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Class Summary

FitsHandler

> This class handles fits files and delivers a usable header (& image).

HeaderHandler

> This class provides a LinkedHashMap containing Header info : key/value pair.

ImageDataProvider

> This class provides nothing for the moment.

---

fr.um2.physique.risa.core.fits

Class FitsHandler

```
java.lang.Object
   |
   +--fr.um2.physique.risa.core.fits.FitsHandler
```

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---

public class **FitsHandler**
extends java.lang.Object

This class handles fits files and delivers a usable header (& image).

> HeaderHandler

Author:

> Etienne Gibaud

Constructors

FitsHandler

```
public   FitsHandler(java.io.File file)
      throws nom.tam.fits.FitsException
```

> Constructs a FitsHandler & creates a HeaderHandler.

> **Parameters:**

> > file - is user input main file

> **Throws:**

> > nom.tam.fits.FitsException -

Methods

getHeaderMap

`public java.util.Map` **`getHeaderMap`**`()`

>This method returns the header handler created in constructor.
>
>**Returns:**
>>Fits file header map key, value.

---

fr.um2.physique.risa.core.fits

Class HeaderHandler

```
java.lang.Object
    |
    +--fr.um2.physique.risa.core.fits.HeaderHandler
```

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---

public class **HeaderHandler**
extends java.lang.Object

This class provides a LinkedHashMap containing Header info : key/value pair.

>HeaderHandler

Author:
>Etienne Gibaud

Constructors

HeaderHandler

`public` **`HeaderHandler`**`(nom.tam.fits.Header rawHeader)`
`        throws java.lang.IllegalArgumentException`

>HeaderHandler Constructor. Creates the Header Map
>
>**Parameters:**
>>rawHeader - : Fits file header.
>
>**Throws:**
>>java.lang.IllegalArgumentException -

Methods

getMap

```
public java.util.Map getMap()
                    throws java.lang.NullPointerException
```

This method returns the Map containing header information.

Returns:

Header info map

Throws:

java.lang.NullPointerException -

---

fr.um2.physique.risa.core.fits

Class ImageDataProvider

```
java.lang.Object
    |
    +--fr.um2.physique.risa.core.fits.ImageDataProvider
```

< [Constructors](#) >

---

public class **ImageDataProvider**
extends java.lang.Object

This class provides nothing for the moment. Could store Fits image data into a matrix (?) by nom.tam.fits, which will be sent into ImageJ for display purpose.

Author:

Etienne Gibaud

Constructors

ImageDataProvider

```
public  ImageDataProvider()
```

Package fr.um2.physique.risa.core.process

Class Summary

[FlippedImage](#)

This class return a flipped image : horizontal, vertical,

[Histogram](#)

This class will provide Histogram data.

[InvertedImage](#)

This class returns an inverted image (neg.)

[Mathematical](#)

This class does mathematical operations on fits image using constants and functions and returns the processed ImagePlus : add, subtract, log, ...

[RawImage](#)

This classes creates and return a raw ImagePlus of the fits file.

[TwoImages](#)

This class will allow operations on two different fits files.

---

fr.um2.physique.risa.core.process

Class FlippedImage

```
java.lang.Object
   |
   +--fr.um2.physique.risa.core.process.FlippedImage
```

< [Constructors](#) > < [Methods](#) >

public class **FlippedImage**
extends java.lang.Object

This class return a flipped image : horizontal, vertical,

Author:
Etienne Gibaud

Constructors

FlippedImage

public **FlippedImage**()

FlippedImage constructor creates ImagePlus and ImageProcessor.

Methods

getHorFlipImage

`public ij.ImagePlus` **`getHorFlipImage`**`()`

> This method returns a horizontally flipped image.
>
> **Returns:**
>> horizontally flipped ImagePlus

---

getLeftFlipImage

`public ij.ImagePlus` **`getLeftFlipImage`**`()`

> This method returns a left flipped image.
>
> **Returns:**
>> Anti Clockwise rotated ImagePlus

---

getRightFlipImage

`public ij.ImagePlus` **`getRightFlipImage`**`()`

> This method returns a right flipped image.
>
> **Returns:**
>> Clockwise rotated ImagePlus

---

getType

`public java.lang.String` **`getType`**`()`

> This method returns the type of process done.
>
> **Returns:**
>> Type of last processed flipped image.

