

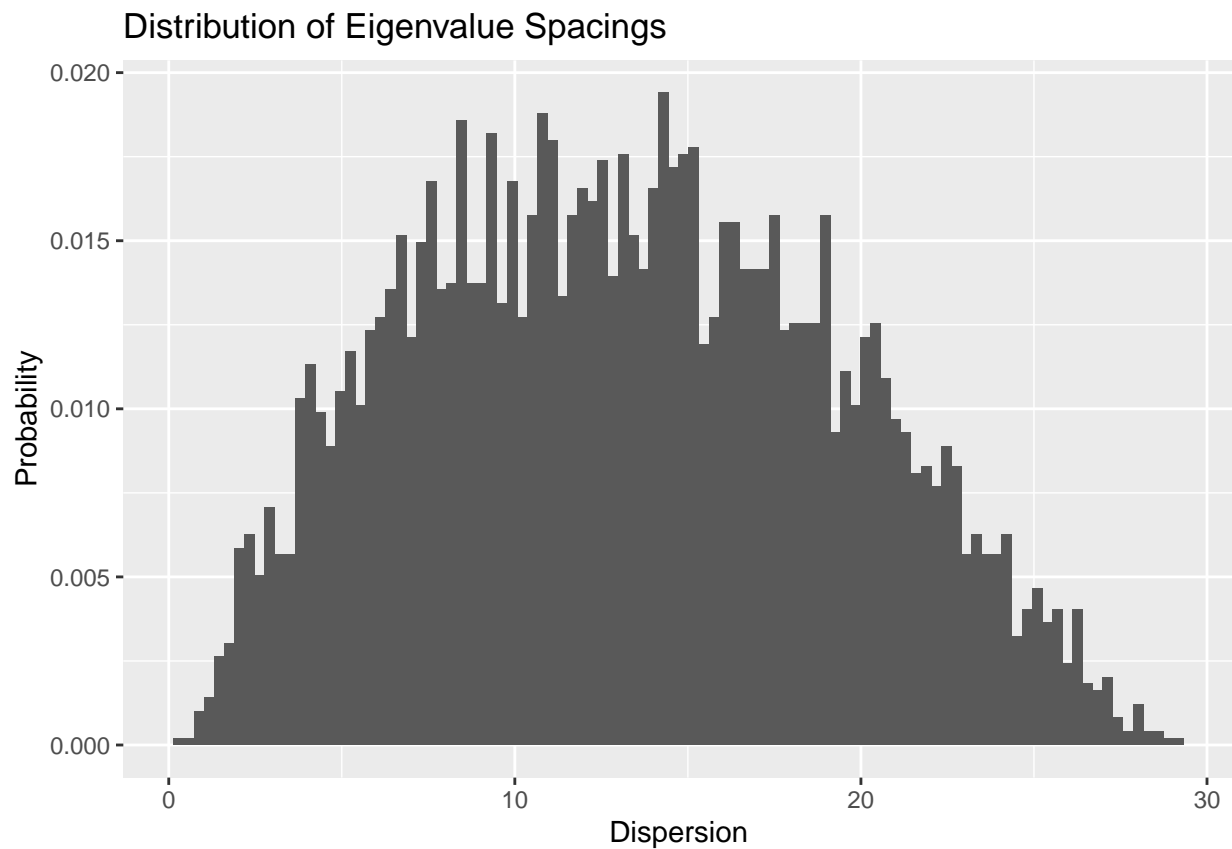
# Eigen-Dev

Ali Taqi

2/23/2021

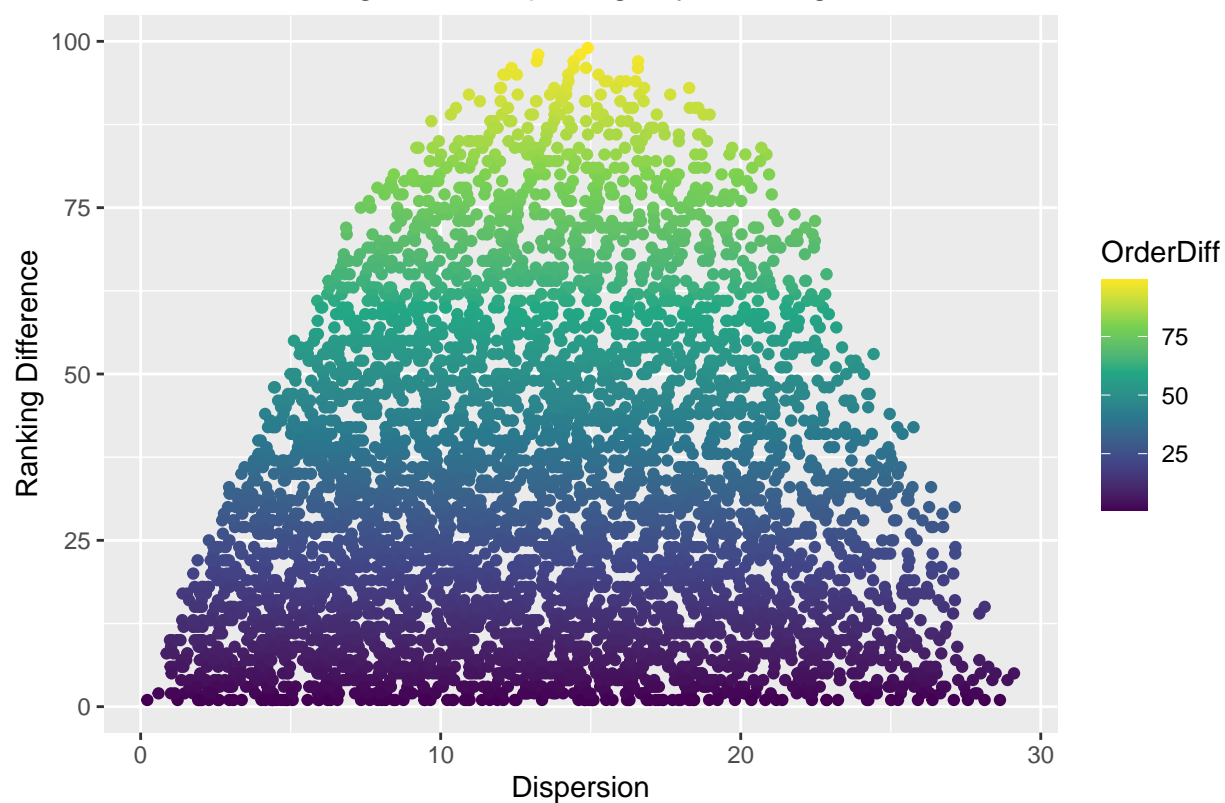
## Standard Normal, Different Norms (Standard and Power-4)

```
P <- RM_norm(100, cplx = T)
P %>% dispersion.histogram()
```



