6 Proposed Pixel Array Detector Application Definitions

The following has been derived from the current Dectris Eiger test data and presentations, changing some of the class names to ensure that they start with NX and to avoid conflicts with existing class names.

6.1 NXentry_pad

```
NXentry_pad (application definition, version 0.1) (overlays NXentry)
  data_000001:NXDATA
  data_000002:NXDATA
  ...
  data_nnnnnn:NXDATA
  instrument:NXinstrument_pad
  ...
```

- ENTRY_PAD:NXentry_pad →
  _NXentry_pad.NX_tree_path NEXUSTREEPATH
  _NXentry_pad.NX_id ENTRY_PADID
  _NXentry_pad.NX_scan_id SCANID
  _NXentry_pad.NX_diffrn_id DIFFRNID
  _NXentry_pad.NX_entry_id ENTRYID
  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXentry_pad__ENTRY_PAD" where ENTRY_PAD is the name of this NeXus class instance, typically "entry_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.
- data_000001:NXDATA →
  _NXentry_pad.NXDATA_id data_000001
- data_000002:NXDATA →
  _NXentry_pad.NXDATA_id data_000002
- .1:... →
  _NXentry_pad....._id .1
- data_nnnnnn:NXDATA →
  _NXentry_pad.NXDATA_id data_nnnnnn
- instrument:NXinstrument_pad →
  _NXentry_pad.NXinstrument_pad_id instrument

Note the use of multiple NXDATA NeXus classes. We propose to merge this definition into the NXentry base class.

6.2 NXinstrument_pad

```
NXinstrument_pad (application definition, version 0.1) (overlays NXinstrument)
  dectector:NXdetector_pad
```

- INSTRUMENT_PAD:NXinstrument_pad →
  _NXinstrument_pad.NX_tree_path NEXUSTREEPATH
  _NXinstrument_pad.NX_id INSTRUMENT_PADID
  _NXinstrument_pad.NX_scan_id SCANID

_NXinstrument_pad.NX_diffrn_id DIFFRNID
_NXinstrument_pad.NX_entry_id ENTRYID

where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXinstrument_pad__INSTRUMENT-_PAD" where INSTRUMENT_PAD is the name of this NeXus class instance, typically "instrument_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.

- dectector:NXdetector_pad →
  _NXinstrument_pad.NXdetector_pad_id dectector

There is no difference between this class and NXinstrument, and we proposed to merge this into the base NXinstrument class.

6.3 NXdetector_pad

```
NXdetector_pad (application definition, version 0.1) (overlays NXDetector)
  acquisition_mode:NX_CHAR
  angular_calibration_applied:NX_BOOLEAN
  beam_center_x:NX_FLOAT
    @units
  beam_center_y:NX_FLOAT
    @units
  bit_depth_readout:NX_UINT
  count_time:NX_FLOAT[np]
    @units
  countrate_correction_applied:NX_BOOLEAN
  description:NX_CHAR
  detector_number:NX_CHAR
  detectorExtended:NXdetector_extended_detris_eiger
  detectorSpecific:NX_detector_specific_detris_eiger
  detector_number:NX_CHAR
  detector_readout_time:NX_FLOAT[np]
    @units
  efficiency_correction_applied:NX_BOOL
  flatfield_correction_applied:NX_BOOL
  frame_time:NX_FLOAT[np]
    @units
  gain_setting:NX_CHAR
  number_of_cycles:NX_UINT
  pixel_mask_applied:NX_BOOL
  sensor_material:NX_STRING
  sensor_thickness:NX_FLOAT
    @units
  threshold_energy:NX_FLOAT
    @units
  virtual_pixel_correction_applied:NX_BOOL
  x_pixel_size:NX_FLOAT
    @units
  y_pixel_size:NX_FLOAT
    @units
```

