Random Matrix Analysis

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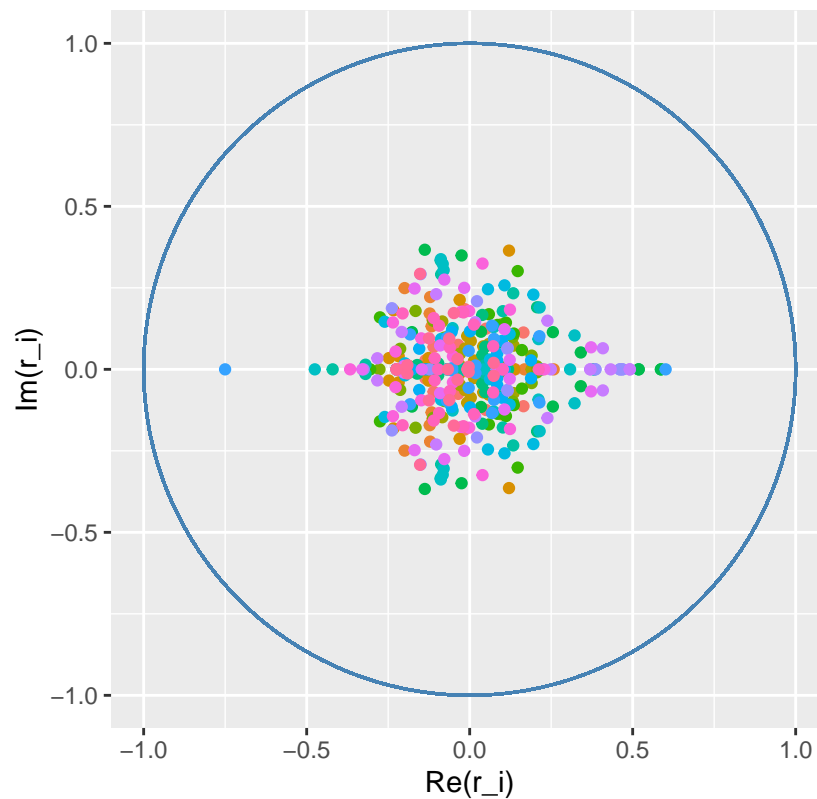
```
bool_plot <- T
bool_loud <- F
M <- 20
```

Eigenmetrics of Various Random Matrices

Stochastic Matrix

```
P <- rand_M_stoch(M, row_fn = r_zeros)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Stochastic")}
```
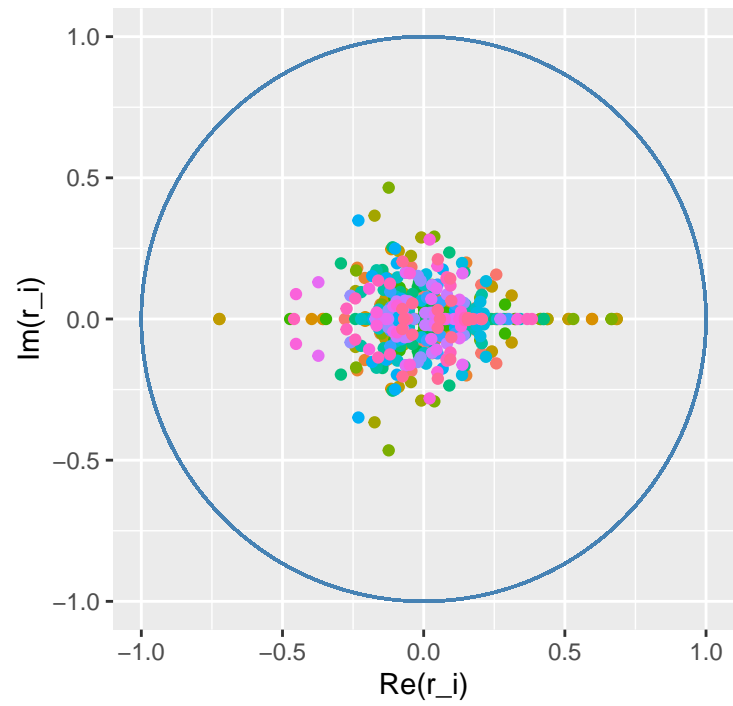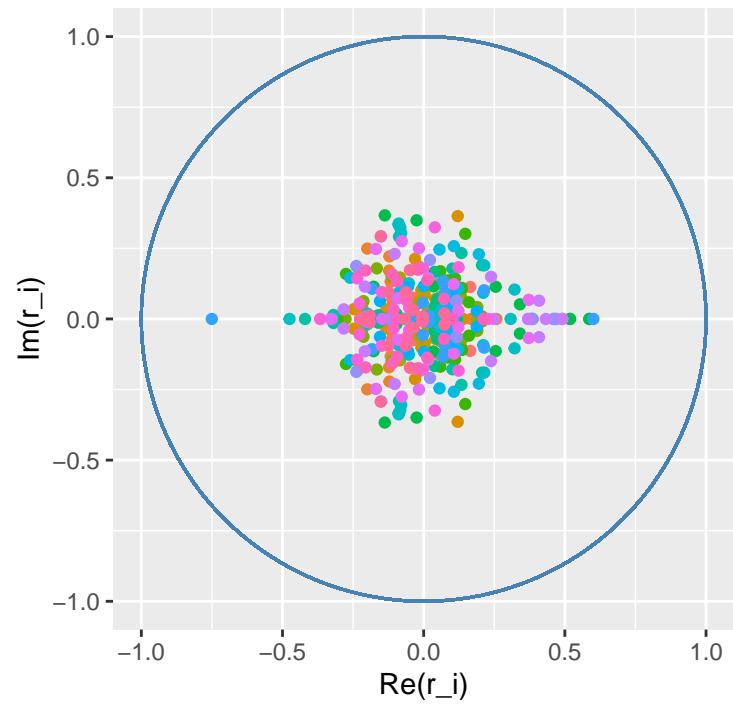
Eigenvectors: Stochastic Matrix