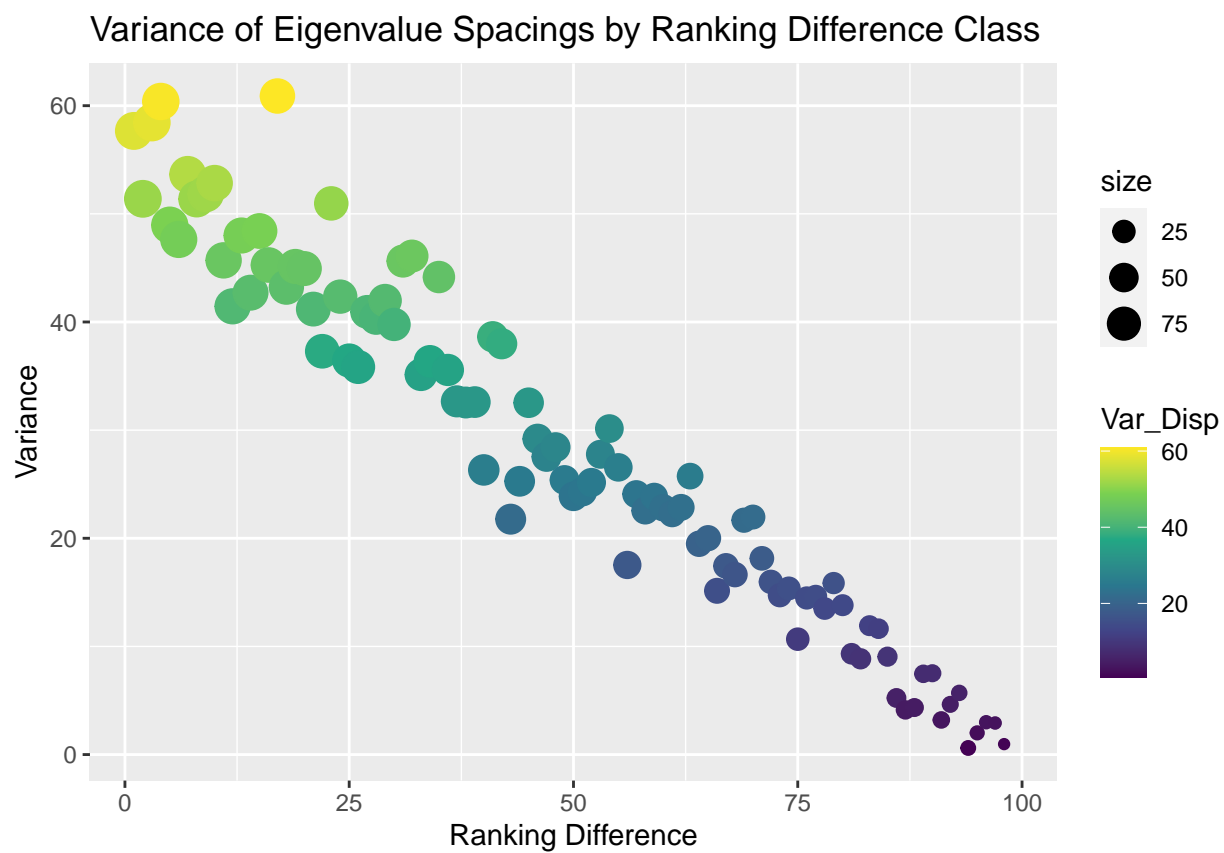
```
P %>% dispersion.scatterplot()
```

Distribution of Eigenvalue Spacings by Ranking Difference Class



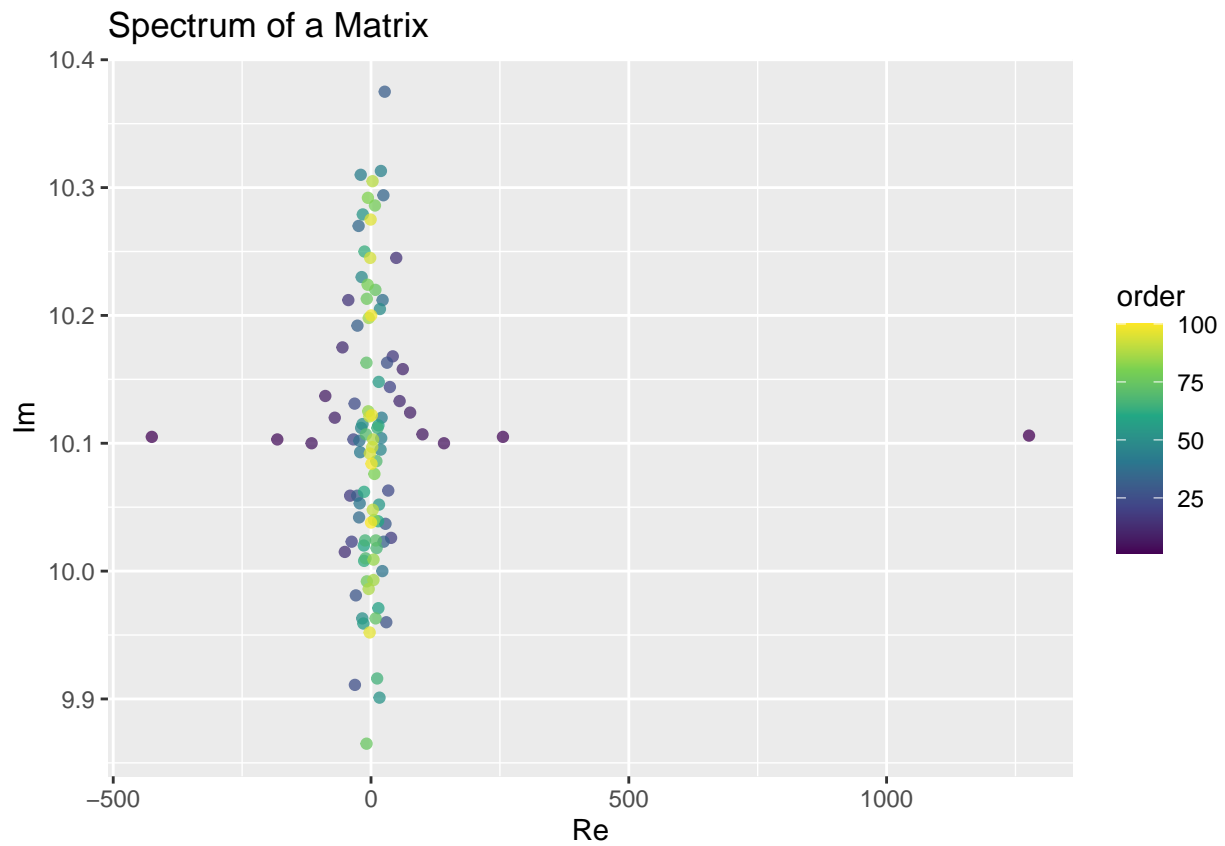
```
P %>% dispersion.varplot()
```

```
## Warning: Removed 1 rows containing missing values (geom_point).
```