- DETECTOR_PAD:NXdetector_pad →
  _NXdetector_pad.NX_tree_path NEXUSTREEPATH
  _NXdetector_pad.NX_id DETECTOR_PADID
  _NXdetector_pad.NX_scan_id SCANID
  _NXdetector_pad.NX_diffrn_id DIFFRNID
  _NXdetector_pad.NX_entry_id ENTRYID

  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXdetector_pad__DETECTOR-_PAD" where DETECTOR_PAD is the name of this NeXus class instance, typically "detector_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.
- acquisition_mode:NX_CHAR=ACQUISITION_MODE →
  _NXdetector_pad.acquisition_mode ACQUISITION_MODE
- angular_calibration_applied:NX_BOOLEAN=ANGULAR_CALIBRATION_APPLIED →
  _NXdetector_pad.angular_calibration_applied ANGULAR_CALIBRATION_APPLIED
- beam_center_x:NX_FLOAT=BEAM_CENTER_X →
  _NXdetector_pad.beam_center_x BEAM_CENTER_X
- @units=UNITS →
  _NXdetector_pad.beam_center_x__units UNITS
- beam_center_y:NX_FLOAT=BEAM_CENTER_Y →
  _NXdetector_pad.beam_center_y BEAM_CENTER_Y
- @units=UNITS →
  _NXdetector_pad.beam_center_y__units UNITS
- bit_depth_readout:NX_UINT=BIT_DEPTH_READOUT →
  _NXdetector_pad.bit_depth_readout BIT_DEPTH_READOUT
- count_time:NX_FLOAT[np]=COUNT_TIME →
  _NXdetector_pad.count_time COUNT_TIME
- @units=UNITS →
  _NXdetector_pad.count_time__units UNITS
- countrate_correction_applied:NX_BOOLEAN=COUNTRATE_CORRECTION_APPLIED →
  _NXdetector_pad.countrate_correction_applied COUNTRATE_CORRECTION_APPLIED
- description:NX_CHAR=DESCRIPTION →
  _NXdetector_pad.description DESCRIPTION
- detector_number:NX_CHAR=DETECTOR_NUMBER →
  _NXdetector_pad.detector_number DETECTOR_NUMBER
- detectorExtended:NXdetector_extended_detris_eiger →
  _NXdetector_pad.NXdetector_extended_detris_eiger_id detectorExtended
- detectorSpecific:NX_detector_specific_detris_eiger=DETECTORSPECIFIC →
  _NXdetector_pad.detectorSpecific DETECTORSPECIFIC
- detector_number:NX_CHAR=DETECTOR_NUMBER →
  _NXdetector_pad.detector_number DETECTOR_NUMBER
- detector_readout_time:NX_FLOAT[np]=DETECTOR_READOUT_TIME →
  _NXdetector_pad.detector_readout_time DETECTOR_READOUT_TIME
- @units=UNITS →
  _NXdetector_pad.detector_readout_time__units UNITS

