

WORKING WITH FITS FILE

IN PYTHON

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Outline

2

- What is a FITS file?
- How to access a FITS file
- Examples feat. Why is it useful?



What is a FITS file?

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4

- ❑ FITS stands for „Flexible Image Transport System“
- ❑ Binary file format
- ❑ Developed by NASA in 1981
- ❑ Many telescopes store their data in FITS format
- ❑ Can be used for images (x, y, counts) and also as catalogs
- ❑ Many programs can open FITS files
- ❑ TIFF is a similar format, but less powerful (header)



How to access a FITS file

How to access a FITS file

6

- ❑ Bash: Not possible
- ❑ Special tools, e.g. ‚dfits‘ (header) or ‚ldactools‘ (access, manipulate, calculate)
- ❑ PyFITS / astropy (in Python)
- ❑ CFITSIO (in C)
- ❑ fv (fits viewer)

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Examples feat. Why is it useful?

Examples feat. Why is it useful? (1)

8

- Smaller file size (00_create_data.py)
 - ▣ Only for larger data sets efficient
- Speed (01_minimum.*)
 - ▣ For one single command not big difference
- Speed / easier (02_add_column.*)
 - ▣ Exception: You know (g)awk (it's C)! But also only up to a certain limit...
- History (03_add_column_with_history.py)
 - ▣ You know later what you did!!!

Examples feat. Why is it useful? (2)

9

- Easier (04_adding_two_FITS_files.py)
 - ▣ Of course also possible with ,cat‘, but do you have the history?
- Filtering (05_only_stars.py)

Questions?

10