---

getVertFlipImage

`public ij.ImagePlus` **`getVertFlipImage`**`()`

> This method returns a vertically flipped image.
>
> **Returns:**
>> vertically flipped ImagePlus.

fr.um2.physique.risa.core.process

Class Histogram

```
java.lang.Object
    |
    +--fr.um2.physique.risa.core.process.Histogram
```

< [Constructors](#) >

public class **Histogram**
extends java.lang.Object

This class will provide Histogram data. THIS IS A COPY OF AN OLD CLASS : NOT DESIGNED TO BE RUN. XXX : Create histogram data class. This class is being built.

Author:
      Etienne Gibaud

Constructors

Histogram

public **Histogram**()

fr.um2.physique.risa.core.process

Class InvertedImage

```
java.lang.Object
    |
    +--fr.um2.physique.risa.core.process.InvertedImage
```

< [Constructors](#) > < [Methods](#) >

public class **InvertedImage**
extends java.lang.Object

This class returns an inverted image (neg.)

Author:
      Etienne Gibaud

Constructors

InvertedImage

public **InvertedImage**()

> InvertedImage constructor. Creates ImagePlus and ImageProcessor from file.

Methods

getImage

public ij.ImagePlus **getImage**()

> This method returns the ImagePlus inverted.
>
> **Returns:**
>> ImagePlus Inverted Image.

getType

public java.lang.String **getType**()

> This method returns the type of the process.
>
> **Returns:**
>> "Inverted"

fr.um2.physique.risa.core.process

Class Mathematical

```
java.lang.Object
   |
   +--fr.um2.physique.risa.core.process.Mathematical
```

< [Constructors](#) > < [Methods](#) >

public class **Mathematical**
extends java.lang.Object

This class does mathematical operations on fits image using constants and functions and returns the processed ImagePlus : add, subtract, log, ...

Author:
> Etienne Moutarde

Constructors

Mathematical

```
public  Mathematical()
```

> Constructor for mathematically transformed images. Creates a processor for the raw image.

Methods

getAddImage

```
public ij.ImagePlus getAddImage(double value)
```

> This method returns the ImagePlus with a constant added.
>
> **Parameters:**
>> value - added
>
> **Returns:**
>> processed ImagePlus

---

getLogImage

```
public ij.ImagePlus getLogImage()
```

> This method returns the ImagePlus process with Log.
>
> **Returns:**
>> processed ImagePlus

---

getMaxImage

```
public ij.ImagePlus getMaxImage(double value)
```

> This method returns the ImagePlus. It is displayed with a maximal pixel value.
>
> **Parameters:**
>> value - maximum
>
> **Returns:**
>> processed ImagePlus

---

getMinImage

```
public ij.ImagePlus getMinImage(double value)
```

This method returns the ImagePlus. It is displayed with a minimal pixel value.

Parameters:

value - minimum

Returns:

processed ImagePlus

---

getMinMaxImage

```
public ij.ImagePlus getMinMaxImage(double min,
                                   double max)
```

This method returns the ImagePlus It is displayed with a minimum and a maximal pixel value.

Parameters:

min - value
max - value

Returns:

processed ImagePlus

---

getMultiImage

```
public ij.ImagePlus getMultiImage(double value)
```

This method returns the ImagePlus processed with a multiplication.

Parameters:

value - multiplied

Returns:

processed ImagePlus

---

getType

```
public java.lang.String getType()
```

This method returns the type of the last created ImagePlus.

Returns:

type.

fr.um2.physique.risa.core.process

Class RawImage

```
java.lang.Object
     |
     +--fr.um2.physique.risa.core.process.RawImage
```

< [Constructors](#) > < [Methods](#) >

public class **RawImage**
extends java.lang.Object

This classes creates and return a raw ImagePlus of the fits file.

Author:
> Etienne Gibaud

Constructors

RawImage

```
public  RawImage()
        throws java.lang.NullPointerException
```

> RawImage Constructor, creates an ImagePlus for the fits file in CoreInterface.

