Random Matrix Analysis

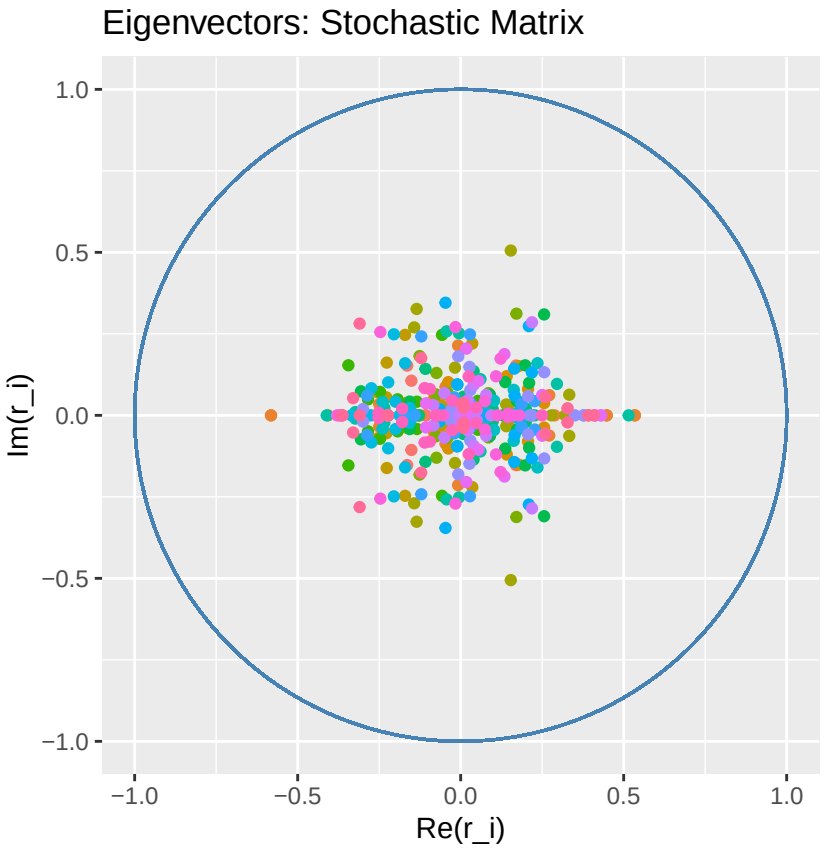
Ali Taqi

```
bool_plot <- T
bool_loud <- F
M <- 20
```

Eigenmetrics of Various Random Matrices

Stochastic Matrix

```
P <- RM_stoch(M, sparsity = T)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Stochastic")}
```

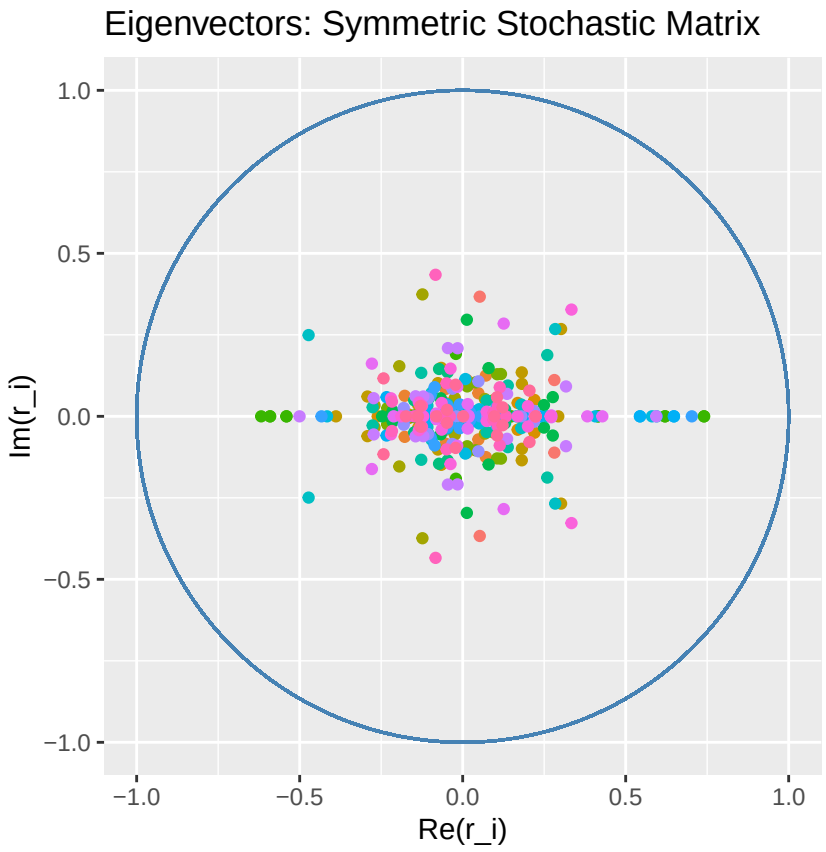



```
eigen_summary(eigen_frame(P))
```

```
## [1] "Proportion of real-valued rows: 0"
```

Symmetric Stochastic Matrix

```
set.seed(23)
P <- RM_stoch(M, symm = T, sparsity = T)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Symmetric Stochastic")}
```