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

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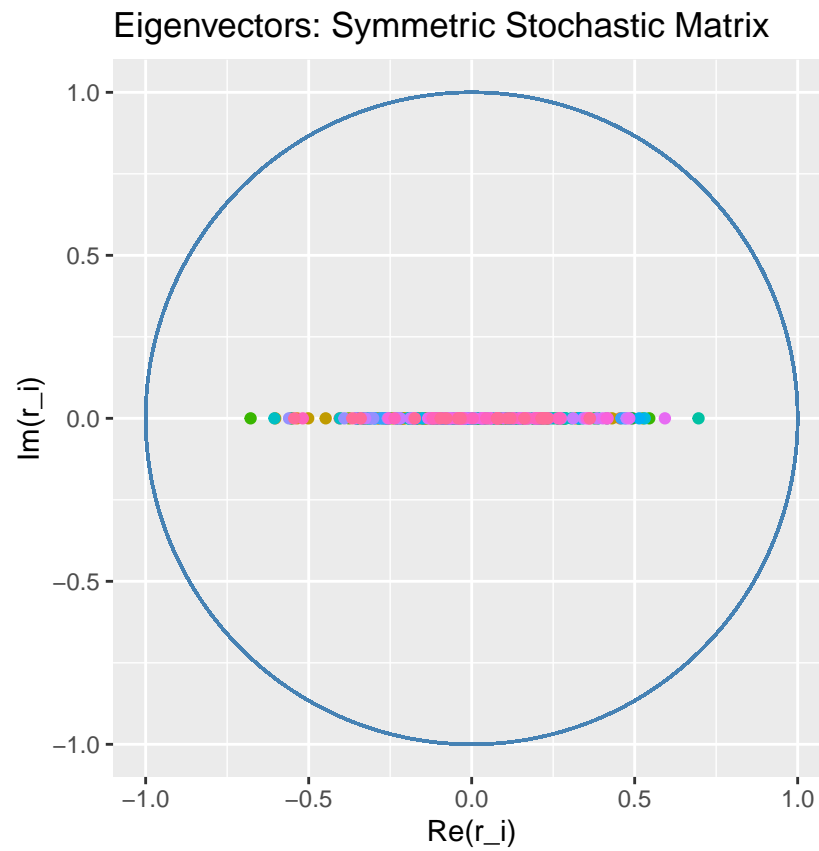
Eigenvectors: Transpose Matrix

