

SPIRE SpecExplorer Design Document

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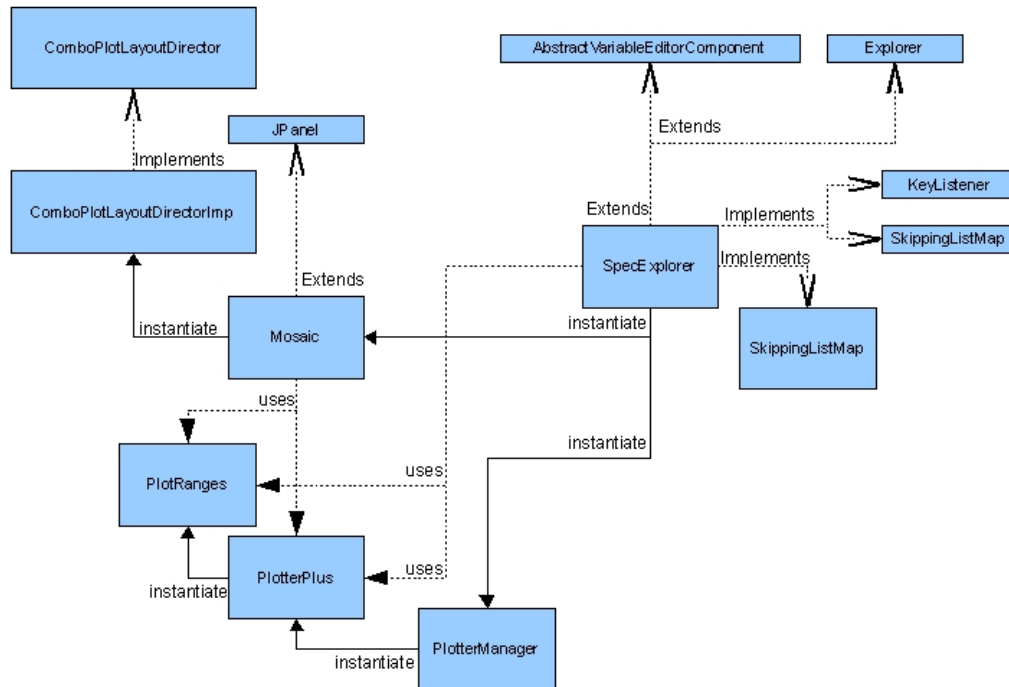
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Introduction

The purpose of this document is to provide an overview of the design and architecture of the SpecExplorer, a visualization tool within the SPIRE Data Processing Environment in the Herschel Common Software System. This document provides software developers with guidance to the package and its internal workings. This document does not contain variables, methods and constructor details. In order to obtain such information please refer to the API.

The following illustration shows the class diagram for SpecExplorer:



Data Dictionary

This document covers all classes and their subclasses. The following is the standard used in this dictionary:

- Class:** name of the class
- Subclasses:** names of the subclasses
- Extends:** what this class extends
- Implements:** what this class implements
- Instantiated by:** the classes that instantiate this class
- Instantiates:** the class that are instantiated by this class
- Uses:** other classes in the GUI package that are used by this class but are NOT instantiated by it
- Used by:** classes that use this class but do not instantiate it
- Definition:** detailed explanation of the purpose of this classes and its functionalities

Class:	ComboPlotLayoutDirectorImp	Instantiated by:	Mosaic
Subclass(es):	N.A.	Instantiates:	N.A.
Extends:	N.A.	Uses:	N.A.
Implements:	ComboPlotLayoutDirector	Used by:	Mosaic