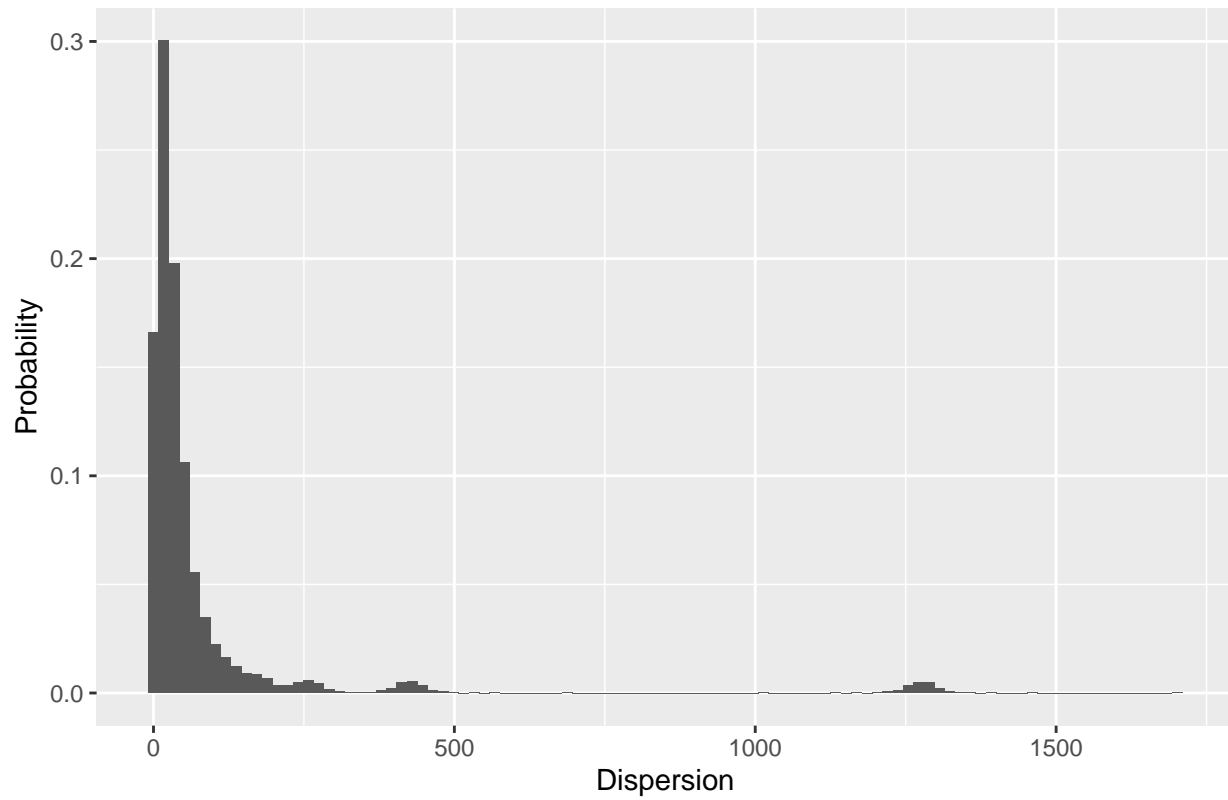
## 100 x 100; N(10,1) Complex Hermitian

```
P <- RM_norm(100, mean = 10, cplx = T, herm = T)
P %>% spectrum.scatterplot()
```



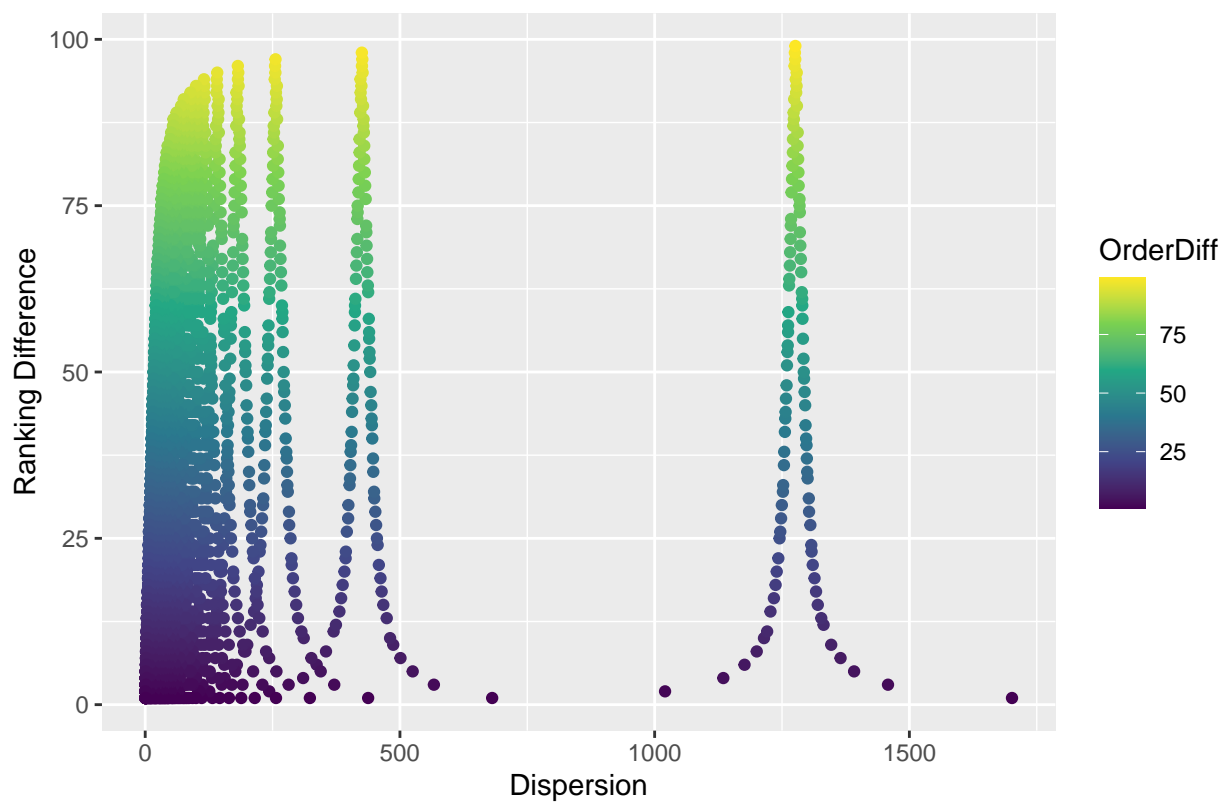
```
P %>% dispersion.histogram()
```

Distribution of Eigenvalue Spacings



```
P %>% dispersion.scatterplot()
```

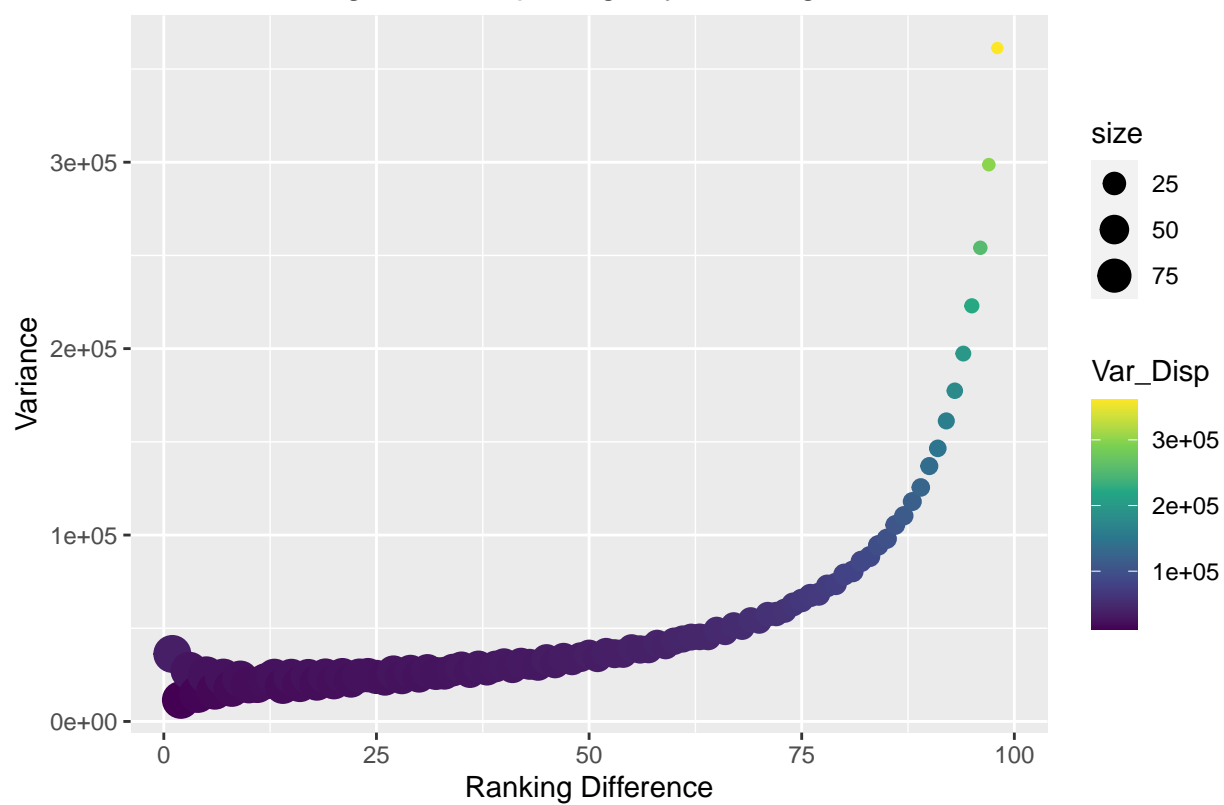
Distribution of Eigenvalue Spacings by Ranking Difference Class



```
P %>% dispersion.varplot()
```