- efficiency_correction_applied:NX_BOOL=EFFICIENCY_CORRECTION_APPLIED → _NXdetector_pad.efficiency_correction_applied EFFICIENCY_CORRECTION_APPLIED
- flatfield_correction_applied:NX_BOOL=FLATFIELD_CORRECTION_APPLIED → _NXdetector_pad.flatfield_correction_applied FLATFIELD_CORRECTION_APPLIED
- frame_time:NX_FLOAT[np]=FRAME_TIME → _NXdetector_pad.frame_time FRAME_TIME
- @units=UNITS → _NXdetector_pad.frame_time__units UNITS
- gain_setting:NX_CHAR=GAIN_SETTING → _NXdetector_pad.gain_setting GAIN_SETTING
- number_of_cycles:NX_UINT=NUMBER_OF_CYCLES → _NXdetector_pad.number_of_cycles NUMBER_OF_CYCLES
- pixel_mask_applied:NX_BOOL=PIXEL_MASK_APPLIED → _NXdetector_pad.pixel_mask_applied PIXEL_MASK_APPLIED
- sensor_material:NX_STRING=SENSOR_MATERIAL → _NXdetector_pad.sensor_material SENSOR_MATERIAL
- sensor_thickness:NX_FLOAT=SENSOR_THICKNESS → _NXdetector_pad.sensor_thickness SENSOR_THICKNESS
- @units=UNITS → _NXdetector_pad.sensor_thickness__units UNITS
- threshold_energy:NX_FLOAT=THRESHOLD_ENERGY → _NXdetector_pad.threshold_energy THRESHOLD_ENERGY
- @units=UNITS → _NXdetector_pad.threshold_energy__units UNITS
- virtual_pixel_correction_applied:NX_BOOL=VIRTUAL_PIXEL_CORRECTION_APPLIED → _NXdetector_pad.virtual_pixel_correction_applied VIRTUAL_PIXEL_CORRECTION_APPLIED
- x_pixel_size:NX_FLOAT=X_PIXEL_SIZE → _NXdetector_pad.x_pixel_size X_PIXEL_SIZE
- @units=UNITS → _NXdetector_pad.x_pixel_size__units UNITS
- y_pixel_size:NX_FLOAT=Y_PIXEL_SIZE → _NXdetector_pad.y_pixel_size Y_PIXEL_SIZE
- @units=UNITS → _NXdetector_pad.y_pixel_size__units UNITS

Except for the subclasses, there is no significant difference between this class and the NXdetector class. We propose to merge this class into the NXdetector base class.

6.4 NXdetector_extended_pad

```
NXdetector_extended_pad (application definition, version 0.1)
  detector_distance:NXFLOAT
    @units
  rotation_angle_step:NX_FLOAT[np]
    @units
  wavelength:NX_FLOAT
    @units
```

- DETECTOR_EXTENDED_PAD:NXdetector_extended_pad →
  _NXdetector_extended_pad.NX_tree_path NEXUSTREEPATH
  _NXdetector_extended_pad.NX_id DETECTOR_EXTENDED_PADID
  _NXdetector_extended_pad.NX_scan_id SCANID
  _NXdetector_extended_pad.NX_diffrn_id DIFFRNID
  _NXdetector_extended_pad.NX_entry_id ENTRYID
  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXdetector_extended_pad__DETECTOR-_EXTENDED_PAD" where DETECTOR_EXTENDED_PAD is the name of this NeXus class instance, typically "detector_extended_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.
- detector_distance:NXFLOAT →
  _NXdetector_extended_pad.NXFLOAT_id detector_distance
- @units=UNITS →
  _NXdetector_extended_pad.NX_NeXus class instance_at__units UNITS
- rotation_angle_step:NX_FLOAT[np]=ROTATION_ANGLE_STEP →
  _NXdetector_extended_pad.rotation_angle_step ROTATION_ANGLE_STEP
- @units=UNITS →
  _NXdetector_extended_pad.rotation_angle_step__units UNITS
- wavelength:NX_FLOAT=WAVELENGTH →
  _NXdetector_extended_pad.wavelength WAVELENGTH
- @units=UNITS →
  _NXdetector_extended_pad.wavelength__units UNITS