> **Throws:**
>> java.lang.NullPointerException -

Methods

getImage

```
public ij.ImagePlus getImage()
```

> This method return the raw ImagePlus of the fits file.

> **Returns:**
>> raw ImagePlus

getType

```
public java.lang.String getType()
```

> This method returns image type, here : Raw.
>
> **Returns:**
>
> > type

---

fr.um2.physique.risa.core.process

Class TwoImages

```
java.lang.Object
    |
    +--fr.um2.physique.risa.core.process.TwoImages
```

< [Constructors](#) > < [Methods](#) >

---

public class **TwoImages**
extends java.lang.Object

This class will allow operations on two different fits files.

Author:
> Etienne Gibaud

Constructors

TwoImages

```
public   TwoImages(java.io.File file)
```

> TwoImages constructor. Creates ImagePlus from main file and input file. Creates ImageProcessor for Both. Converts processors to 32-bit float representation.
>
> **Parameters:**
>
> > file - input

Methods

addFits

```
public ij.ImagePlus addFits()
```

> This method adds two fits image and returns resulting ImagePlus.
>
> **Returns:**
>> processed ImagePlus

---

getType

```
public java.lang.String getType()
```

> Return type of current operation.
>
> **Returns:**
>> type

---

subFits

```
public ij.ImagePlus subFits()
```

> This method subtracts two fits files.
>
> **Returns:**
>> processed ImagePlus

Package fr.um2.physique.risa.display

Class Summary

HistogramViewer

> This class is designed to accept histogram data and display it.

ImageViewer

> This class display the image data of a FITS file.

---

fr.um2.physique.risa.display

Class HistogramViewer

```
java.lang.Object
    |
    +--fr.um2.physique.risa.display.HistogramViewer
```

< **Constructors** >

---

public class **HistogramViewer**
extends java.lang.Object

This class is designed to accept histogram data and display it. TODO Write it.

Author:
> mtrd

Constructors

HistogramViewer

```
public  HistogramViewer()
```

fr.um2.physique.risa.display

Class ImageViewer

```
java.lang.Object
     |
     +--java.awt.Component
          |
          +--java.awt.Container
               |
               +--java.awt.Window
                    |
                    +--java.awt.Frame
                         |
                         +--fr.um2.physique.risa.display.ImageViewer
```

All Implemented Interfaces:
> java.awt.MenuContainer, java.awt.event.ActionListener, java.awt.event.MouseMotionListener, java.awt.image.ImageObserver, java.io.Serializable, javax.accessibility.Accessible

---

< [Constructors](#) > < [Methods](#) >

---

public class **ImageViewer**
extends java.awt.Frame
implements java.awt.event.ActionListener, java.awt.event.MouseMotionListener

This class display the image data of a FITS file.

> ImageViewer

Author:
> Etienne Gibaud

Constructors

ImageViewer

```
public   ImageViewer(ij.ImagePlus imp,
                     java.lang.String imageType)
```

> ImageViewer constructor.

> **Parameters:**
>> imp - Processed ImagePlus.
>> imageType - type of the processed ImagePlus

Methods

actionPerformed

public void **actionPerformed**(java.awt.event.ActionEvent e)

> Handles actions performed on this Frame.

---

getType

public java.lang.String **getType**()

> Returns the image type.
>
> **Returns:**
>
> > a String representing the image type

---

mouseDragged

public void **mouseDragged**(java.awt.event.MouseEvent e)

> Handles Mouse dragging.

---

mouseMoved

public void **mouseMoved**(java.awt.event.MouseEvent me)

> Handles Mouse action on this Frame.

Package fr.um2.physique.risa.gui

Class Summary

[CoreInterface](#)

> This class is the interface between user gui and core class (calculations & image processing).

[HeaderTab](#)

> This class display the header tab.

[HistogramTab](#)

> This class display the Histogram tab.

[ImageTab](#)

> This class display the picture tab.

