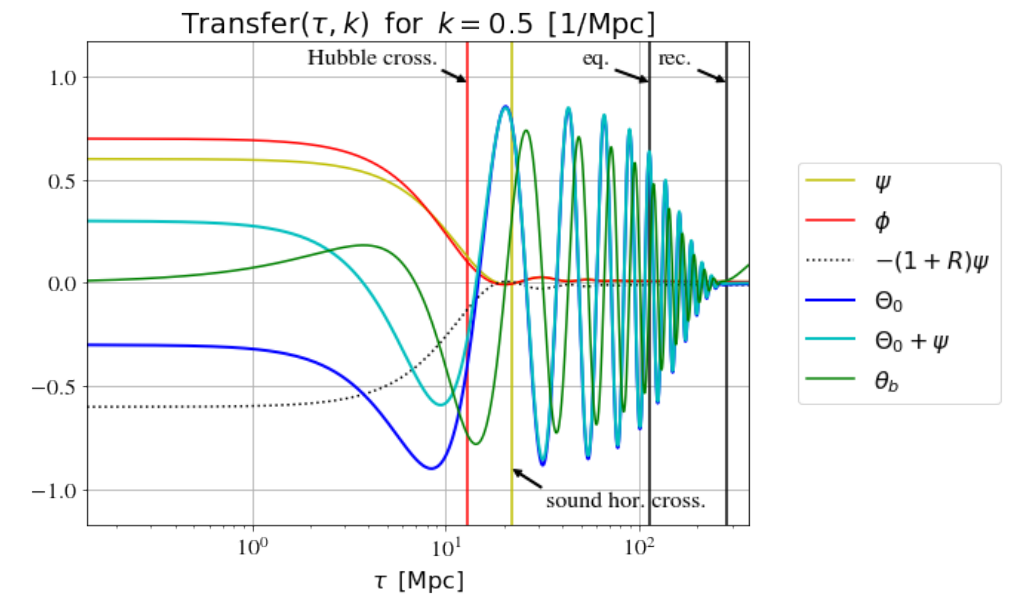
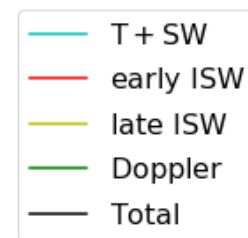
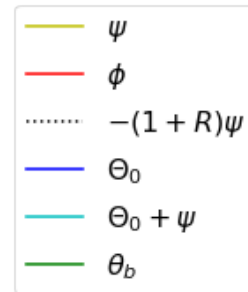
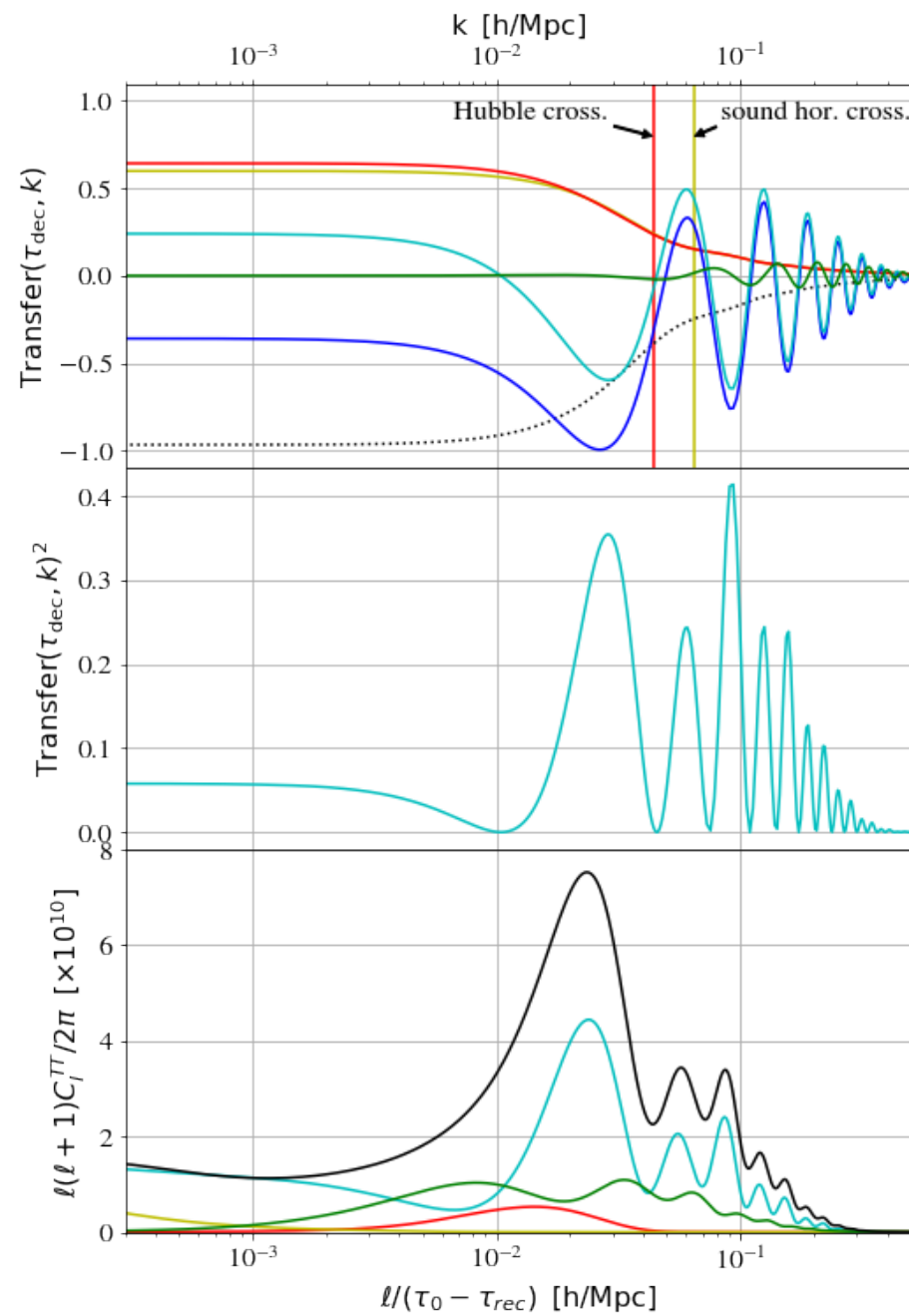
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Content of the modules

