NAME

MX-calibrate − Validate detector position for MX beamlines

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**
show program's version number and exit

−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

−−tilt Allow initially detector tilt to be refined (rot1, rot2, rot3). Default: Activated

−−no−tilt
Deactivated tilt refinement and set all rotation to 0

−−dist DIST
sample−detector distance in meter

−−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’, ’blob’ or ’watershed’ 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.