6.5 NX_detector_specific_pad

```
NX_detector_specific_pad (application definition, version 0.1)
  countrate_correction_bunch_mode:NX_CHAR
  countrate_correction_count_cutoff:NX_UINT
  countrate_correction_lookup_table:NX_FLOAT[1000000]
  data_collection_date:NX_CHAR
  detectorModule_000:NXDetectorModule_pad
  detectorModule_001:NXDetectorModule_pad
  detectorModule_002:NXDetectorModule_pad
  detectorModule_003:NXDetectorModule_pad
  detectorModule_004:NXDetectorModule_pad
  detectorModule_005:NXDetectorModule_pad
  detectorModule_006:NXDetectorModule_pad
  detectorModule_007:NXDetectorModule_pad
  detectorModule_008:NXDetectorModule_pad
  detectorModule_009:NXDetectorModule_pad
  detectorModule_010:NXDetectorModule_pad
  detectorModule_011:NXDetectorModule_pad
  detectorModule_012:NXDetectorModule_pad
  detectorModule_013:NXDetectorModule_pad
  detectorModule_014:NXDetectorModule_pad
  detectorModule_015:NXDetectorModule_pad
  detectorModule_016:NXDetectorModule_pad
```

```
detectorModule_017:NXDetectorModule_pad
detectorModule_018:NXDetectorModule_pad
detectorModule_019:NXDetectorModule_pad
detectorModule_020:NXDetectorModule_pad
detectorModule_021:NXDetectorModule_pad
detectorModule_022:NXDetectorModule_pad
detectorModule_023:NXDetectorModule_pad
detectorModule_024:NXDetectorModule_pad
detectorModule_025:NXDetectorModule_pad
detectorModule_026:NXDetectorModule_pad
detectorModule_027:NXDetectorModule_pad
detectorModule_028:NXDetectorModule_pad
detectorModule_029:NXDetectorModule_pad
detectorModule_030:NXDetectorModule_pad
detectorModule_031:NXDetectorModule_pad
detectorModule_032:NXDetectorModule_pad
detectorModule_033:NXDetectorModule_pad
detectorModule_034:NXDetectorModule_pad
detectorModule_035:NXDetectorModule_pad
detectorModule_036:NXDetectorModule_pad
detectorModule_037:NXDetectorModule_pad
detectorModule_038:NXDetectorModule_pad
detectorModule_039:NXDetectorModule_pad
detectorModule_040:NXDetectorModule_pad
detectorModule_041:NXDetectorModule_pad
detectorModule_042:NXDetectorModule_pad
detectorModule_043:NXDetectorModule_pad
detectorModule_044:NXDetectorModule_pad
detectorModule_045:NXDetectorModule_pad
detectorModule_046:NXDetectorModule_pad
detectorModule_047:NXDetectorModule_pad
detectorModule_048:NXDetectorModule_pad
detectorModule_049:NXDetectorModule_pad
detectorModule_050:NXDetectorModule_pad
detectorModule_051:NXDetectorModule_pad
detectorModule_052:NXDetectorModule_pad
detectorModule_053:NXDetectorModule_pad
detectorModule_054:NXDetectorModule_pad
detectorModule_055:NXDetectorModule_pad
detectorModule_056:NXDetectorModule_pad
detectorModule_057:NXDetectorModule_pad
detectorModule_058:NXDetectorModule_pad
detectorModule_059:NXDetectorModule_pad
detector_origin:NX_FLOAT64
    @depends_on
    @transformation
    @units
    @vector
detector_origin_rotated:NX_FLOAT64
    @depends_on
```

```
    @transformation
    @units
    @vector
flat field:NX_FLOAT[number of x pixels,number of y pixels]
imgType:NX_UINT
mode_register:NX_UINT
nimages:NX_UINT
number_of_excluded_pixels:NX_UINT
photon_energy:NX_FLOAT
pixel_mask:NX_FLOAT[number of x pixels,number of y pixels]
readout_mode:NX_CHAR
seriedId:NX_ULONG
software_version:NX_CHAR
sub_image_exposure_time:NX_FLOAT
summation_mode:NX_CHAR
summation_nimages:NX_UINT
trigger_mode:NX_CHAR
x_pixels_in_detector:NX_UINT
y_pixels_in_detector:NX_UINT
```