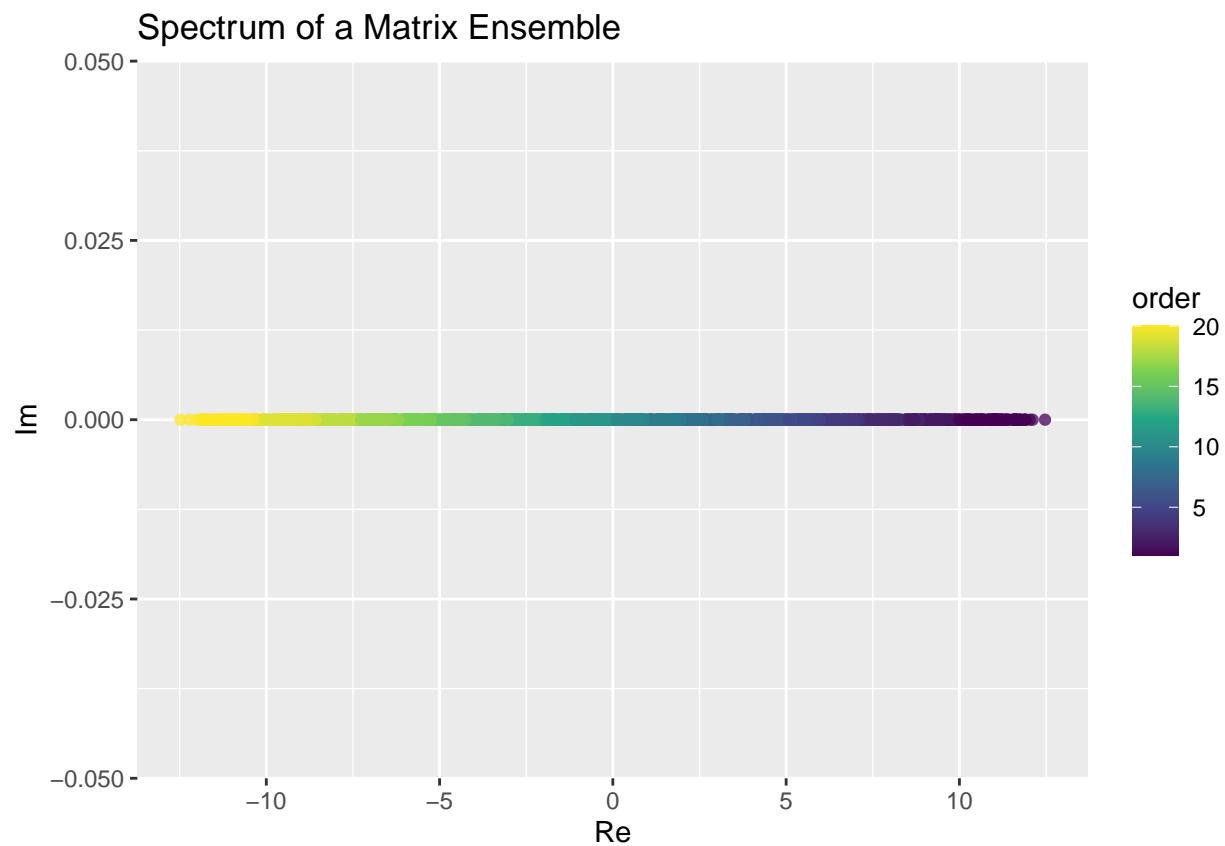
```
## Warning: Removed 1 rows containing missing values (geom_point).
```

Variance of Eigenvalue Spacings by Ranking Difference Class



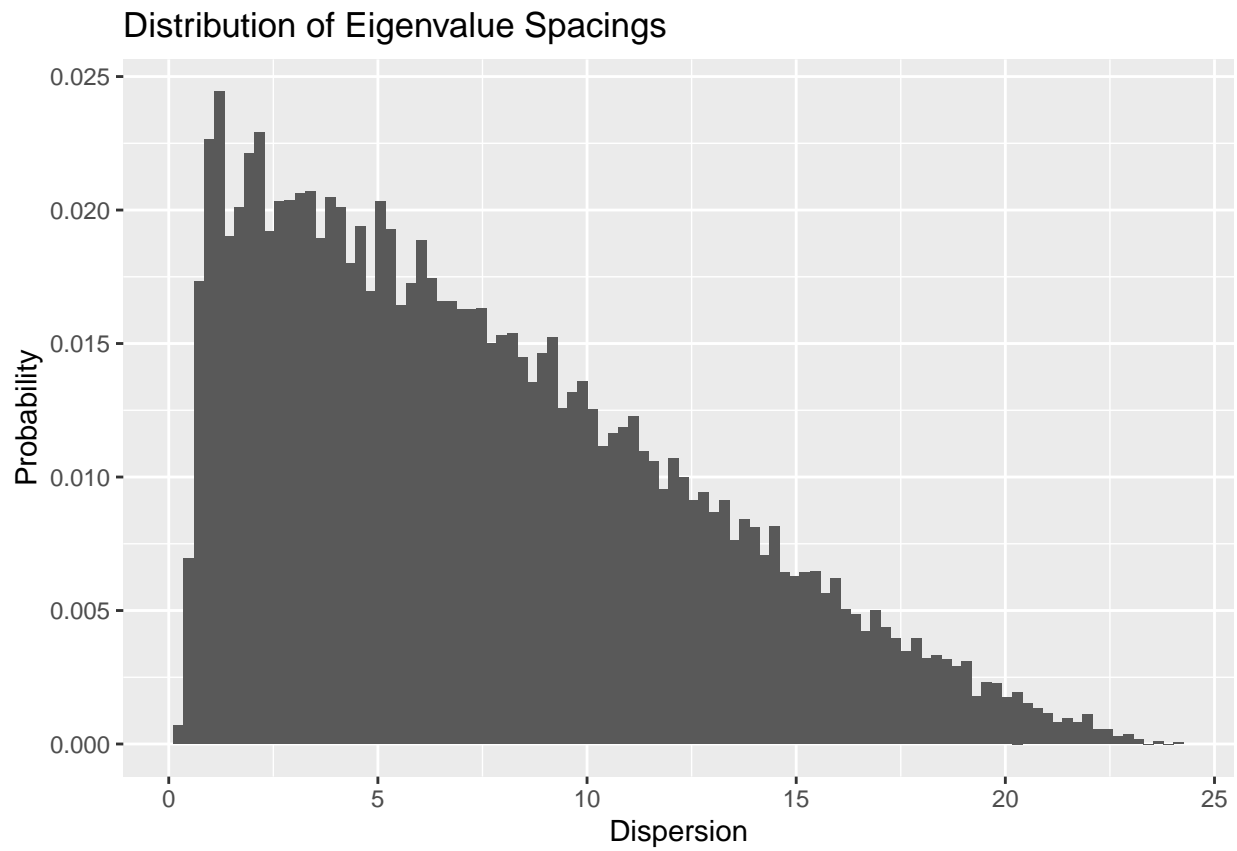
## Beta = 4 (Standard Norm)

```
ens <- RME_beta(N = 20, beta = 4, size = 100)
ens %>% spectrum.scatterplot()
```



