

OIFitsExplorer

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Outline

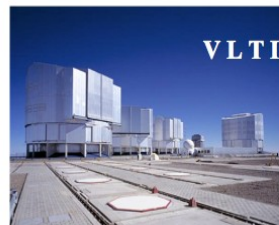
- Short introductions
- Quick functionalities overview
- Demo
- How to get and run OIFitsExplorer on your machine

Short Introduction

Jean-Marie Mariotti Center will be presented more in details next thursday.

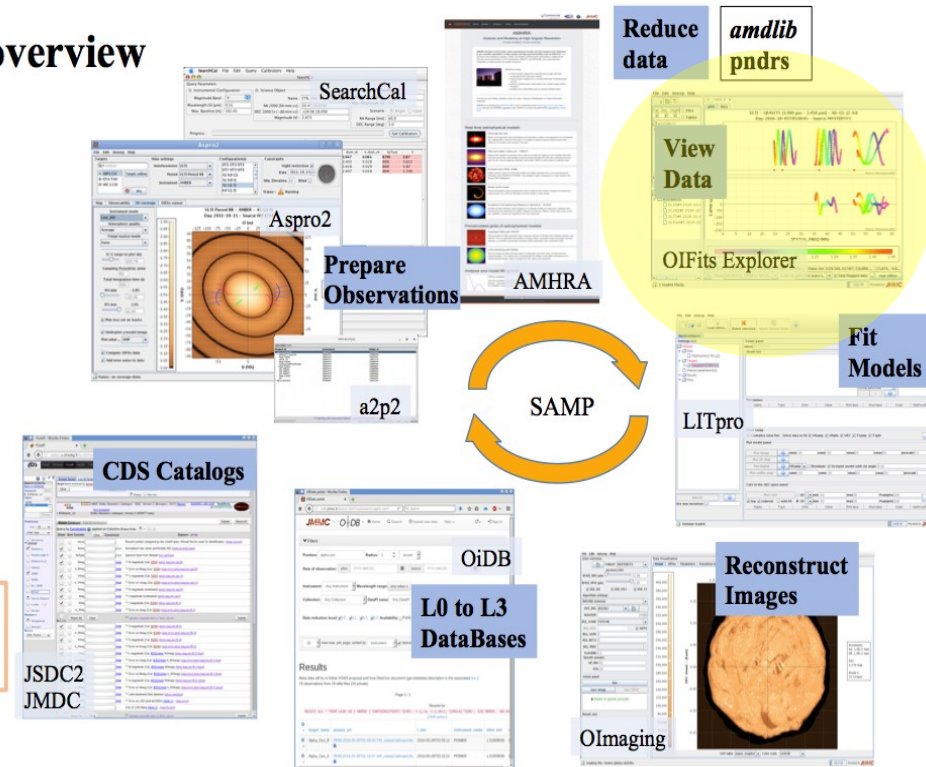
After Data Reduction,
View Data
 using OIFitsExplorer

JMIMC Service overview



French Expertise Center
 User Support

- + TRAINING
- + OLBIN Publications DB



OIFitsExplorer must conform to OIFits data format

<https://oifits.olbin.org>

OIFITS

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About OIFITS

OIFITS is a standard for exchanging calibrated, time-averaged data from astronomical optical interferometers, based on the [FITS Standard](#) (OIFITS is a [registered FITS convention](#)). OIFITS may be used to combine data from multiple interferometer arrays for joint analysis and/or image reconstruction. OIFITS-format files can be prepared from the raw interferometer data without using information about the detailed structure of the target object (i.e. without doing any astrophysical interpretation), yet once the data is in the format, it can be analysed without knowing the details of the instrument. Calibrated data from different interferometers can be treated in the same way (provided there are no residual systematic errors).

<https://oival.jmmc.fr>

OIFits Validator

http://oidb.jmmc.fr/get-data.html?id=1652115

name	s_ra	s_dec	t_exptime	t_min	t_max	em_res_power	em_min	em_max	facility_name
alphanoo	213.915285	19.182411	0.0	53869.25310185179	53869.31271990761	32.032707	1.5272E-6	1.5272E-6	IOTA_AB

Analysing File: get-data.html?id=16521152322016877428926190.tmp

Analysing table [OI_TARGET#1]
SEVERE TARGET_ID[0] cannot be < 1 at row 0

Analysing table [OI_VIS2#3]
SEVERE Missing OI_ARRAY table that describes the 'IOTA_AB' array

Analysing table [OI_VIS2#4]
SEVERE Missing OI_ARRAY table that describes the 'IOTA_AC' array

Analysing table [OI_VIS2#5]
SEVERE Missing OI_ARRAY table that describes the 'IOTA_BC' array

Analysing table [OI_T3#6]
SEVERE Missing OI_ARRAY table that describes the 'IOTA_ABC' array

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 0, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 1, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 2, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 3, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 4, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 5, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 6, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 7, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 8, found '-1.0' should be >= 0 or NaN or flagged out

SEVERE Invalid value at index 0 for column 'T3AMPERR' line 9, found '-1.0' should be >= 0 or NaN or flagged out

0 warnings, 6 severe errors

defined by Duvert, Young and Hummel, A&A 597, A8 (2017), <https://doi.org/10.1051/aa/2017101>
The standard are published on arXiv.