- _DETECTOR_SPECIFIC_PAD:NX_detector_specific_pad →
  _NX_detector_specific_pad.NX_tree_path NEXUSTREEPATH
  _NX_detector_specific_pad.NX_id _DETECTOR_SPECIFIC_PADID
  _NX_detector_specific_pad.NX_scan_id SCANID
  _NX_detector_specific_pad.NX_diffrn_id DIFFRNID
  _NX_detector_specific_pad.NX_entry_id ENTRYID
  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NX_detector_specific_pad-__DETECTOR_SPECIFIC_PAD" where _DETECTOR_SPECIFIC_PAD is the name of this NeXus class instance, typically "_detector_specific_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.
- countrate_correction_bunch_mode:NX_CHAR=COUNTRATE_CORRECTION_BUNCH_MODE →
  _NX_detector_specific_pad.countrate_correction_bunch_mode
  COUNTRATE_CORRECTION_BUNCH_MODE
- countrate_correction_count_cutoff:NX_UINT=
  COUNTRATE_CORRECTION_COUNT_CUTOFF →
  _NX_detector_specific_pad.countrate_correction_count_cutoff
  COUNTRATE_CORRECTION_COUNT_CUTOFF
- countrate_correction_lookup_table:NX_FLOAT[1000000]
  =COUNTRATE_CORRECTION_LOOKUP_TABLE →
  _NX_detector_specific_pad.countrate_correction_lookup_table
  COUNTRATE_CORRECTION_LOOKUP_TABLE
- data_collection_date:NX_CHAR=DATA_COLLECTION_DATE →
  _NX_detector_specific_pad.data_collection_date DATA_COLLECTION_DATE
- detectorModule_000:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_000
- detectorModule_001:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_001

- detectorModule_002:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_002
- detectorModule_003:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_003
- detectorModule_004:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_004
- detectorModule_005:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_005
- detectorModule_006:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_006
- detectorModule_007:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_007
- detectorModule_008:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_008
- detectorModule_009:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_009
- detectorModule_010:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_010
- detectorModule_011:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_011
- detectorModule_012:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_012
- detectorModule_013:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_013
- detectorModule_014:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_014
- detectorModule_015:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_015
- detectorModule_016:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_016
- detectorModule_017:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_017
- detectorModule_018:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_018
- detectorModule_019:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_019
- detectorModule_020:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_020
- detectorModule_021:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_021
- detectorModule_022:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_022
- detectorModule_023:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_023

- detectorModule_024:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_024
- detectorModule_025:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_025
- detectorModule_026:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_026
- detectorModule_027:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_027
- detectorModule_028:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_028
- detectorModule_029:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_029
- detectorModule_030:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_030
- detectorModule_031:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_031
- detectorModule_032:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_032
- detectorModule_033:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_033
- detectorModule_034:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_034
- detectorModule_035:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_035
- detectorModule_036:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_036
- detectorModule_037:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_037
- detectorModule_038:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_038
- detectorModule_039:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_039
- detectorModule_040:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_040
- detectorModule_041:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_041
- detectorModule_042:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_042
- detectorModule_043:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_043
- detectorModule_044:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_044
- detectorModule_045:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_045

- detectorModule_046:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_046
- detectorModule_047:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_047
- detectorModule_048:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_048
- detectorModule_049:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_049
- detectorModule_050:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_050
- detectorModule_051:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_051
- detectorModule_052:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_052
- detectorModule_053:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_053
- detectorModule_054:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_054
- detectorModule_055:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_055
- detectorModule_056:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_056
- detectorModule_057:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_057
- detectorModule_058:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_058
- detectorModule_059:NXDetectorModule_pad →
  _NX_detector_specific_pad.NXDetectorModule_pad_id detectorModule_059
- detector_origin:NX_FLOAT64=DETECTOR_ORIGIN →
  _NX_detector_specific_pad.detector_origin DETECTOR_ORIGIN
- @depends_on=DEPENDS_ON →
  _NX_detector_specific_pad.detector_origin__depends_on DEPENDS_ON
- @transformation=TRANSFORMATION →
  _NX_detector_specific_pad.detector_origin__transformation TRANSFORMATION
- @units=UNITS →
  _NX_detector_specific_pad.detector_origin__units UNITS
- @vector=VECTOR →
  _NX_detector_specific_pad.detector_origin__vector VECTOR
- detector_origin_rotated:NX_FLOAT64=DETECTOR_ORIGIN_ROTATED →
  _NX_detector_specific_pad.detector_origin_rotated DETECTOR_ORIGIN_ROTATED
- @depends_on=DEPENDS_ON →
  _NX_detector_specific_pad.detector_origin_rotated__depends_on DEPENDS_ON
- @transformation=TRANSFORMATION →
  _NX_detector_specific_pad.detector_origin_rotated__transformation TRANSFORMATION