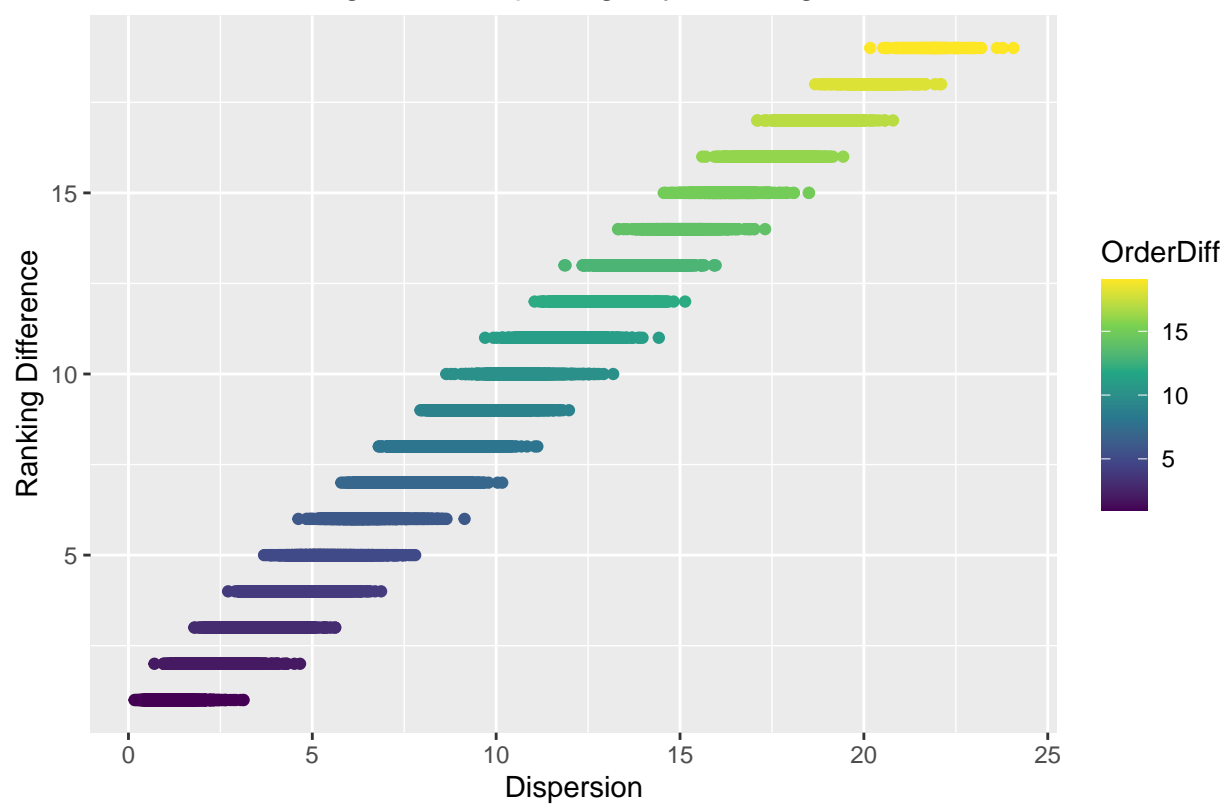
```
ens %>% dispersion.histogram()
```



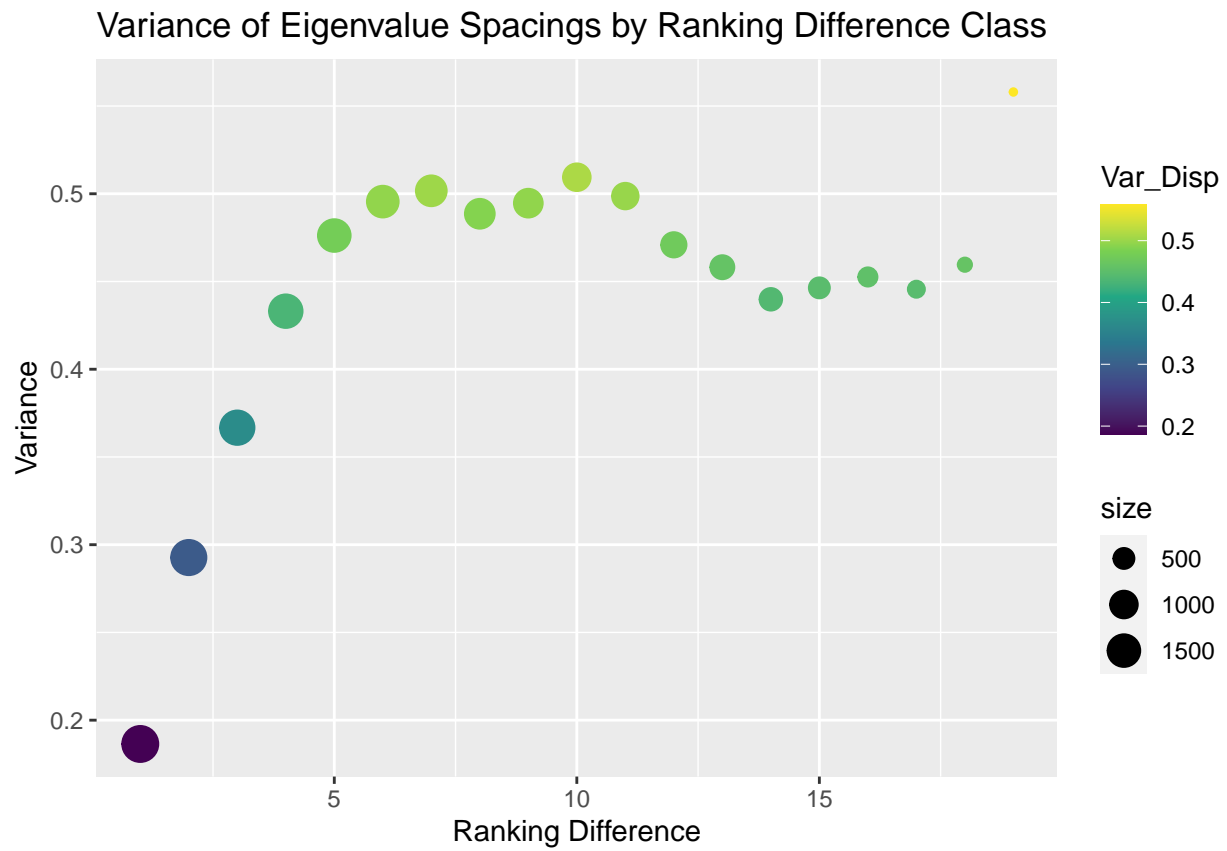


```
ens %>% dispersion.scatterplot()
```