Eigenvectors: Original Matrix
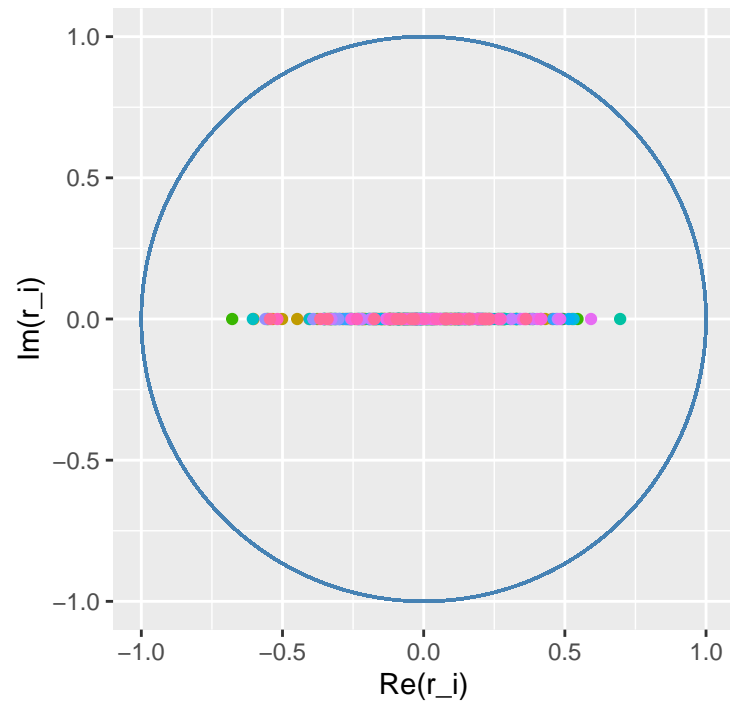
Symmetric Stochastic Matrix

```
set.seed(23)
P <- rand_M_symm_stoch(M, row_fn = r_zeros)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Symmetric Stochastic")}
```

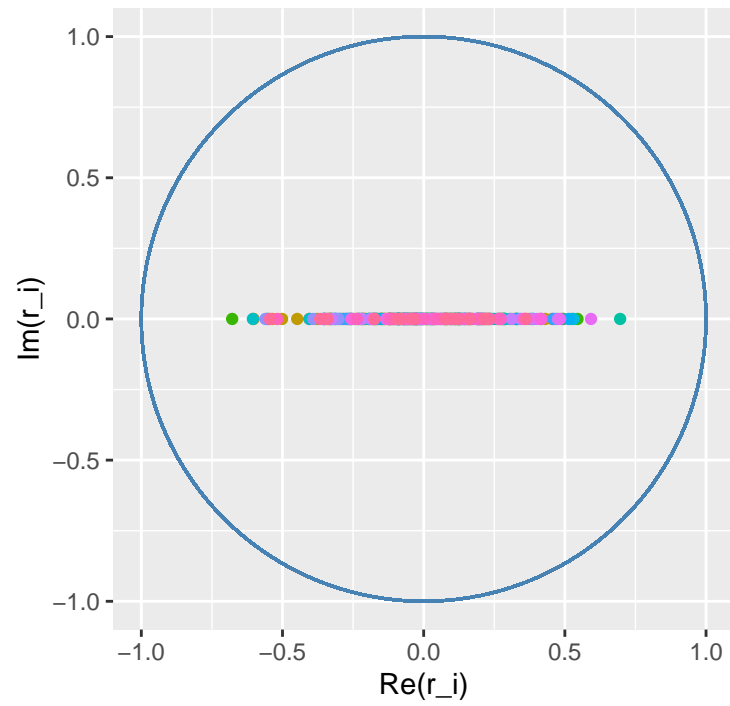### Eigenvectors: Symmetric Stochastic Matrix


