

Developer

Taqi

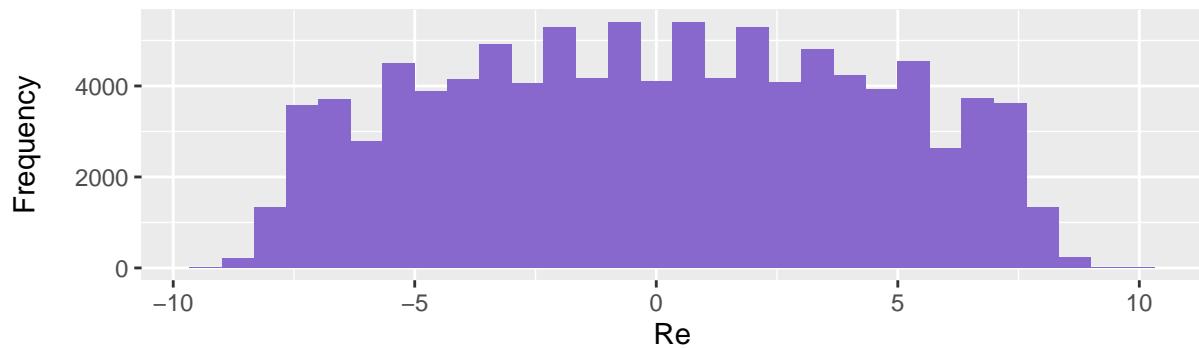
3/9/2021

```
# Get the master summary "eigen-plot" for a matrix or ensemble
spectral_plots <- function(array, pair_scheme = "largest", disp_metric = "diff_abs", retArrays = F){
  spectrum_array <- spectrum(array)
  dispersion_array <- dispersion(array, pairs = pair_scheme)
  spectrum_scatter <- spectrum_array %>% spectrum.scatterplot()
  dispersion_hist <- dispersion_array %>% dispersion.histogram(metric = disp_metric)
  dispersion_scatter <- dispersion_array %>% dispersion.scatterplot()
  if(retArrays){list(spectrum_scatter,dispersion_hist,dispersion_scatter,spectrum_array,dispersion_array)}
  else{list(spectrum_scatter,dispersion_hist,dispersion_scatter)}
}

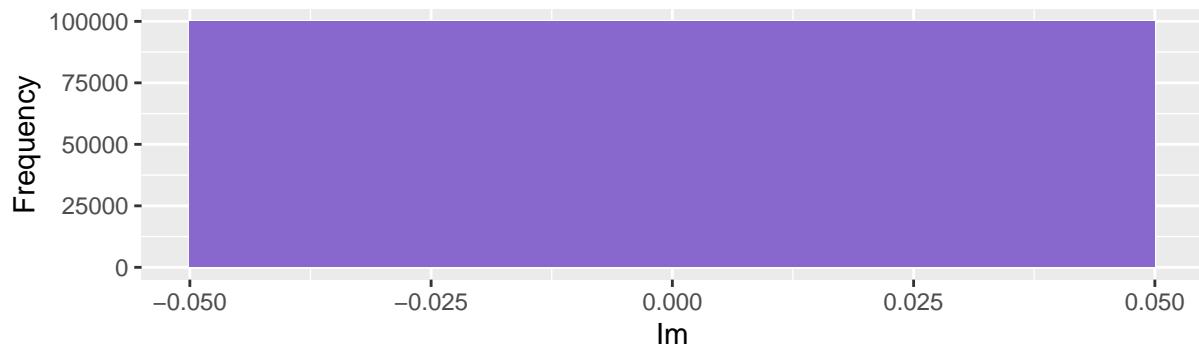
# Simulate P and look at statistics
P <- RME_beta(10, beta = 4, size = 10000)
#P %>% dispersion()
P %>% spectrum.histogram()

## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

Spectrum of a Matrix Ensemble (Re)

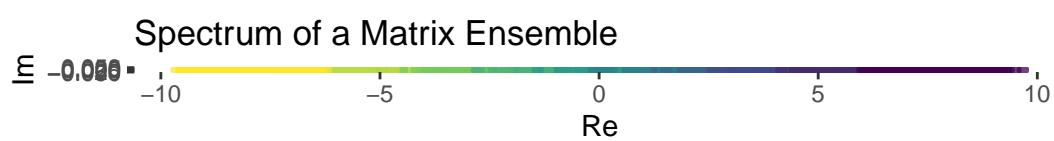


Spectrum of a Matrix Ensemble (Im)



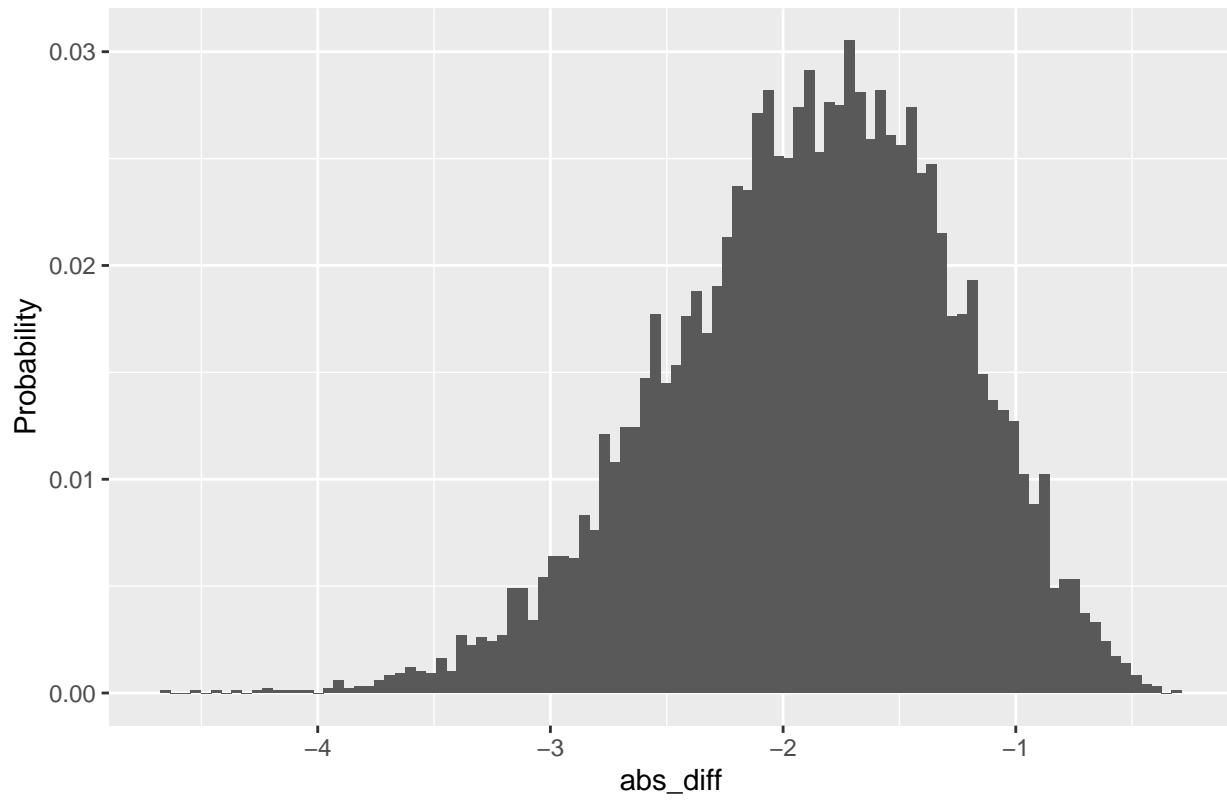
```
# Get plots
spectral_plots(P, disp_metric = "abs_diff")