Definition: This class is the director of the layout for the mosaic. When this class is set to direct a layout, its addPlot() is called first for each plot added, then getPlotBounds() for each plot as well. Layout() is called at the end. This class directs the ComboPlot on how to organize the plots. When a plot is added, all its location information is stored in a hashmap that resides in one of the following functions: getLongWaveMappings(), getShortWaveMappings(), getCoAlignedMappings(), getCoAlignedUnvignetted(). When a pixel needs to be plotted or added to the combo plot, its (x,y) location in the comboplot is retrieved from the hashmap in the mosaic, then passed to the Layout Director. The Director adds this pixel to its hashmap with the (x,y) constraints. Then the getPlotBounds method is called which, amongst many tasks, calculates the exact location on the ComboPlot this pixel is to be placed. When the layout is called, all variables such as the scales and chart height and width is re-calculated. To ensure it matches any changes in the comboplot (resizing of window, minimize..etc)

Class:	Mosaic	Instantiated by:	SpecExplorer
Subclass(es):	N.A.	Instantiates:	ComboPlotLayoutDirectorImp
Extends:	JPanel	Uses:	PlotterPlus, PlotterRanges
Implements:	N.A.	Used by:	SpecExplorer.

Definition: This class is responsible for displaying a group of plots in a single window called mosaic. This class stores the lists of pixels or detectors that needs to be displayed together and their locations in the mosaic. Also, it allows for manipulation of the plot features such as axes, ticks, title, subtitles, etc. This class also works as a dispatcher to the SpecExplorerEngine (SEE) class by passing to its methods all the needed parameters that will allow SEE to plot the pixels.

Class:	SpecExplorer	Instantiated by:	DatasetInspector or SpecExplorerComponent (Depend if using JIDE or HIPE)
Subclass(es):	AddListener, ButtonList, ButtonListGroup, ButtonSettingBoundedRangeModel, ButtonSettingSpinnerSkippingNumberModel, ButtonWithState, CancelListener, ClickTask, CloseListener, CustomizerCloseListener, DeselectableButtonGroup, LinkedRangeLink, LinkStateChangedModel, ListDoubleClickListener, ListEnterListener, NullDatasetException, OnFocusButtonSelector, RangeLink, RangeSlider, RangeSliderModel, RestoreListener, SEBSUI, SetListener, SkippingSpinnerLink, SpaceEaterEast, SpinnerScaledNumberModel, SpinnerSkippingNumberModel, TextEnterListener	Instantiates:	Mosaic, PlotterManager
Extends:	JPanel	Uses:	PlotRanges, PlotterPlus, PlotterManager
Implements:	Explorer, SkippingListMap	Used by:	SpecExplorerComponent, DatasetInspector

Definition: SpecExplorer Graphical Interface, Listeners, and core methods that allow the creation of SpecExplorer and all its features. It allows the user to perform the following:

1. Display all the Detectors in the honeycomb arrangement.
2. Plotting and Over-Plotting of scans of the detectors. Moreover, it allows manipulating and customizing all the plots.
3. Instantiates the Mosaic and performs the necessary class that reflect user selections.
4. Perform and Maintain Plotting objects such as PlotterManager and PlotterPlus.

Class:	SpecExplorerPlotterManager	Instantiated by:	PlotterPlus: Mosaic, SpecExplorer PlotterManager: SpecExplorer PlotRanges: PlotPlus
Subclass(es):	PlotterPlus, PlotterManager, PlotRanges	Instantiates:	N.A.
Extends:	N.A.	Uses:	N.A.
Implements:	N.A.	Used by:	Mosaic, SpecExplorer

Definition: SpecExplorerPlotterManager class is a container for three main subclasses:

1. PlotterPlus: the container for the plotting information including information such as the PlotXY, scales and ranges, type of product to be plotted, etc. This information is passed as an instance of this subclass when needed, the instance of this class is passed to be manipulated then plotted.
2. PlotterManager: the main subclass that gives SEPM outside interface. Information regarding PlotterPlus can be accessed through the PlotterManager.
3. PlotRanges: Subclass that is concerned with ranges and ranges operations such as equalities between floats and converting ranges to strings and setting and getting ranges, etc.