CTATools : A *proposal* for a set of common tools

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David Sanchez

Aims

- **Common set of python tools**
  - **Simulation of sources using the ST**
  - **Analysis of sources using the ST**
  - **Plotting macros (spectrum, Maps, etc..)**
  - **Distances**
  - **EBL**
  - **Time Series analysis (Bayesian blocs, Exp-test, Fava-like tool ?, etc..)**
  - **And more to come (SSC, IGMF, LIV,… , more advanced code?)**

- **Avoid duplicate code**
- **Same look and feel of plots**
- **Share pieces of good code**

Philosophy : use all the power of python and public modules (Astropy, numpy, etc..)

git Repo

davidsanchez / **CTAtools**

Unwatch 2 | Star 0 | Fork 1

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Pulse | Graphs | Settings

Set of tools to analyse CTA data — Edit

13 commits | **1** branch | **0** releases | **1** contributor | GPL-3.0

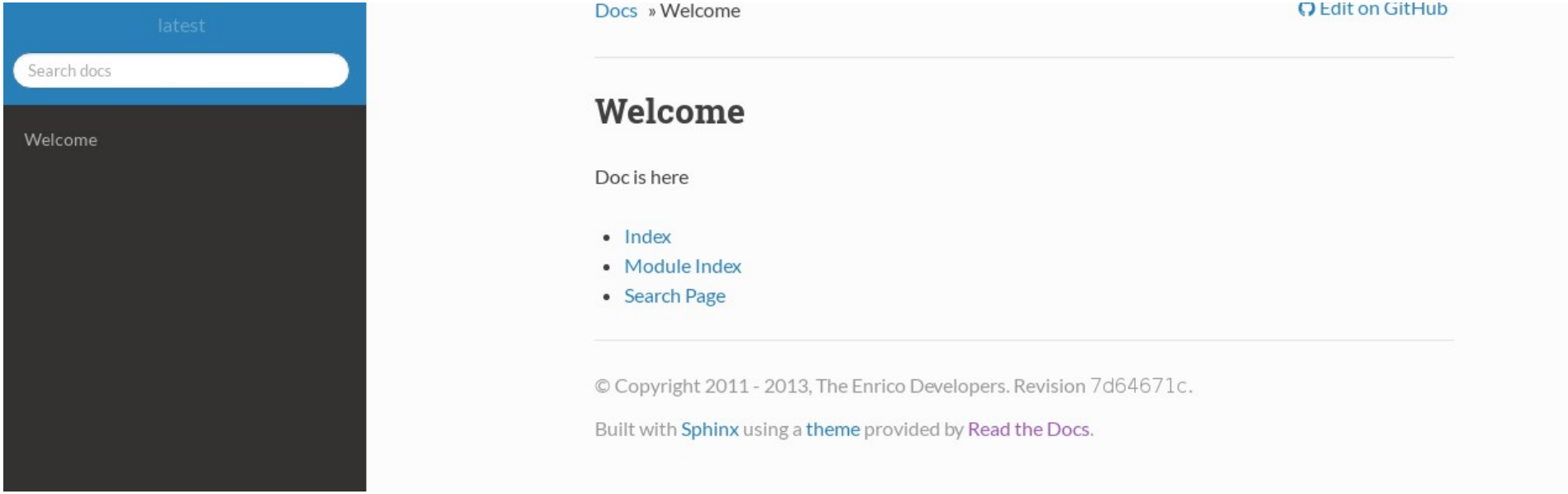
Branch: **master** | **New pull request** | **Create new file** | **Upload files** | **Find file** | **Clone or download**

sanchez-local doc — Latest commit `7d64671` 4 days ago

CTAAnalysis	work on plot module + ex	4 days ago
Catalog	work on plot module + ex	4 days ago
Distances	plot distance : tuto	2 months ago
EBL	more work	16 days ago
Example	work on plot module + ex	4 days ago
Plot	work on plot module + ex	4 days ago
doc	doc	4 days ago
.gitignore	finish fit function	25 days ago
Init_tools.sh	work on plot module + ex	4 days ago