## [[1]]
```



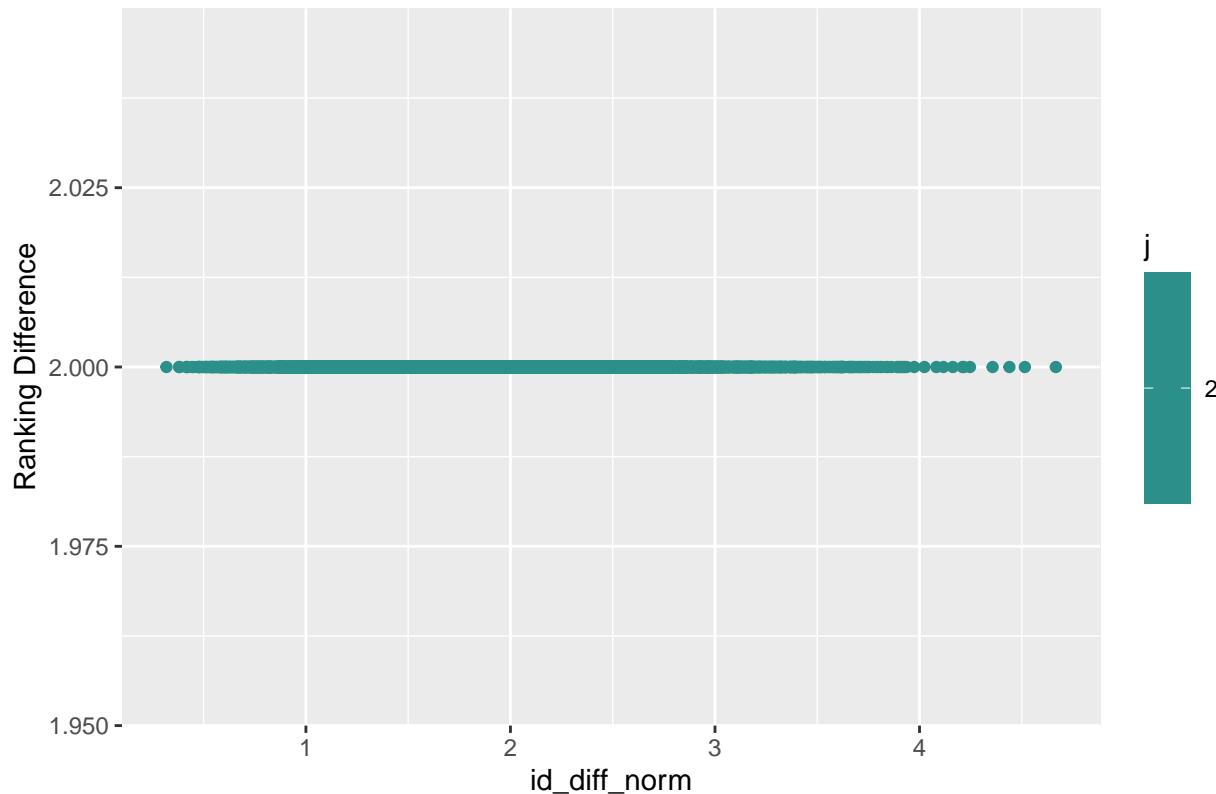
```
##
## [[2]]
```

Distribution of Eigenvalue Spacings



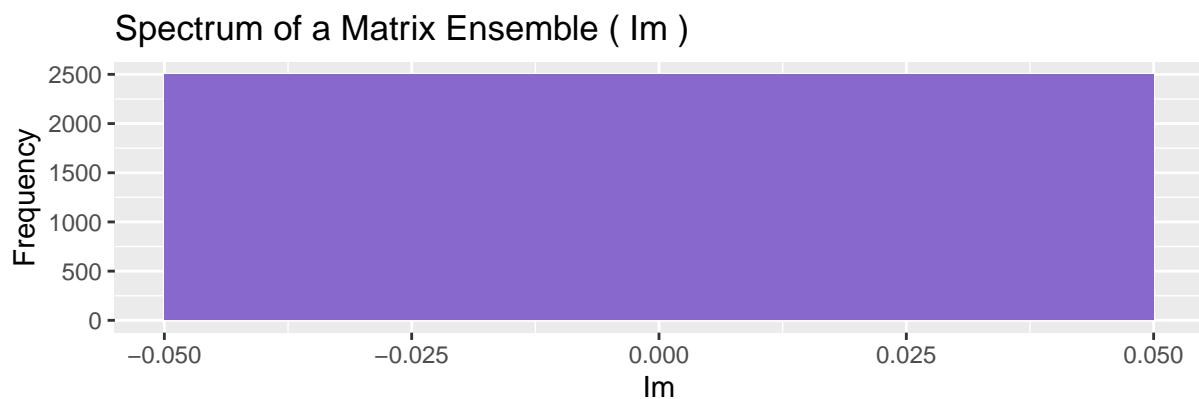
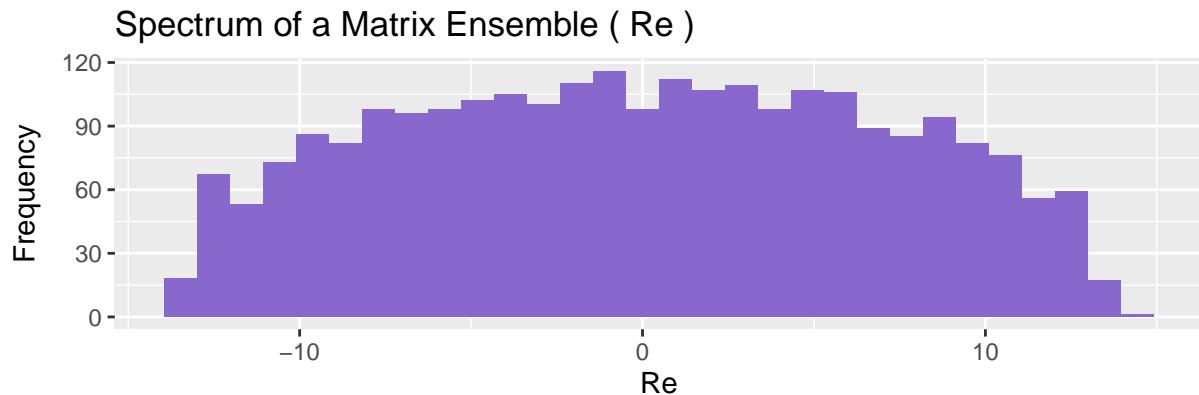
```
##  
## [[3]]
```

