

# KstPlot overlays

All capabilities of kst1.4 need to be ported to kst 2.0

We also need the ability to overlay different logical plots into the same space. So:

All plots live in a rectangular content region (the part of the plot where lines/images appear).

Plots may be non-Cartesian.

Plots need to be able to draw non-cartesian axis (eg, polar plot, etc).

Plots need to be able to project an image or a curve into its space.

Plots need to report/accept their ranges in the natural units of the plot (eg,  $r$  and  $\theta$  for a polar plot).

From the user's point of view, the projection needs to live with the plot, not the curve/image.

When in a grid, plots need to be able to align their borders/content region with neighboring plots

Plots need to be able to report their minimum required borders.

Plots need to be able to accept a border size to draw into.

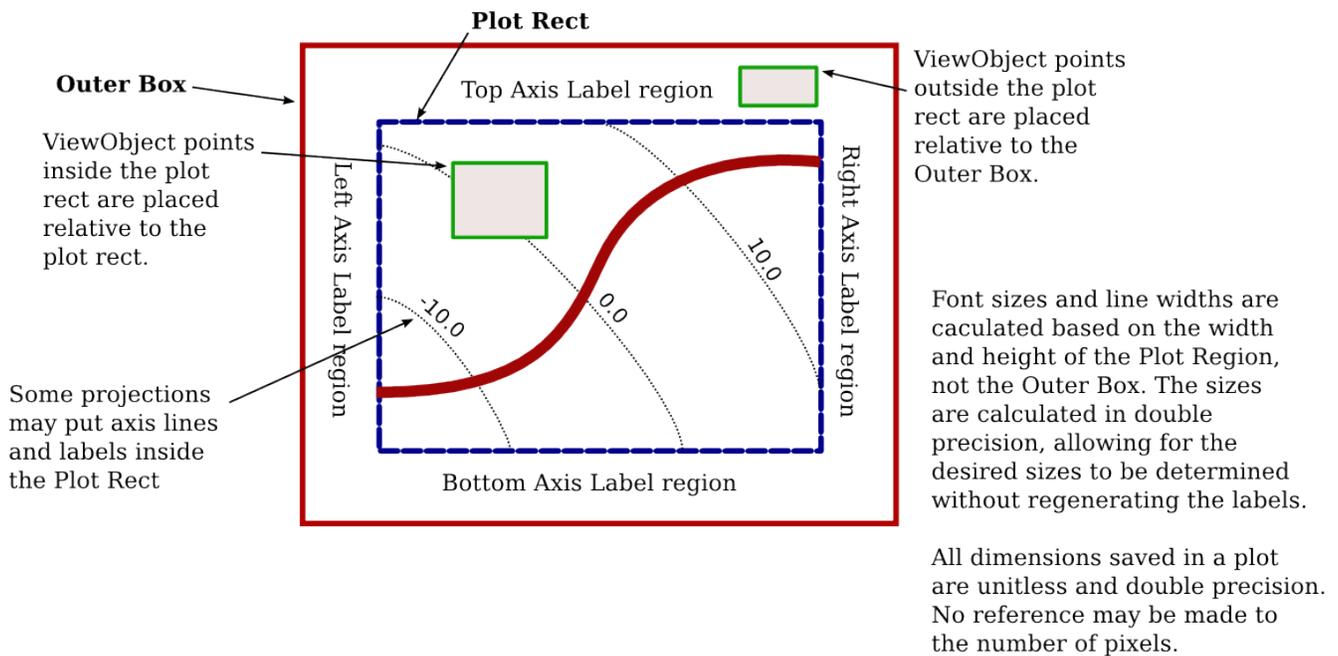
Plots need to be able to suppress any of their borders.

If a plot has suppressed a border, its minimum border size will be zero for the suppressed border.

If a plot (and all overlays) have suppressed borders, then, when on a grid, they need to dynamically resize themselves to keep the same size content region as neighboring plots.