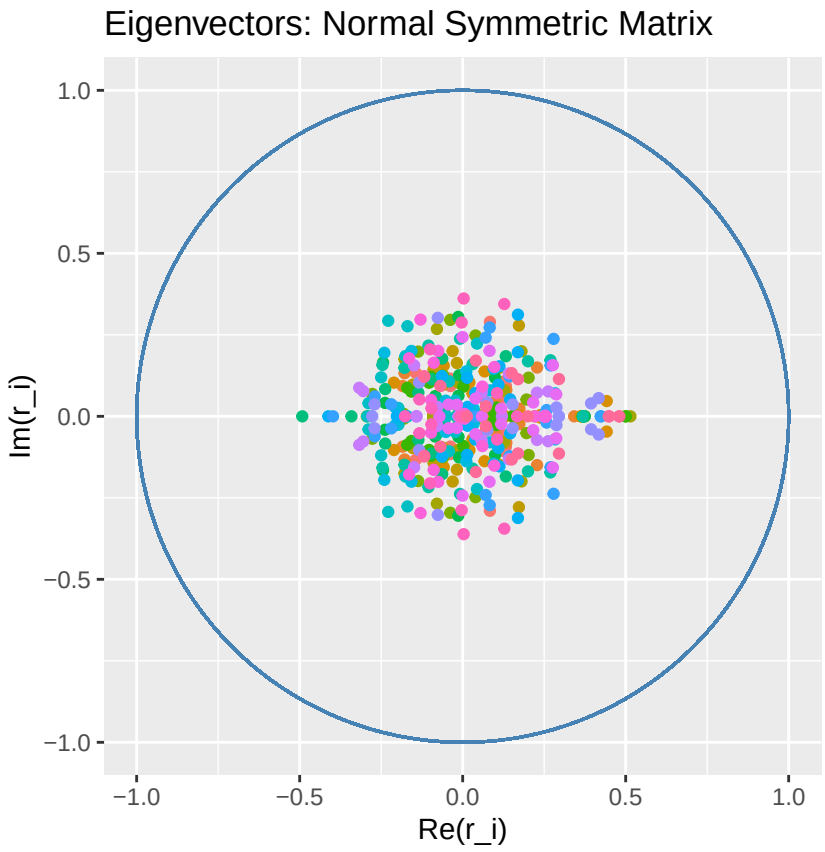



```
eigen_summary(eigen_frame(P))
```

```
## [1] "Proportion of real-valued rows: 0"
```

Normal Symmetric Matrix

```
set.seed(23)
P <- RM_normal(M, normal_args = c(0,1), symm = T)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Normal Symmetric")}
```

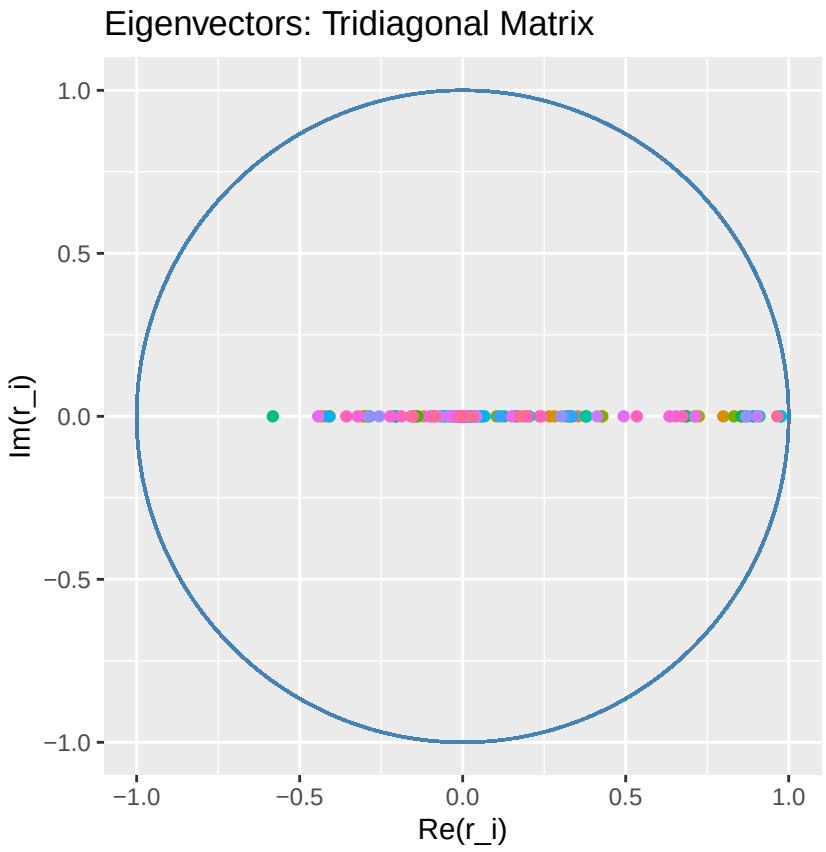



```
eigen_summary(eigen_frame(P))
```

```
## [1] "Proportion of real-valued rows: 0"
```

Tridiagonal Matrix

```
set.seed(23)
P <- RM_trid(M)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Tridiagonal")}
```




```
eigen_summary(eigen_frame(P))
```

```
## [1] "Proportion of real-valued rows: 1"
```