## NAME

MX-calibrate − MX-calibrate

## DESCRIPTION

usage: MX−Calibrate −**w** 1.54 −**c** CeO2 file1.cbf file2.cbf ...

Calibrate automatically a set of frames taken at various sample−detector distance. Return the linear regression of the fit in funtion of the samplesetector distance.

**positional arguments:**

FILE     List of files to calibrate

**optional arguments:**

**−h**, **−−help**

show this help message and exit

**−V**, **−−version**

**−v**, **−−verbose**

switch to debug/verbose mode

**−c** FILE, **−−calibrant** FILE

file containing d−spacing of the calibrant reference sample (MANDATORY)

**−w** WAVELENGTH, **−−wavelength** WAVELENGTH

wavelength of the X−Ray beam in Angstrom

**−e** ENERGY, **−−energy** ENERGY

energy of the X−Ray beam in keV (hc=12.398419292keV.A)

**−P** POLARIZATION_FACTOR, **−−polarization** POLARIZATION_FACTOR

polarization factor, from −**1** (vertical) to +1 (horizontal), default is 0, synchrotrons are around 0.95

**−b** BACKGROUND, **−−background** BACKGROUND

Automatic background subtraction if no value are provided

**−d** DARK, **−−dark** DARK

list of dark images to average and subtract

**−f** FLAT, **−−flat** FLAT

list of flat images to average and divide

**−s** SPLINE, **−−spline** SPLINE

spline file describing the detector distortion

**−p** PIXEL, **−−pixel** PIXEL

size of the pixel in micron

**−D** DETECTOR_NAME, **−−detector** DETECTOR_NAME

Detector name (instead of pixel size+spline)

**−m** MASK, **−−mask** MASK

file containing the mask (for image reconstruction)

**−−filter** FILTER

select the filter, either mean(default), max or median

**−−saturation** SATURATION

consider all pixel>max*(1−saturation) as saturated and reconstruct them

**−r** MAX_RINGS, **−−ring** MAX_RINGS

maximum number of rings to extract

**−−weighted**

weight fit by intensity

**−l** DISTANCE, **−−distance** DISTANCE
> sample−detector distance in millimeter

**−−no−tilt**
> refine the detector tilt

**−−poni1** PONI1
> poni1 coordinate in meter

**−−poni2** PONI2
> poni2 coordinate in meter

**−−rot1** ROT1
> rot1 in radians

**−−rot2** ROT2
> rot2 in radians

**−−rot3** ROT3
> rot3 in radians

**−−fix−dist**
> fix the distance parameter

**−−free−dist**
> free the distance parameter

**−−fix−poni1**
> fix the poni1 parameter

**−−free−poni1**
> free the poni1 parameter

**−−fix−poni2**
> fix the poni2 parameter

**−−free−poni2**
> free the poni2 parameter

**−−fix−rot1**
> fix the rot1 parameter

**−−free−rot1**
> free the rot1 parameter

**−−fix−rot2**
> fix the rot2 parameter

**−−free−rot2**
> free the rot2 parameter

**−−fix−rot3**
> fix the rot3 parameter

**−−free−rot3**
> free the rot3 parameter

**−−fix−wavelength**
> fix the wavelength parameter

**−−free−wavelength**
> free the wavelength parameter

**−−no−gui**
> force the program to run without a Graphical interface

**−−gui**   force the program to run with a Graphical interface

**−−no−interactive**
    force the program to run and exit without prompting for refinements

**−−interactive**
    force the program to prompt for refinements

**−−peak−picker** PEAKPICKER
    Uses the 'massif' or the 'blob' peak−picker algorithm (default: blob)

This tool has been developed for ESRF MX−beamlines where an acceptable calibration is usually present is the header of the image. PyFAI reads it and does a "recalib" on each of them before exporting a linear regression of all parameters versus this distance.