Distribution of Eigenvalue Spacings by Ranking Difference Class

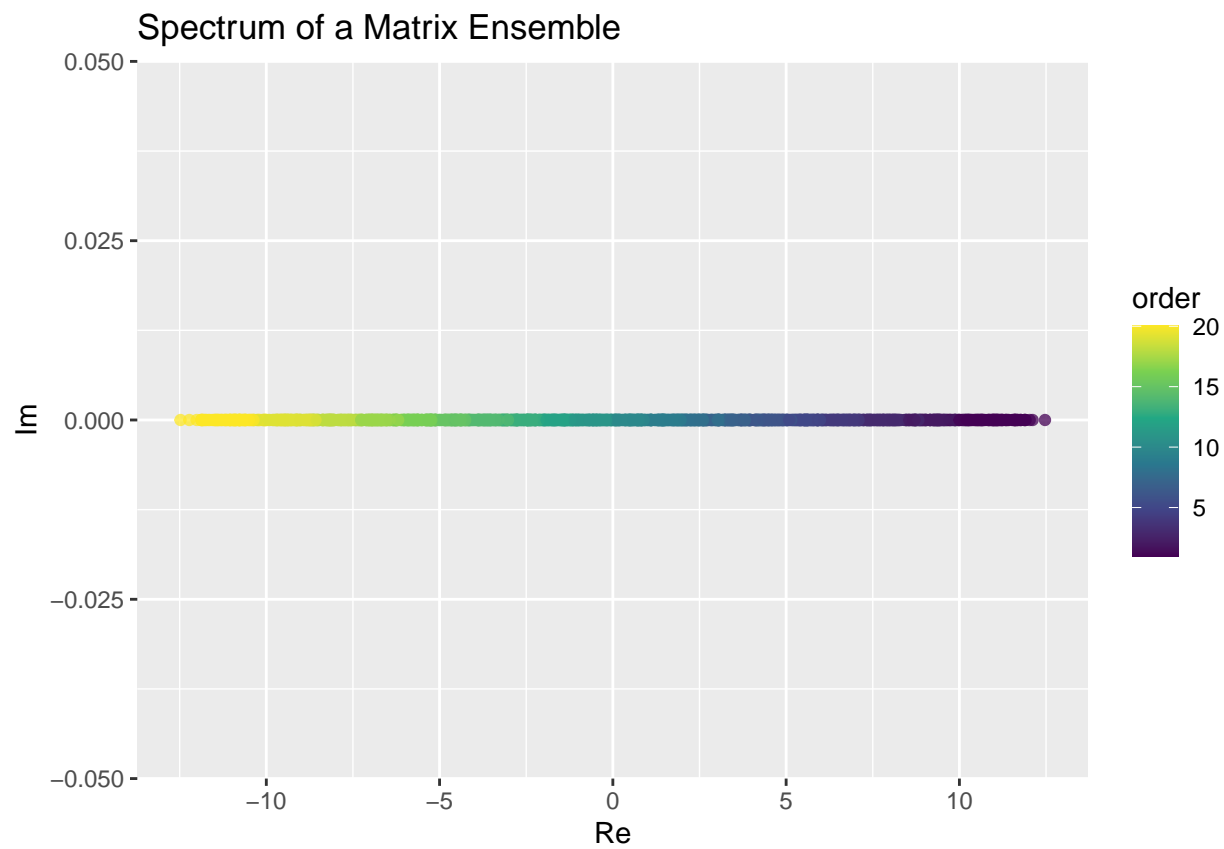


```
ens %>% dispersion.varplot()
```

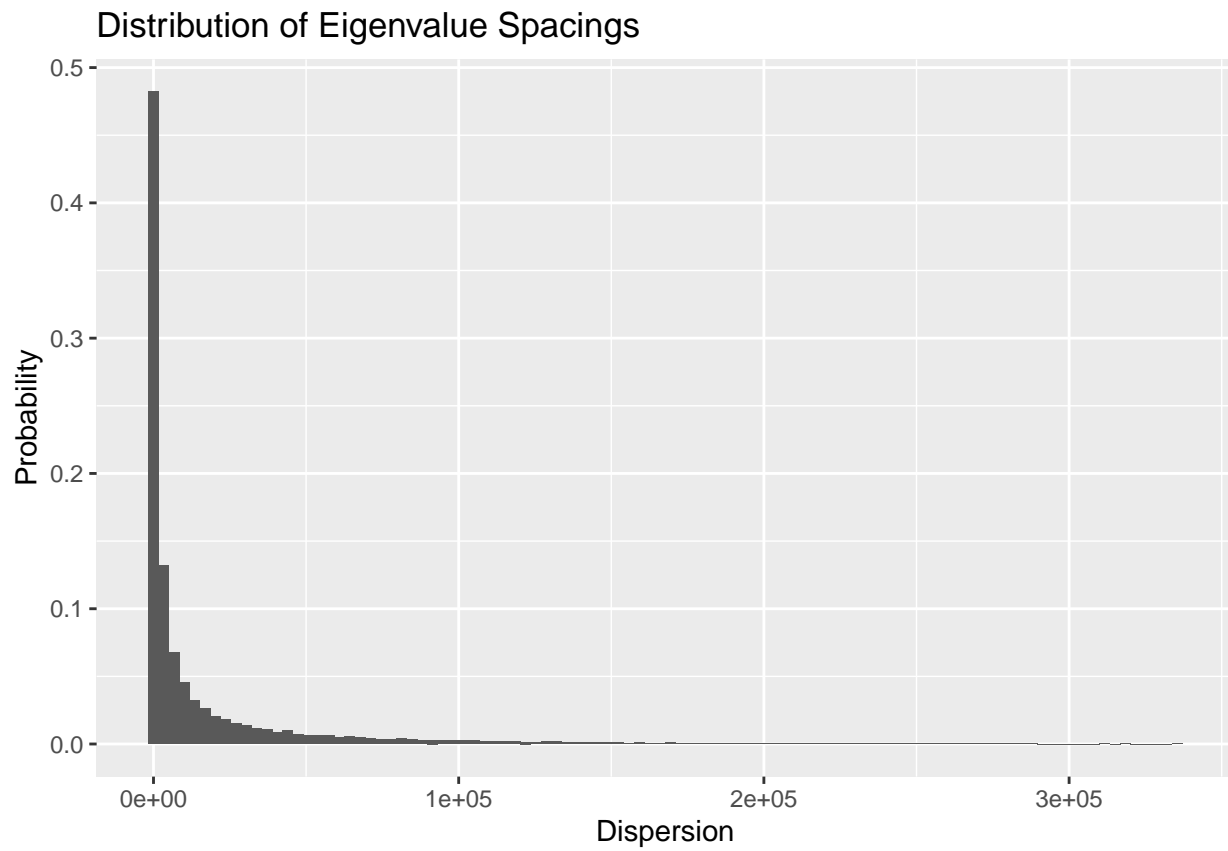


**Beta = 4 (Power-4 Norm)**

```
ens %>% spectrum.scatterplot()
```

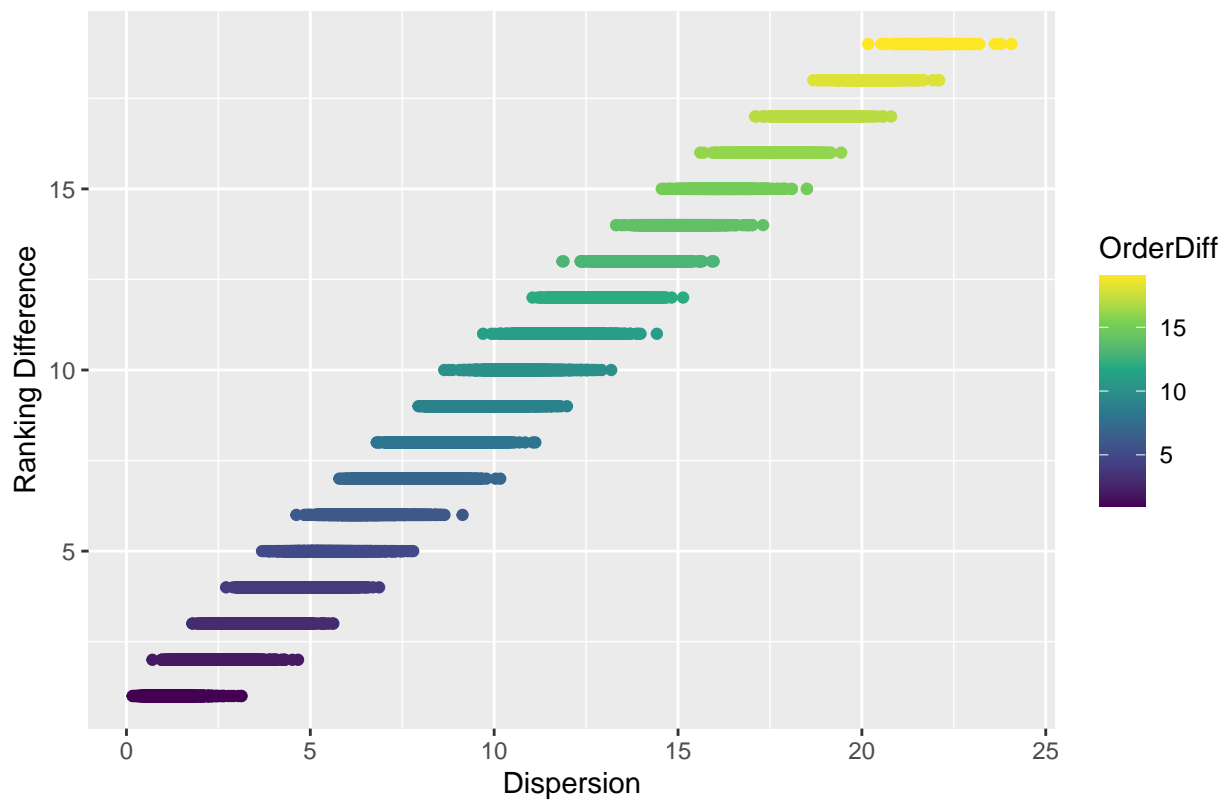


```
ens %>% dispersion.histogram(norm = 4)
```