[UserInterface](#)

> This class is the main class for Graphical User Interface

---

fr.um2.physique.risa.gui

Class CoreInterface

```
java.lang.Object
   |
   +--fr.um2.physique.risa.gui.CoreInterface
```

< [Constructors](#) > < [Methods](#) >

---

public class **CoreInterface**
extends java.lang.Object

This class is the interface between user gui and core class (calculations & image processing).

Author:

> Etiene Gibaud

Constructors

CoreInterface

public **CoreInterface**()

Methods

displayAdd

```
public static void displayAdd(double value)
```

> This method displays the image with a constant added. Creates an ImageViewer for desired image.
>
> **Parameters:**
>> value -

---

displayAddFits

```
public static void displayAddFits(java.io.File file)
```

> This method displays two added fits files. Creates an ImageViewer for desired image.
>
> **Parameters:**
>> file - : second file.

---

displayHFlipped

```
public static void displayHFlipped()
```

> This method displays a horizontally flipped image. Creates an ImageViewer for desired image.

---

displayInverted

```
public static void displayInverted()
```

> This method displays the inverted fits image. Creates an ImageViewer for desired image.

---

displayLFlipped

```
public static void displayLFlipped()
```

> This method displays a left flipped image. Creates an ImageViewer for desired image.

---

displayLog

```
public static void displayLog()
```

> This method displays the log image. Creates an ImageViewer for desired image.

---

displayMax

```
public static void displayMax(double value)
```

> This method displays the image with a maximal pixel value. Creates an ImageViewer for desired image.
>
> **Parameters:**
> > value -

---

displayMin

```
public static void displayMin(double value)
```

> This method displays the image with a minimal pixel value. Creates an ImageViewer for desired image.
>
> **Parameters:**
> > value -

---

displayMinMax

```
public static void displayMinMax(double min,
                                 double max)
```

> This method displays the image with a minimal and a maximal pixel value. Creates an ImageViewer for desired image.
>
> **Parameters:**
> > min - value.
> > max - value.

---

displayMultiplied

```
public static void displayMultiplied(double value)
```

> This method displays an image with his pixel value multiplied by a constant. Creates an ImageViewer for desired image.
>
> **Parameters:**
> > value -

---

displayRFlipped

```
public static void displayRFlipped()
```

> This method displays a right flipped image. Creates an ImageViewer for desired image.

displayRaw

`public static void` **`displayRaw`**`()`

> This method displays the Raw fits image. Creates an ImageViewer for desired image.

---

displaySubFits

`public static void` **`displaySubFits`**`(java.io.File file)`

> This method displays two substracted fits files. Creates an ImageViewer for desired image.
>
> **Parameters:**
>> file - : second file.

---

displayVFlipped

`public static void` **`displayVFlipped`**`()`

> This method displays a vertically flipped image. Creates an ImageViewer for desired image.

---

getFile

`public static java.io.File` **`getFile`**`()`

> This method returns the current file.
>
> **Returns:**
>> main/current file

---

getFileName

`public static java.lang.String` **`getFileName`**`()`

> This method returns file name without extension.
>
> **Returns:**
>> name of the file

---

getHeaderMap

```
public static java.util.Map getHeaderMap()
```

>   This method returns the HeaderMap.
>   **Returns:**
> >   Map The fits header map with (Key, Value) pairs.

---

loadFile

```
public static void loadFile(java.io.File file)
```

>   this method loads the file and creates a FitsHandler.
>   **Parameters:**
> >   file - input

---

main

```
public static void main(java.lang.String[] args)
```

---

fr.um2.physique.risa.gui

Class HeaderTab

```
java.lang.Object
    |
    +--java.awt.Component
        |
        +--java.awt.Container
            |
            +--javax.swing.JComponent
                |
                +--javax.swing.JPanel
                    |
                    +--fr.um2.physique.risa.gui.HeaderTab
```

All Implemented Interfaces:
>   java.awt.MenuContainer, java.awt.event.ActionListener, java.awt.image.ImageObserver,
>   java.io.Serializable, javax.accessibility.Accessible,
>   javax.swing.TransferHandler.HasGetTransferHandler

< [Constructors](#) > < [Methods](#) >

---

public class **HeaderTab**
extends javax.swing.JPanel
implements java.awt.event.ActionListener

This class display the header tab.