- @units=UNITS → _NX_detector_specific_pad.detector_origin_rotated__units UNITS
- @vector=VECTOR → _NX_detector_specific_pad.detector_origin_rotated__vector VECTOR
- flatfield:NX_FLOAT[numberofxpixels,numberofypixels]=FLATFIELD → _NX_detector_specific_pad.flatfield FLATFIELD
- imgType:NX_UINT=IMGTYPE → _NX_detector_specific_pad.imgType IMGTYPE
- mode_register:NX_UINT=MODE_REGISTER → _NX_detector_specific_pad.mode_register MODE_REGISTER
- nimages:NX_UINT=NIMAGES → _NX_detector_specific_pad.nimages NIMAGES
- number_of_excluded_pixels:NX_UINT=NUMBER_OF_EXCLUDED_PIXELS → _NX_detector_specific_pad.number_of_excluded_pixels NUMBER_OF_EXCLUDED_PIXELS
- photon_energy:NX_FLOAT=PHOTON_ENERGY → _NX_detector_specific_pad.photon_energy PHOTON_ENERGY
- pixel_mask:NX_FLOAT[numberofxpixels,numberofypixels]=PIXEL_MASK → _NX_detector_specific_pad.pixel_mask PIXEL_MASK
- readout_mode:NX_CHAR=READOUT_MODE → _NX_detector_specific_pad.readout_mode READOUT_MODE
- seriedId:NX_ULONG=SERIEDID → _NX_detector_specific_pad.seriedId SERIEDID
- software_version:NX_CHAR=SOFTWARE_VERSION → _NX_detector_specific_pad.software_version SOFTWARE_VERSION
- sub_image_exposure_time:NX_FLOAT=SUB_IMAGE_EXPOSURE_TIME → _NX_detector_specific_pad.sub_image_exposure_time SUB_IMAGE_EXPOSURE_TIME
- summation_mode:NX_CHAR=SUMMATION_MODE → _NX_detector_specific_pad.summation_mode SUMMATION_MODE
- summation_nimages:NX_UINT=SUMMATION_NIMAGES → _NX_detector_specific_pad.summation_nimages SUMMATION_NIMAGES
- trigger_mode:NX_CHAR=TRIGGER_MODE → _NX_detector_specific_pad.trigger_mode TRIGGER_MODE
- x_pixels_in_detector:NX_UINT=X_PIXELS_IN_DETECTOR → _NX_detector_specific_pad.x_pixels_in_detector X_PIXELS_IN_DETECTOR
- y_pixels_in_detector:NX_UINT=Y_PIXELS_IN_DETECTOR → _NX_detector_specific_pad.y_pixels_in_detector Y_PIXELS_IN_DETECTOR

The specific number of modules may vary.