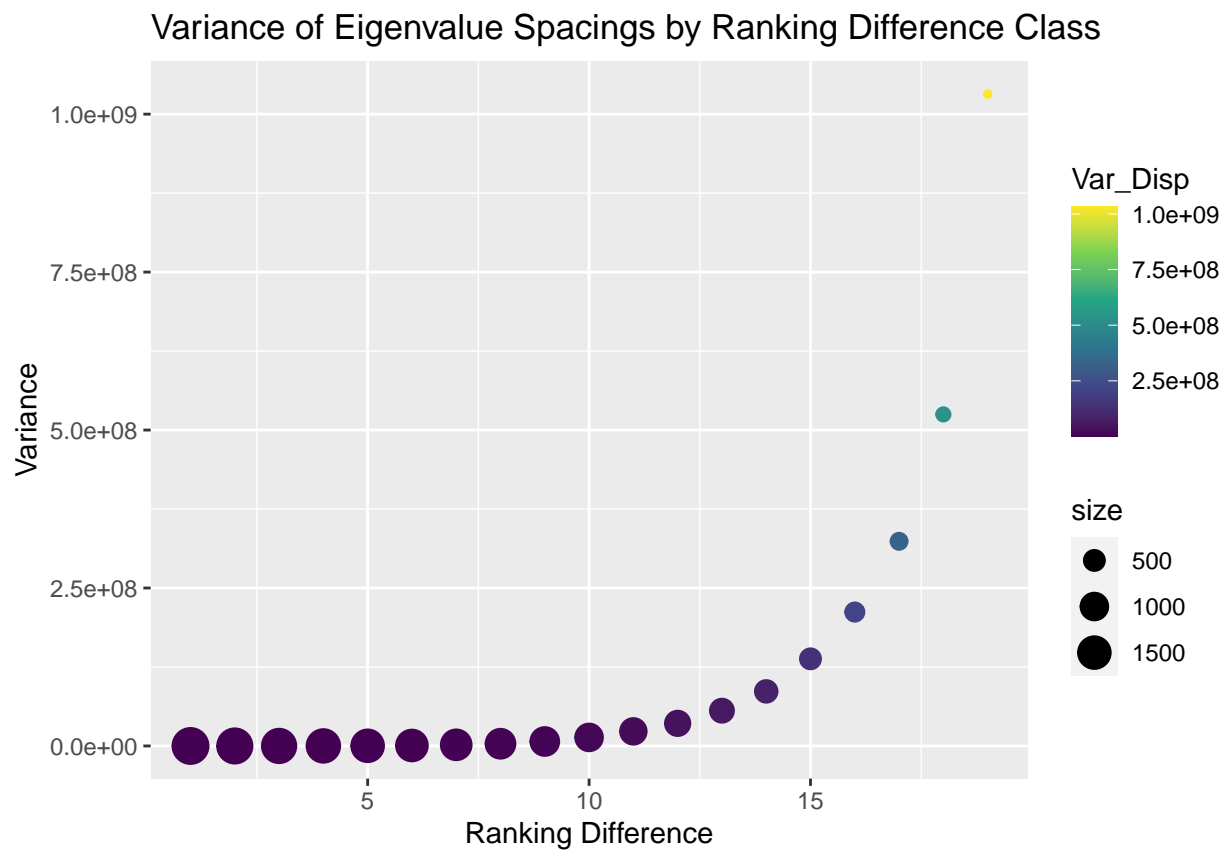


```
ens %>% dispersion.scatterplot()
```

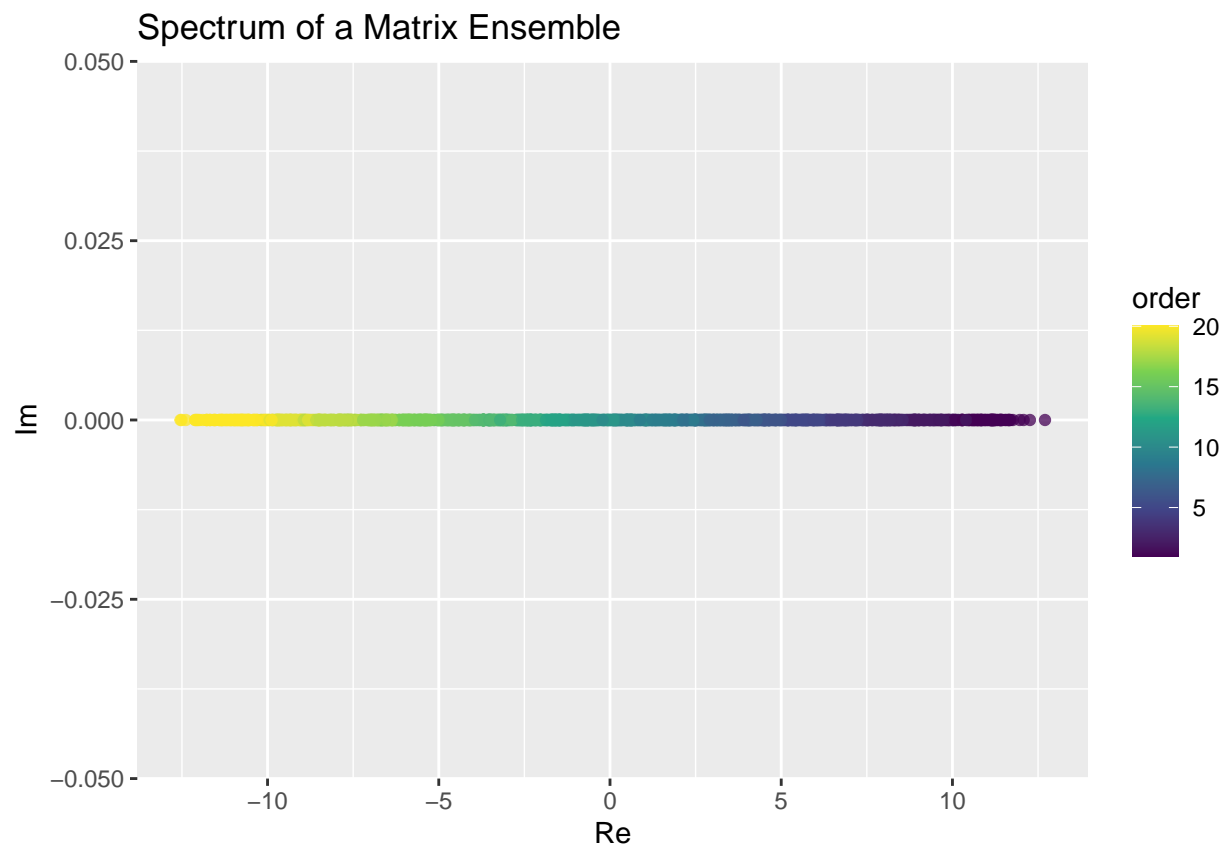
Distribution of Eigenvalue Spacings by Ranking Difference Class



```
ens %>% dispersion.varplot(norm = 4)
```