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

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

Eigenvectors: Transpose Matrix
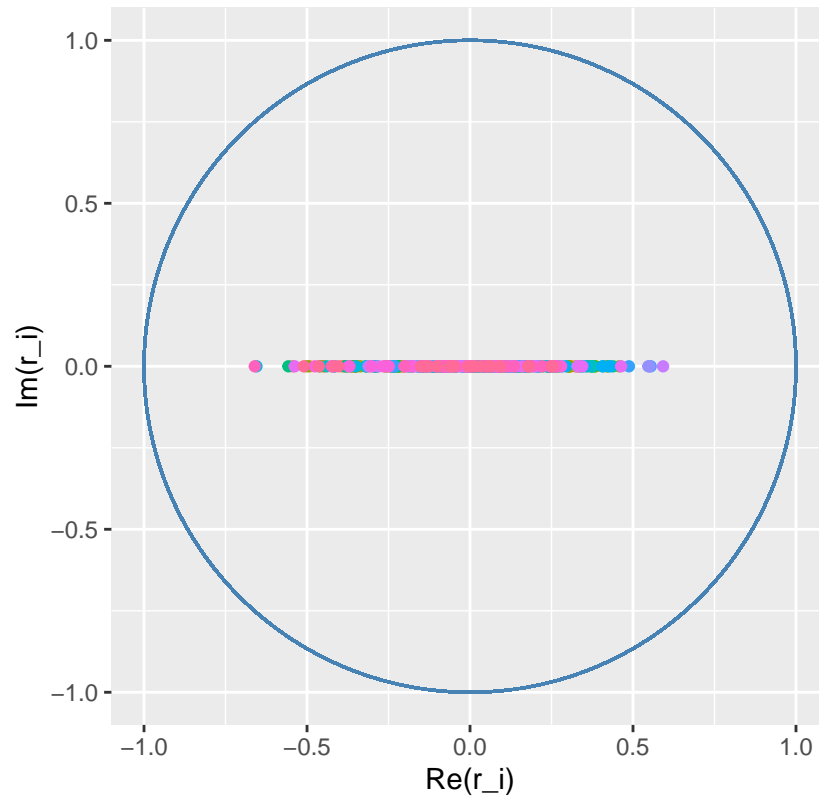

Eigenvectors: Original Matrix

Normal Symmetric Matrix

```r
set.seed(23)
P <- rand_M_symm_norm(M, mu = 0, sd = 1)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Normal Symmetric (Mu = 0)")}
```


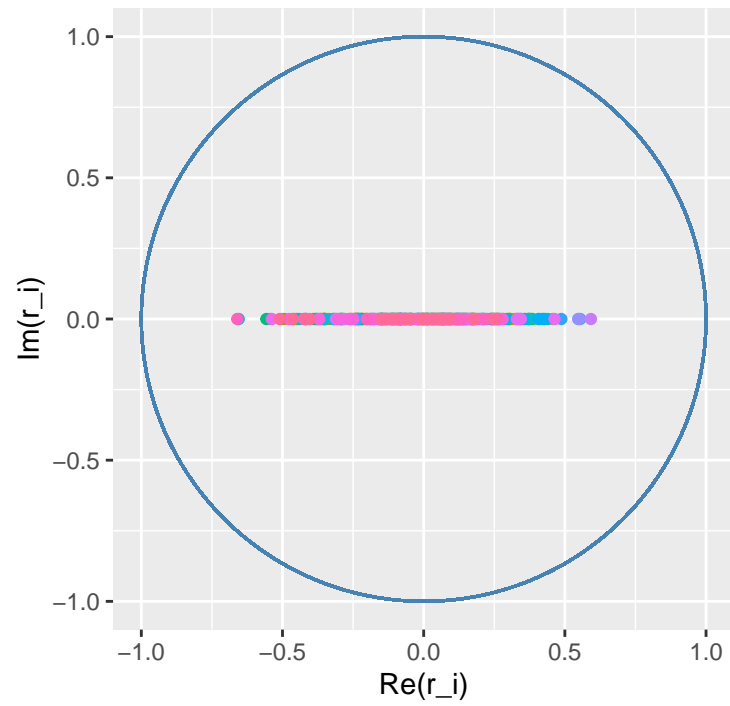Eigenvectors: Normal Symmetric (Mu = 0) Matrix
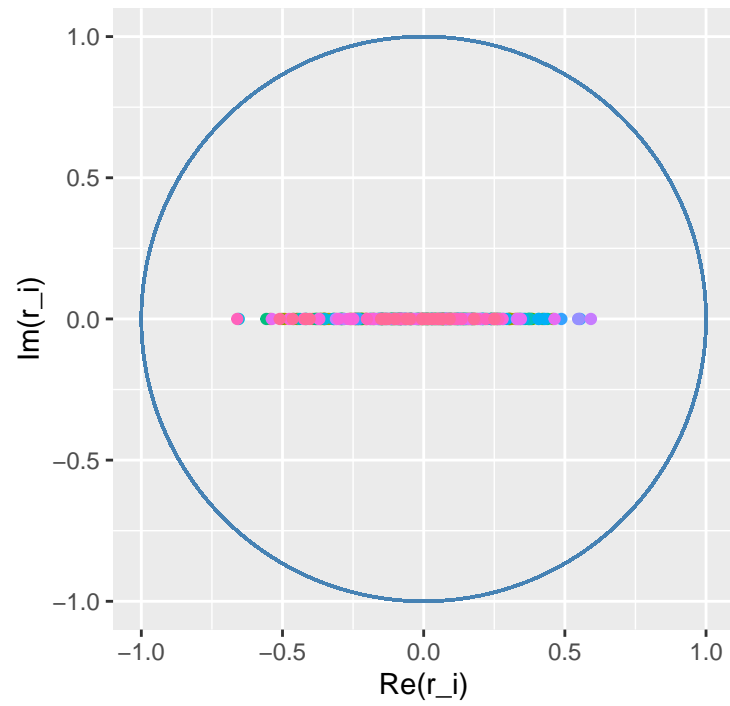
```r
eigen_summary(eigen_frame(P))
```