6.6 NXDetectorModule_pad

```
NXDetectorModule_pad (application definition, version 0.1)
  dac_names:NX_CHAR[6]
  dac_values:NX_UINT[7]
  data_origin:NX_UINT[2]
```

```
data_size:NX_UINT[2]
detectorChip_00:NXDetectorChip_pad
detectorChip_01:NXDetectorChip_pad
detectorChip_02:NXDetectorChip_pad
detectorChip_03:NXDetectorChip_pad
detectorChip_04:NXDetectorChip_pad
detectorChip_05:NXDetectorChip_pad
detectorChip_06:NXDetectorChip_pad
detectorChip_07:NXDetectorChip_pad
detectorChip_08:NXDetectorChip_pad
detectorChip_09:NXDetectorChip_pad
detectorChip_10:NXDetectorChip_pad
detectorChip_11:NXDetectorChip_pad
detectorChip_12:NXDetectorChip_pad
detectorChip_13:NXDetectorChip_pad
detectorChip_14:NXDetectorChip_pad
detectorChip_15:NXDetectorChip_pad
fast_pixel_direction:NX_FLOAT64
  @depends_on
  @transformation
  @units
  @vector
firmware_version:NX_CHAR
module_offset:NX_FLOAT64
  @depends_on
  @transformation
  @units
  @vector
nbits:NX_UINT
nchips:NX_UINT
readout_frequency:NX_FLOAT
  @units
region_of_interest:NX_UINT[4]
slow_pixel_direction:NX_FLOAT64
  @depends_on
  @transformation
  @units
  @vector
x_pixels_in_module:NX_UINT
y_pixels_in_module:NX_UINT
```

- DETECTORMODULE_PAD:NXDetectorModule_pad →
  _NXDetectorModule_pad.NX_tree_path NEXUSTREEPATH
  _NXDetectorModule_pad.NX_id DETECTORMODULE_PADID
  _NXDetectorModule_pad.NX_scan_id SCANID
  _NXDetectorModule_pad.NX_diffrn_id DIFFRNID
  _NXDetectorModule_pad.NX_entry_id ENTRYID

  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXDetectorModule_pad-__DETECTORMODULE_PAD" where DETECTORMODULE_PAD is the name of this NeXus class instance, typically "DetectorModule_pad". The SCANID, DIFFRNID and ENTRYID are optional

keys for use when multiple scans, *etc.* are aggregated in the same CBF.

- dac_names:NX_CHAR[6]=DAC_NAMES → _NXDetectorModule_pad.dac_names DAC_NAMES
- dac_values:NX_UINT[7]=DAC_VALUES → _NXDetectorModule_pad.dac_values DAC_VALUES
- data_origin:NX_UINT[2]=DATA_ORIGIN → _NXDetectorModule_pad.data_origin DATA_ORIGIN
- data_size:NX_UINT[2]=DATA_SIZE → _NXDetectorModule_pad.data_size DATA_SIZE
- detectorChip_00:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_00
- detectorChip_01:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_01
- detectorChip_02:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_02
- detectorChip_03:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_03
- detectorChip_04:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_04
- detectorChip_05:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_05
- detectorChip_06:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_06
- detectorChip_07:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_07
- detectorChip_08:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_08
- detectorChip_09:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_09
- detectorChip_10:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_10
- detectorChip_11:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_11
- detectorChip_12:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_12
- detectorChip_13:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_13
- detectorChip_14:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_14
- detectorChip_15:NXDetectorChip_pad → _NXDetectorModule_pad.NXDetectorChip_pad_id detectorChip_15
- fast_pixel_direction:NX_FLOAT64=FAST_PIXEL_DIRECTION → _NXDetectorModule_pad.fast_pixel_direction FAST_PIXEL_DIRECTION