Author:
>   Emmanuel Hermellin

Constructors

HeaderTab

```
public  HeaderTab()
```

Methods

actionPerformed

```
public void actionPerformed(java.awt.event.ActionEvent e)
```

displayLoadError

```
public static void displayLoadError(java.io.File file)
```

>   Method to show an error during opening action

fillheader

```
public static void fillheader(javax.swing.JTextArea head)
```

>   This method fills the header box.
>   **Parameters:**
> >   head - JTextArea

getAppLog

```
public javax.swing.JTextArea getAppLog()
```

>   This method is used to get the log JTextArea from other classes.
>   **Returns:**
> >   log JTextArea

init

```
public static void init(java.io.File file)
                 throws nom.tam.fits.FitsException
```

> This method load file at execution.
> **Parameters:**
> > file -
> **Throws:**
> > nom.tam.fits.FitsException -

---

fr.um2.physique.risa.gui

Class HistogramTab

```
java.lang.Object
   |
   +--java.awt.Component
        |
        +--java.awt.Container
             |
             +--javax.swing.JComponent
                  |
                  +--javax.swing.JPanel
                       |
                       +--fr.um2.physique.risa.gui.HistogramTab
```

All Implemented Interfaces:
> java.awt.MenuContainer, java.awt.image.ImageObserver, java.io.Serializable,
> javax.accessibility.Accessible, javax.swing.TransferHandler.HasGetTransferHandler

---

< [Constructors](#) >

---

public class **HistogramTab**
extends javax.swing.JPanel

This class display the Histogram tab.

Author:
> Emmanuel Hermellin

Constructors

HistogramTab

```
public HistogramTab()
```

Class ImageTab

```
java.lang.Object
     |
     +--java.awt.Component
          |
          +--java.awt.Container
               |
               +--javax.swing.JComponent
                    |
                    +--javax.swing.JPanel
                         |
                         +--fr.um2.physique.risa.gui.ImageTab
```

All Implemented Interfaces:
>   java.awt.MenuContainer, java.awt.event.ActionListener, java.awt.image.ImageObserver,
>   java.io.Serializable, javax.accessibility.Accessible,
>   javax.swing.TransferHandler.HasGetTransferHandler

< [Constructors](#) > < [Methods](#) >

---

public class **ImageTab**
extends javax.swing.JPanel
implements java.awt.event.ActionListener

This class display the picture tab.

Author:
>   Emmanuel Hermellin

Constructors

ImageTab

public   **ImageTab**()

Methods

actionPerformed

public void **actionPerformed**(java.awt.event.ActionEvent e)

>   The Action Listener To display fits pictures For saveAs button

displayFileError

```
public void displayFileError()
```

      This method display a file error in log in headertard when there is no file selected.

---

fr.um2.physique.risa.gui

Class UserInterface

```
java.lang.Object
    |
    +--java.awt.Component
        |
        +--java.awt.Container
            |
            +--javax.swing.JComponent
                |
                +--javax.swing.JPanel
                    |
                    +--fr.um2.physique.risa.gui.UserInterface
```

All Implemented Interfaces:
      java.awt.MenuContainer, java.awt.image.ImageObserver, java.io.Serializable,
      javax.accessibility.Accessible, javax.swing.TransferHandler.HasGetTransferHandler

---

< [Constructors](#) > < [Methods](#) >

---

public class **UserInterface**
extends javax.swing.JPanel

This class is the main class for Graphical User Interface

Author:
      Emmanuel Hermellin

Constructors

UserInterface

```
public UserInterface()
```

      Create and setup all the GUI's panels

Methods

getHeaderTab

`public static `[HeaderTab](#)` `**`getHeaderTab`**`()`

> This method returns the HeaderTab (error log purpose)
>
> **Returns:**
>> The HeaderTab

---

getHistogramTab

`public static `[HistogramTab](#)` `**`getHistogramTab`**`()`

> This method returns the HistogramTab (error log purpose)
>
> **Returns:**
>> The HistogramTab

---

main

`public static void `**`main`**`(java.lang.String[] args)`

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