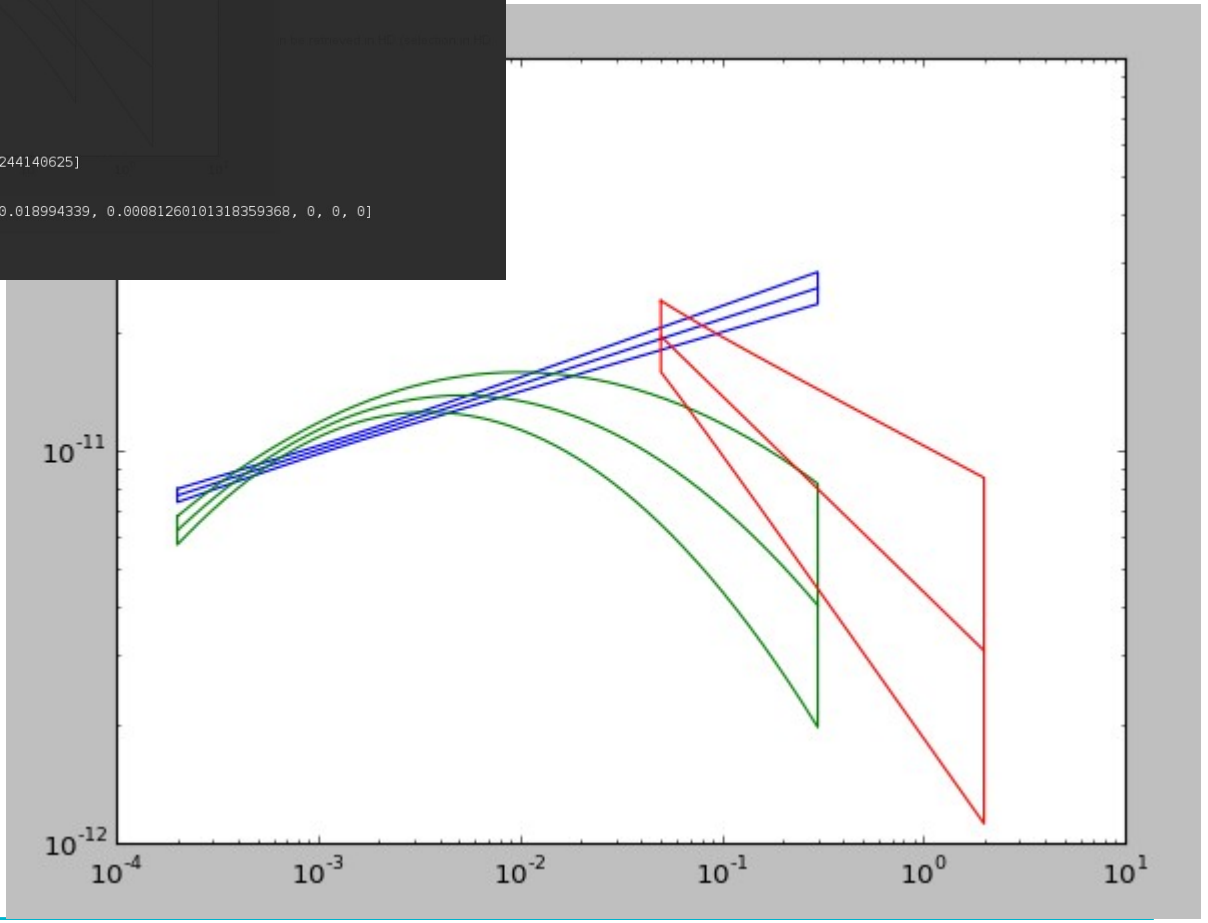
Future Documentation

http://ctatools.readthedocs.io/en/latest/



Reading Fermi Cat

```
[FermiCatalogReader]: creating catalogues Reader with
        /home/sanchez/work/Catalog//gll_psc_v14.fit
        /home/sanchez/work/Catalog//gll_psc_v08.fit
        /home/sanchez/work/Catalog//gll_psch_v07.fit
        /home/sanchez/work/Catalog//gll_psch_v08.fit
try  2FHL  catalog
try  2FGL  catalog
[FermiCatalogReader]: 2FGL source found
[FermiCatalogReader]: Catalog Position 153.788,49.4324
[FermiCatalogReader]: found a close source in the catalog /home/sanchez/work/Catalog//gll_psch_v08.fit at r=0.0140332 named 2FHL J1015.0+4926
[FermiCatalogReader]: found a close source in the catalog /home/sanchez/work/Catalog//gll_psc_v14.fit at r=0.0112939 named 3FGL J1015.0+4925
[FermiCatalogReader]: found a close source in the catalog /home/sanchez/work/Catalog//gll_psch_v07.fit at r=0.0112074 named 1FHL J1015.0+4925
[FermiCatalogReader]: 2FHL model type: PowerLaw
[FermiCatalogReader]: 2FGL model type: LogParabola
[FermiCatalogReader]: 3FGL model type: PowerLaw
[FermiCatalogReader]: 1FHL model type: PowerLaw
[FermiCatalogReader]: 2FHL Object class: bll
[FermiCatalogReader]: 2FGL Object class: bzb
[FermiCatalogReader]: 3FGL Object class: bll
[FermiCatalogReader]: 1FHL Object class: bzb
2FGL association  1H 1013+498
3FGL Name  3FGL J1015.0+4925
3FGL Var Index  110.459
3.86127e-12   1301.9
[3.8612685097916266e-06, 9.042769923703689e-08, 1.8334184, 0.016745932, 0.0013019000244140625]
[FermiCatalogReader]: Reading spectral informations from 3FGL
WARNING:root:Add 3 zeros for the covariance terms
[1.0100425704151483e-05, 4.15049342551016e-07, 1.7225057, 0.044291489, 0.074873619, 0.018994339, 0.00081260101318359368, 0, 0, 0]
[FermiCatalogReader]: Reading spectral informations from 2FGL
[1.62e-10, 2.24e-11, 2.5, 0.23]
[FermiCatalogReader]: Reading spectral informations from 2FHL
```



Also use the Plotting classes made for different model

To come : Maps, etc..

Status

Everything is premilinary

- **I have started to put *Personal* code together**
  → (need to be adapted to be used in a python module)
  - **Small Simulation tools and analysis with ctools**
    - **Aim to have more**
    - **Use a config file (see enrico for *Fermi*)**
  - **EBL correction (Finke and Franceschini models)**
  - **Plotting macro : PL, LP, PLEC with buterfly**
  - **Fermi catalogue reader**
  - **Distances : based on *cosmolopy.distance***

You're welcome to join on gitub