Pds Lusi

Package Lusi

This package and namespace gives access to some feature-extracted parameters for IPIMB and YAG.

Namespace Pds::Lusi

LCLS Ultrafast Science Instruments

class DiodeFexConfigV1

Configuration for feature extraction from each of the diodes used by the Intensity-Position Monitor.

Public Types

```
enum          { Version = 1 }
enum          { NRANGES = 3 } // 3 ranges by the charge amplifier (1pC, 100pc and 10nC)
```

Public Member Functions

```
  // Constructors and Destructor
DiodeFexConfigV1 ()
~DiodeFexConfigV1 ()
DiodeFexConfigV1 (float _base[], float _scale[])
```

Public Attributes

```
float         base [NRANGES]
float         scale [NRANGES]
```

class DiodeFexV1

Interface to feature extracted parameters from each of the diodes used by the Intensity-Position Monitor.

Public Types

```
       Version = 1
enum  { Version = 1 }
```

Public Member Functions

```
 // Constructor
 DiodeFexV1 ()
 DiodeFexV1 (float ch0)
```

Public Attributes

```
float value
```

class IpmFexConfigV1

Configuration for the feature extraction of LUSI In-situ Intensity-Position Monitor, composed of four silicon diodes arranged around the cross-section of hte x-ray beam to detect back-scattered Compton photons off a thin low-Z material window just downstream. The response from each diode is separately digitized and made available for calculation of the X-ray beam position and intensity at the location of the window.

Public Types

```
         Version = 1
         NCHANNELS = 4
enum          { Version = 1 }
enum          { NCHANNELS = 4 }
```

Public Member Functions

```
   // Constructors and Destructor
   IpmFexConfigV1 ()
   ~IpmFexConfigV1 ()
   IpmFexConfigV1 (const DiodeFexConfigV1 _diode[], float _xscale, float _yscale)
```

Public Attributes

```
   DiodeFexConfigV1         diode [NCHANNELS]
   float         xscale
   float         yscale
```

class IpmFexV1

This class defines some derived quantities from the IPIMB (LUSI Pop-in Intensity Position Intensity Monitor Board). Signal is read from 4 diodes on the board which surrounds the beam line. The signal from each diode is proportional to the beam intensity and the beam position in *x* and *y* is obtained from the relative difference in intensity measured by the left-right and top-bottom diodes.

Public Types

```
         Version = 1
enum          { Version = 1 }
```

Public Member Functions

```
   // Constructors
   IpmFexV1 ()
   IpmFexV1 (float ch[], float x, float y, float chsum)
```

Public Attributes

```
  float         channel [4] // background-subtracted output voltage from each of the four channels (diodes)
  float         sum         // sum of all channels[]
  float         xpos        // X-ray beam position in x (constructed from difference in intensity seen by left-
right diodes)
  float         ypos        // X-ray beam position in y (constructed from difference in intensity seen by top-
bottom diodes)
```

class PimImageConfigV1

Configuration information for the LUSI Pop-in Profile Monitors: YAG crystals used in the vacuum path of the FEL converts x-rays into visible light. Video cameras with zoom lenses are used to image the beam profile screens.

Public Types

```
  Version = 1
  enum  { Version = 1 }
```

Public Member Functions

```
   // Constructors and destructor
   PimImageConfigV1 ()
   ~PimImageConfigV1 ()
   PimImageConfigV1 (float _xscale, float _yscale)
```

Public Attributes

```
  float         xscale
  float         yscale
```