Child view objects with active points inside the content region need to be aligned with the content region, not the overall plot.

# Single Plot Geometry



Multiple Plots can share the same Outer Box.

- The PlotRects must all adjust to be the same size.
- The first plot in the list that has use for it gets the Left and Bottom label regions.
- The second gets the right and top label regions.
- All subsequent plots don't get Label regions.
- All plots may put axis lines and labels inside the Plot Region.
- The axis lines and labels for all plots get printed on the bottom layer; the lines and matrixes get plotted above them (in order) and the child ViewObjects get plotted on top.
- normally, zoom rects get interpreted by each plot separately. However, a UI must be provided to allow zooming of only one of the plots.

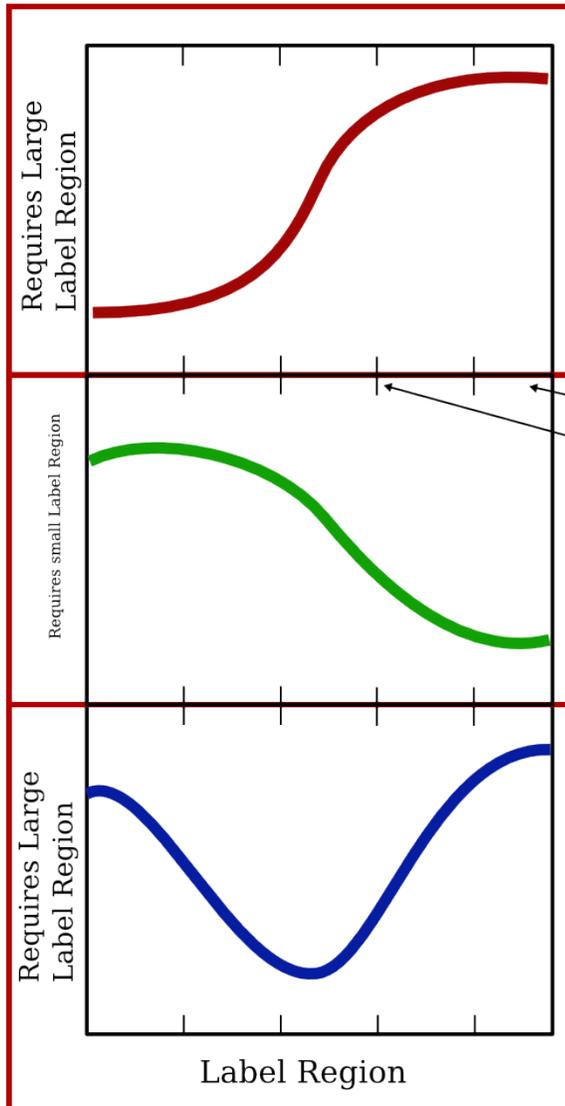
Potential Simplification:

Allow at most 2 plots to share the same outer box:

- Would this be easier (including UI)?
- Is there a use case to argue against it?



# Plot Geometry with shared Axis.



When the following conditions are true, plots will share their X axis as shown to the left.

A) Tied Zoom condition:

- The plot zooms are tied
- The plots are aligned in a column
- The X axis range is the same

B) Parent option Condition:

- The parent of the plots (eg, the top level view) has 'Share axis when possible' set. This option should be default.
- The plots are aligned in a column
- The X axis range is the same

When plots are sharing their X axis:

- the top and bottom label regions of the intermediate plots are suppressed.
- The intermediate plots share axis lines
- Tick marks are still present
- If the plot view objects are the same size, then the outer boxes of the plots are adjusted within the column to maintain a constant Plot Region size. This is dynamic on resize.

If the conditions are only met for part of the column, then the only plots which meet the condition still have their zooms tied.

If the shared axis conditions cease to be met, the plots return to their original size and condition.

Analogous behaviour applies for Y axis sharing.

**Tolerances:** Alignment needs to be within 1% of the size of the Top Level View to be considered aligned.