Distribution of Eigenvalue Spacings by Ranking Difference Class



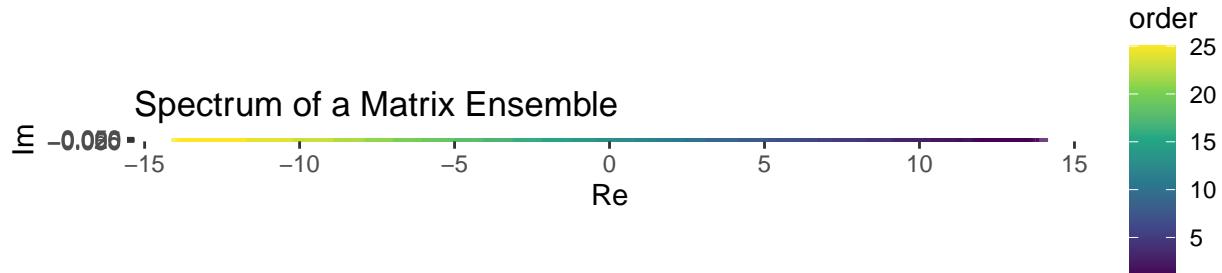
```
# Simulate P and look at statistics
P <- RME_beta(25, beta = 4, size = 100)
#P %>% dispersion()
P %>% spectrum.histogram()

## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



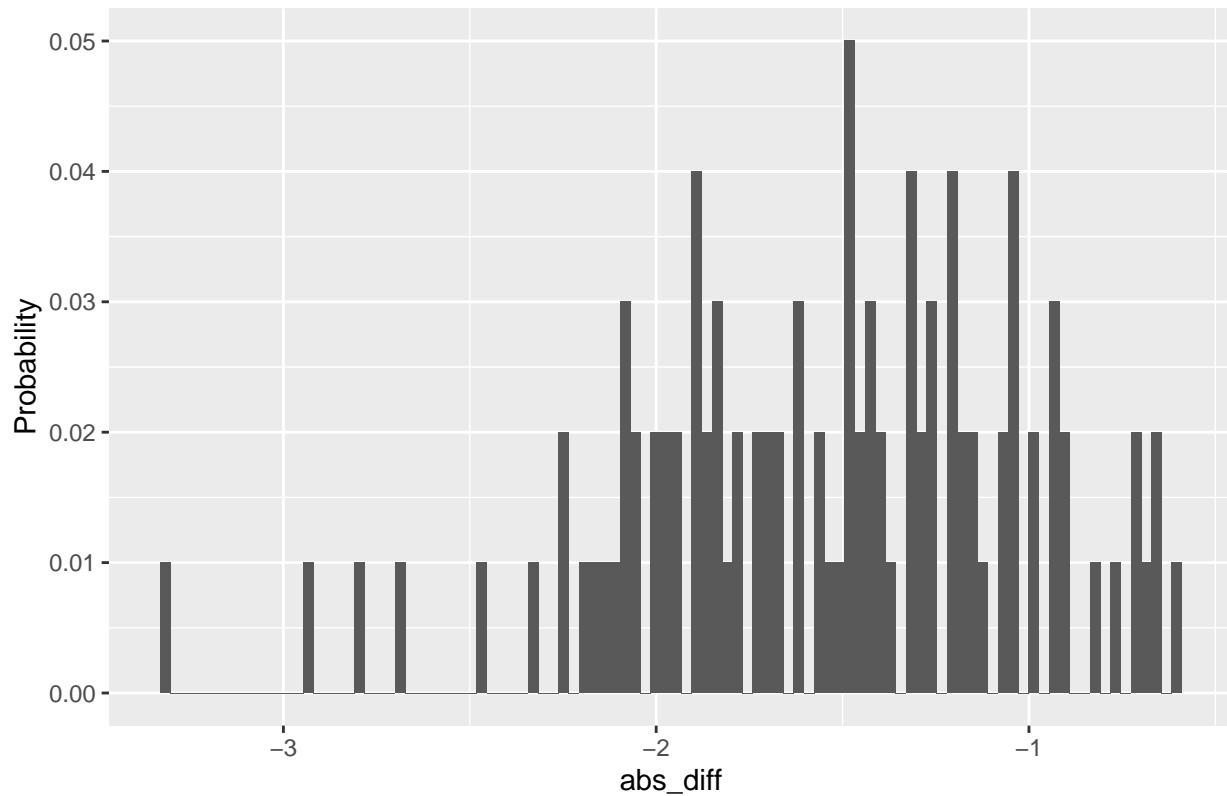
```
# Get plots
spectral_plots(P, disp_metric = "abs_diff")

## [[1]]
```



```
##
## [[2]]
```

Distribution of Eigenvalue Spacings



```
##  
## [[3]]
```

Distribution of Eigenvalue Spacings by Ranking Difference Class