OIFITS Rules

Name	Description	Paragraph	Standard
ARRNAME_REF	check if an OI_ARRAY table matches the ARRNAME keyword	V2.6.1E3	VERSION_1 VERSION_2
ARRNAME_UNIQ	check if a single OI_ARRAY table corresponds to the ARRNAME keyword	V2.5.2E1	VERSION_1 VERSION_2
CORRNAME_REF	check if an OI_CORR table matches the CORRNAME keyword	V2.6.1E3	VERSION_2
CORRNAME_UNIQ	check if a single OI_CORR table corresponds to the CORRNAME keyword	V2.7.2E4	VERSION_2
FILE_EXIST	check if the file exist	JMMC	VERSION_1 VERSION_2
FILE_LOAD	check if the OIFITS file is loaded properly (IO error)	JMMC	VERSION_1 VERSION_2
INSNAME_REF	check if an OI_WAVELENGTH table matches the INSNAME keyword	V2.6.1E3	VERSION_1 VERSION_2
INSNAME_UNIQ	check if a single OI_WAVELENGTH table corresponds to the INSNAME keyword	V1.6.3.1	VERSION_1 VERSION_2
GENERIC_COL_DIM	check if the dimension of column values >= 1	JMMC	VERSION_1 VERSION_2
GENERIC_COL_ERR_FIX	fix the UNFLAGGED *ERR column invalid values (negative values set to NaN)	JMMC	VERSION_1 VERSION_2
GENERIC_COL_FORMAT	check if the column format matches the expected format (data type and dimensions)	V2.4E1	VERSION_1

Read tables and keywords using your favorite programming language

... or use a GUI

The screenshot shows the OIFitsExplorer [c1] window with a file named '2018-12-03T005728_RScI_A0B2J2C1_IR-LM_LOW_IN_IN_noChop_bcdCor_calib.fits'. The interface is split into two main panes.

Left Pane (Keyword List):

- HDU#0
- OI_TARGET#1
- OI_ARRAY#2
- OI_WAVELENGTH#3
- OI_VIS2#4
- OI_T3#5
- OI_VIS#6
- OI_FLUX#7

Right Pane (Keyword Table):

Keyword Name	Value	Description
EXTNAME		extension name
HDUNAME		Unique name for the image within the FITS file
ORIGIN	ESO-PARANAL	Institution responsible for file creation
DATE	2020-02-17T17:47:08	Date the HDU was written
DATE-OBS	2018-12-03T01:02:50...	Start date of observation
CONTENT	OIFITS2	Must contain only the string 'OIFITS2'
AUTHOR		As defined in FITS norm
DATASUM	0	HDU datasum
CHECKSUM	8efP9bZN8bdN8bZN	HDU checksum
TELESCOP	ESO-VLTI-A1234	A generic identification of the ARRAY
INSTRUME	MATISSE	A generic identification of the instrument
OBSERVER	UNKNOWN	Who acquired the data
INSMODE		Instrument mode
OBJECT	R ScI	Object Identifier
REFERENC		Bibliographic reference
PROG ID		Program ID
PROCSOFT		Versioned Data Reduction Software
OBSTECH		Technique of observation
RA	21.740673	Target Right Ascension at mean EQUINOX (deg)
DEC	-32.5433	Target Declination at mean EQUINOX (deg)
EQUINOX	2000.0	Standard FK5 (years)
RADECSYS	FK5	Coordinate reference frame
SPECSYS		Reference frame for spectral coord.
TEXTIME		Maximum elapsed time for data point (s)
MJD-OBS	58455.04364263	Start of observations (MJD)
MJD-END		End of observations (MJD)
BASE_MIN		Minimum projected baseline length (m)
BASE_MAX		Maximum projected baseline length (m)
WAVELMIN		Minimum wavelength (nm)
WAVELMAX		Maximum wavelength (nm)
NUM_CHAN		Total number of spectral channels
SPEC_RES		Reference spectral resolution (λ/Δ)
VIS2ERR		Representative V^2 error (%)
VISPHERR		Representative Diff. Vis. Phase error (deg)
T3PHIERR		Representative Closure Phase error (deg)
SIMPLE	T	file does conform to FITS standard
BITPIX	8	number of bits per data pixel
NAXIS	0	number of data axes
EXTEND	T	FITS dataset may contain extensions
COMMENT		FITS (Flexible Image Transport System) forma...
COMMENT		and Astrophysics', volume 376, page 359; bib...
HIERARCH.PRO.DISP.COEF0	1.9970413595438	
HIERARCH.PRO.DISP.COEF1	0.102155443746597	

Bottom Pane (Table Data):