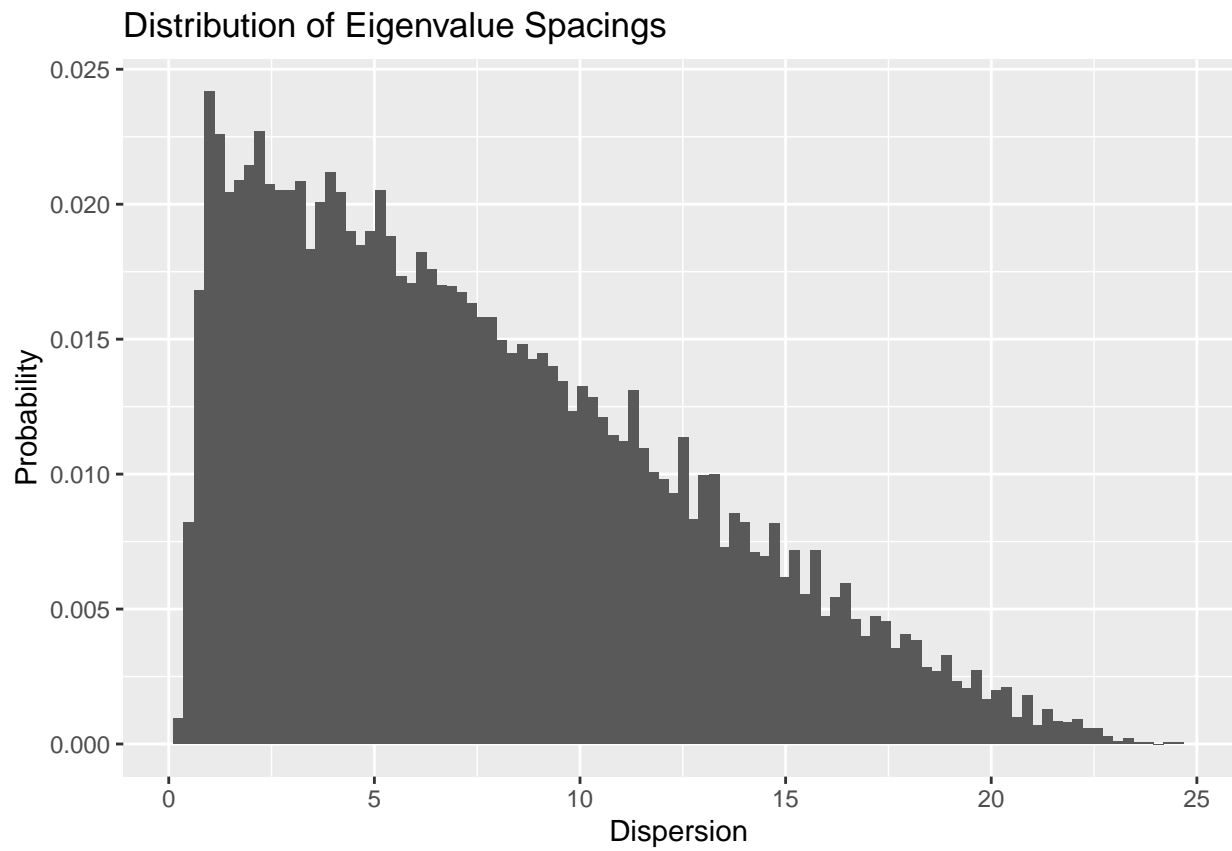


```
ens <- RME_beta(N = 20, beta = 4, size = 100)
ens %>% spectrum.scatterplot()
```



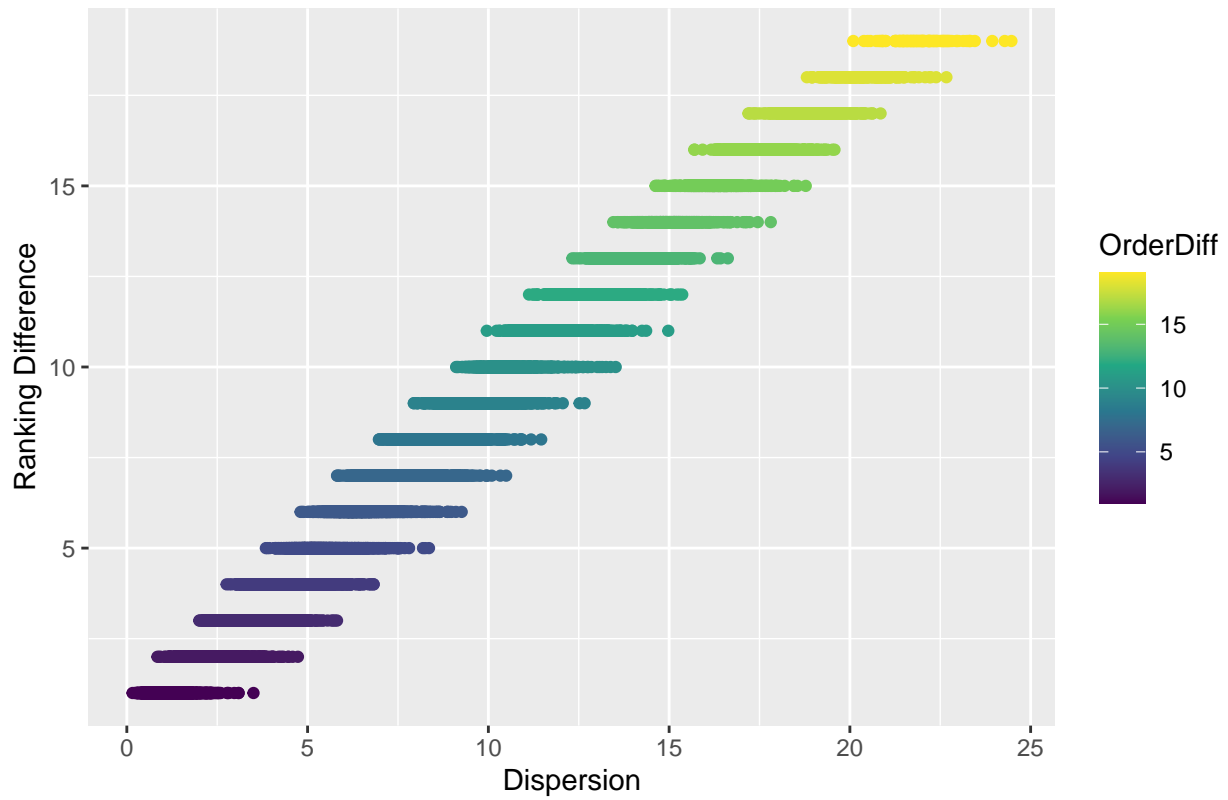
```
ens %>% dispersion.histogram()
```





```
ens %>% dispersion.scatterplot()
```

Distribution of Eigenvalue Spacings by Ranking Difference Class



```
ens %>% dispersion.varplot()
```

