

# Makie ReferenceSheet

## Basics:

- To get Makie, simply run `] add Makie`
- `Scene` object contains everything in a plot.  
`scene = Scene()`  
`display(scene)` in some cases to render it.
- To modify resolution,  
`Scene(resolution = (x, y))`
- At the beginning of the code, write  
`using Makie`

## Common Plot attributes:

- `align`: `(:pos, :pos)`
- `alpha`: `Float32`, transparency
- `color`: Can be color symbol or colormap
- `colorrange`: `(min, max)`
- `fillrange`: `Bool`, toggles range filling in contour plots
- `font`
- `glowcolor`: Marker glow in `scatter` plots
- `glowwidth`: Width of marker glow
- `image`
- `levels`: `Integer`. Number of levels for a contour-type plot.
- `linestyle`: `Symbol`. Style of the line (for `line` and `linesegments` plots). Available styles are `:dash`, `:dot`, `:dashdot`, and `:dashdotdot`.
- `linewidth`: `Number`. Width of the line in `line` and `linesegments` plots.
- `position`: `NTuple{2,Float}`, `(x, y)`. Specify the coordinates to position text at.
- `rotation`: `Float32`. Specifies the rotation in radians.
- `rotations`: `AbstractVector{Float32}`. Similar to `rotation`, except it specifies the rotations for each element in the plot.
- `shading`: `Bool`. Specifies if shading should be on or not (for `meshes`).
- `textsize`: `Integer`. Font pointsize for text.
- `transformation`: `(:plane, location)`. Transforms the `:plane` to the specified location. Possible `:plane`'s are `:xy`, `:yz`, and `:xz`.
- `visible`: `Bool`. Toggle visibility of plot.

## Simple Animations:

```
scene = lines(rand(10); linewidth=10)
record(scene, "line_changing_colour.mp4",
1:255; framerate = 60) do i
    scene.plots[2][:color] = RGBf0(i/255,
(255 - i)/255, 0)
End
```

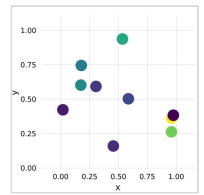
The above example gradually changes the colour of a random line plot.

Take a look at the detailed docs:

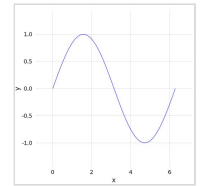
<http://makie.juliaplots.org/dev/index.html>

## Simple Plotting:

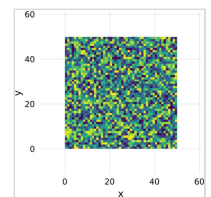
- Scatter plot:  
`x = rand(10)`  
`y = rand(10)`  
`colors = rand(10)`  
`scene = scatter(x, y,`  
`color = colors)`



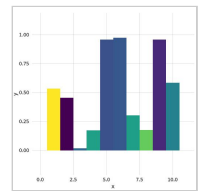
- Line plot:  
`x = range(0, stop =`  
`2pi, length = 40)`  
`f(x) = sin.(x)`  
`y = f(x)`  
`scene = lines(x, y,`  
`color = :blue)`



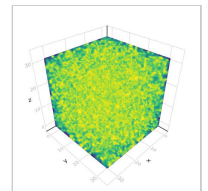
- Heatmap:  
`data = rand(50, 50)`  
`scene = heatmap(data)`



- Barplot:  
`scene =`  
`barplot(rand(10),`  
`color = rand(10))`



- Title: `sc_t =`  
`title(scene, "<title>")`



- Volume Plot:  
`volume(rand(32, 32,`  
`32), algorithm = :mip)`

- Other plots include `Wireframe`, `surface plot`, `streamplot`, `contour plot` etc.

- Axis: `axis = scene[Axis]`  
You can modify `axis.grid.linecolor`,  
`axis.names.textcolor` and  
`axis.names.axisnames`.

- Hbox and vbox:  
Hbox is used for `horizontal layout`.  
Eg. `hbox(scene1, scene2, scene3)`  
Vbox is used for `vertical layout`.  
Eg. `vbox(scene1, scene2, scene3)`

- Scene limits:  
`limits = FRect(x_min, y_min, x_dist,`  
`y_dist)`  
`scene = lines(x, y, color = :blue, limit`  
`= limits)`