- @depends_on=DEPENDS_ON → _NXDetectorModule_pad.fast_pixel_direction__depends_on DEPENDS_ON
- @transformation=TRANSFORMATION → _NXDetectorModule_pad.fast_pixel_direction__transformation TRANSFORMATION
- @units=UNITS → _NXDetectorModule_pad.fast_pixel_direction__units UNITS
- @vector=VECTOR → _NXDetectorModule_pad.fast_pixel_direction__vector VECTOR
- firmware_version:NX_CHAR=FIRMWARE_VERSION → _NXDetectorModule_pad.firmware_version FIRMWARE_VERSION
- module_offset:NX_FLOAT64=MODULE_OFFSET → _NXDetectorModule_pad.module_offset MODULE_OFFSET
- @depends_on=DEPENDS_ON → _NXDetectorModule_pad.module_offset__depends_on DEPENDS_ON
- @transformation=TRANSFORMATION → _NXDetectorModule_pad.module_offset__transformation TRANSFORMATION
- @units=UNITS → _NXDetectorModule_pad.module_offset__units UNITS
- @vector=VECTOR → _NXDetectorModule_pad.module_offset__vector VECTOR
- nbits:NX_UINT=NBITS → _NXDetectorModule_pad.nbits NBITS
- nchips:NX_UINT=NCHIPS → _NXDetectorModule_pad.nchips NCHIPS
- readout_frequency:NX_FLOAT=READOUT_FREQUENCY → _NXDetectorModule_pad.readout_frequency READOUT_FREQUENCY
- @units=UNITS → _NXDetectorModule_pad.readout_frequency__units UNITS
- region_of_interest:NX_UINT[4]=REGION_OF_INTEREST → _NXDetectorModule_pad.region_of_interest REGION_OF_INTEREST
- slow_pixel_direction:NX_FLOAT64=SLOW_PIXEL_DIRECTION → _NXDetectorModule_pad.slow_pixel_direction SLOW_PIXEL_DIRECTION
- @depends_on=DEPENDS_ON → _NXDetectorModule_pad.slow_pixel_direction__depends_on DEPENDS_ON
- @transformation=TRANSFORMATION → _NXDetectorModule_pad.slow_pixel_direction__transformation TRANSFORMATION
- @units=UNITS → _NXDetectorModule_pad.slow_pixel_direction__units UNITS
- @vector=VECTOR → _NXDetectorModule_pad.slow_pixel_direction__vector VECTOR
- x_pixels_in_module:NX_UINT=X_PIXELS_IN_MODULE → _NXDetectorModule_pad.x_pixels_in_module X_PIXELS_IN_MODULE
- y_pixels_in_module:NX_UINT=Y_PIXELS_IN_MODULE → _NXDetectorModule_pad.y_pixels_in_module Y_PIXELS_IN_MODULE

The specific number of chips may vary.

6.7 NXDetectorChip_pad

```
NXDetectorChip_pad
  chip_type:NX_CHAR
  x_pixels_in_chip:NX_UINT
  x_position:NX_UINT
  y_pixels_in_chip:NX_UINT
  y_position:NX_UINT
```

- DETECTORCHIP_PAD:NXDetectorChip_pad →
  _NXDetectorChip_pad.NX_tree_path NEXUSTREEPATH
  _NXDetectorChip_pad.NX_id DETECTORCHIP_PADID
  _NXDetectorChip_pad.NX_scan_id SCANID
  _NXDetectorChip_pad.NX_diffrn_id DIFFRNID
  _NXDetectorChip_pad.NX_entry_id ENTRYID
  where components of NEXUSTREEPATH are composed of the relevant NeXus class, a double under score and, finally, the name of the NeXus class instance, ending with "/NXDetectorChip_pad-__DETECTORCHIP_PAD" where DETECTORCHIP_PAD is the name of this NeXus class instance, typically "DetectorChip_pad". The SCANID, DIFFRNID and ENTRYID are optional keys for use when multiple scans, *etc.* are aggregated in the same CBF.
- chip_type:NX_CHAR=CHIP_TYPE →
  _NXDetectorChip_pad.chip_type CHIP_TYPE
- x_pixels_in_chip:NX_UINT=X_PIXELS_IN_CHIP →
  _NXDetectorChip_pad.x_pixels_in_chip X_PIXELS_IN_CHIP
- x_position:NX_UINT=X_POSITION →
  _NXDetectorChip_pad.x_position X_POSITION
- y_pixels_in_chip:NX_UINT=Y_PIXELS_IN_CHIP →
  _NXDetectorChip_pad.y_pixels_in_chip Y_PIXELS_IN_CHIP
- y_position:NX_UINT=Y_POSITION →
  _NXDetectorChip_pad.y_position Y_POSITION