ROW_INDEX	TEL_NAME	STA_NAME	STA_INDEX	DIAMETER	STAXYZ	FOV	FOVTYPE
0	AT1	A0	1	1.8	14.636 55.806 4.533	1.0	RADIUS
1	AT2	B2	5	1.8	-0.739 75.895 4.538	1.0	RADIUS
2	AT3	J2	23	1.8	-11.4442 62.176 4.559	1.0	RADIUS
3	AT4	C1	10	1.8	-5.691 65.735 4.54	1.0	RADIUS

Quick presentation of the GUI

Plotting window (with tabs)

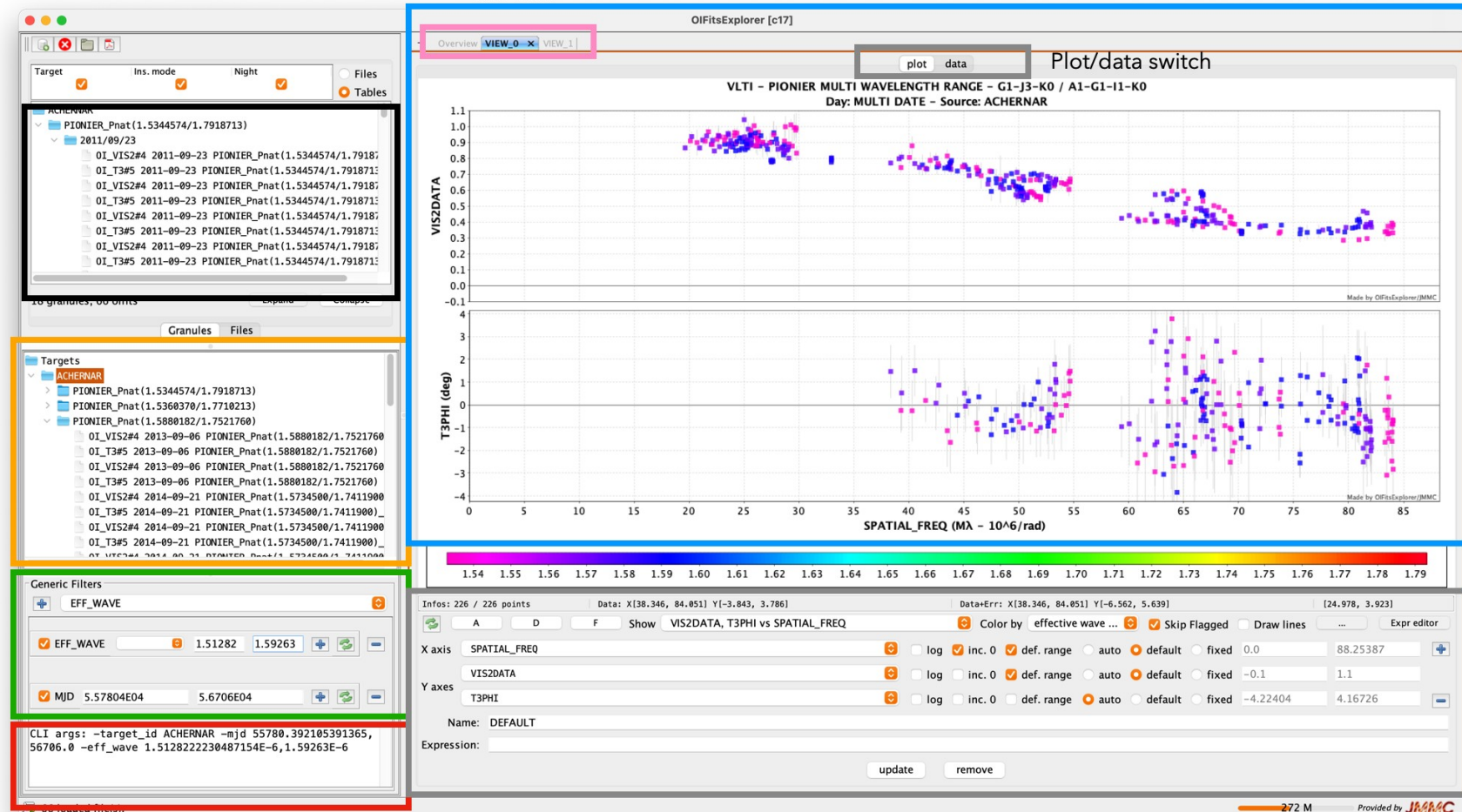
Granule tree panel

OI data selector

Filter panel

Oitools
Command line arguments

Tab view



Plotting parameters



Demo

How to get and run OIFitsExplorer on your machine

- Visit <https://www.jmmc.fr/oifitsexplorer>
- Prerequisites java !
- Main application link run the JavaWebStart version (auto-updated)
- Visit the release page to get access to the beta version and the alternative software package as jar file
- Try its command line interface for batch

Final words

Developments restarted this year and should be active in the coming months – documentation update should be released

Explore, Filter & Export/merge your OIFits files

Please report any problem or question to the JMMC User Support

www.jmmc.fr/support

Feedback always appreciated and useful !