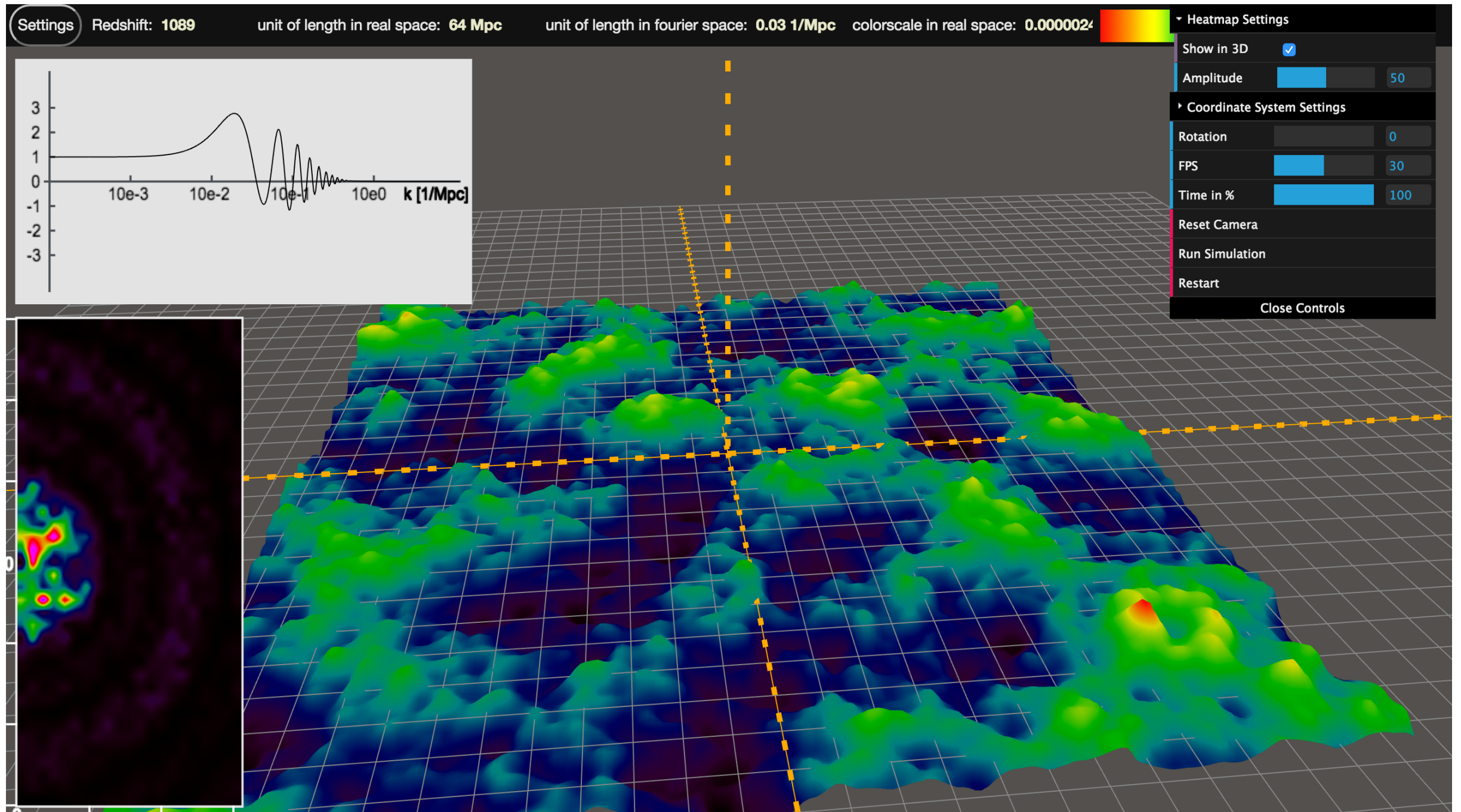
Main modules

1. input
2. background e.g. $d_a(z)$
3. thermodynamics e.g. $g(\tau)$
4. perturbations e.g. $\delta_c(\tau, k)$
5. primordial e.g. $\mathcal{P}_{\mathcal{R}}(k)$
6. fourier e.g. $P_m(z, k)$
7. transfer e.g. $\Delta_\ell(\tau, k)$
8. harmonic e.g. $C_\ell^{\text{TT}, \text{unlensed}}$
9. lensing e.g. $C_\ell^{\text{TT}, \text{lensed}}$
10. distortions e.g. $y, \mu, \dots$

External modules (codes/data)

- bbn
- HyRec2020
- RecfastCLASS
- Halofit
- HMcode
- heating
- distortions
- external_Pk
- RealSpaceInterface

RealSpaceInterface



CLAPP

- public beta-version, paper + better version next week

CLAPP: The CLASS LLM Agent for Pair Programming

S. Casas,^{1,2} C. Fidler,¹ B. Bolliet,^{3,4} F. Villaescusa-Navarro,^{5,6} and J. Lesgourgues¹

<https://classclapp.streamlit.app/>

Share ☆ ↗ 🔍 ⋮

🔑 API & Assistants

OpenAI API Key

..... 🔍

Password to encrypt/decrypt API key

..... 🔍

Choose LLM model 🧠

gpt-4o ▾

Response Mode

☒ Fast Mode

⚡ Quick responses with good quality (recommended for most uses)

🚀 Initialize with Selected Model

🔧 CLASS Setup

Install CLASS to enable code execution and plotting capabilities

📦 Install CLASS

🧪 Test CLASS



🏠

Hello! I'm here to assist you with the CLASS code, a cosmological tool that specializes in solving the Einstein-Boltzmann equations. My role is to help you understand the key components of the CLASS code and guide you through specific tasks such as setting up cosmological parameters, understanding differential equation-solving related to cosmology, and interpreting results. Whether you need help with implementation details or clarifying concepts in cosmology, feel free to ask!

Type your prompt here... ➤

Range of application

- Lots of **cosmologies** within FLRW (incl. non-standard DM models, neutrinos, DE models)
- Lots of **observables** (incl. density Cl's, shear Cl's w/o Limber, HMcode 2020)
- Separate public **branches** e.g. for GW anisotropies, interface with particle physics codes
- CLASS **interfaced** from MontePython, Cobaya, Cosmosis, CosmoPower, OLE

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- CLASS **interfaced** from MontePython, Cobaya, Cosmosis, CosmoPower, OLE
- Coming soon:
 - Minor releases with improved notebooks, comments in classy, readthedocs, vector modes, new architecture for **classy.py**
 - Major release for one-loop matter power spectrum and bispectrum of **EFTofLSS**

class C



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Schöneberg (+community)