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

Eigenvectors: Transpose Matrix
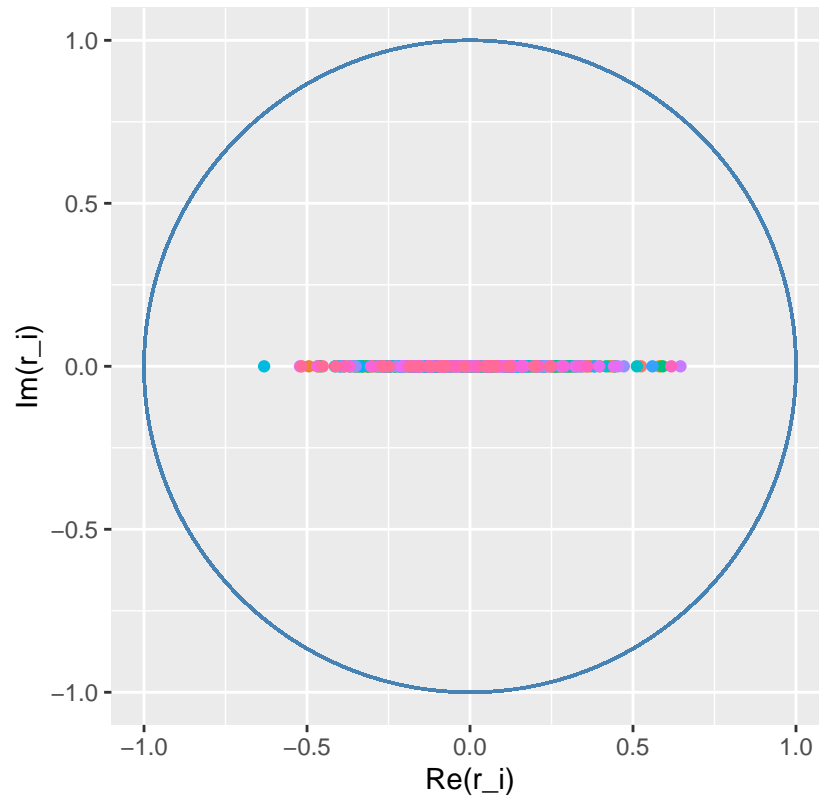

Eigenvectors: Original Matrix

Normal Symmetric Matrix

```r
set.seed(23)
P <- rand_M_symm_norm(M, mu = 1, sd = 2)
if(bool_plot){eigen_plot(P, loud = bool_loud, "Normal Symmetric (Mu = 1)")}
```
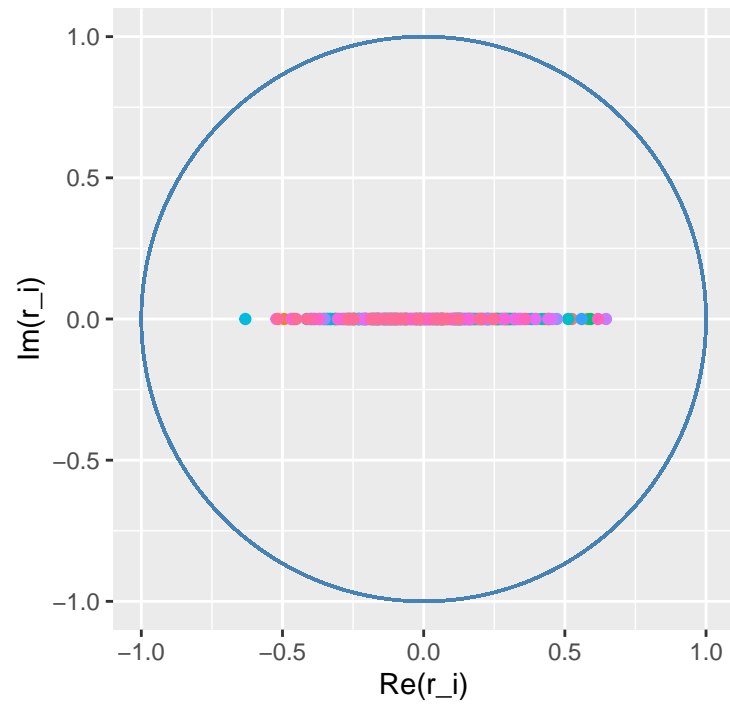
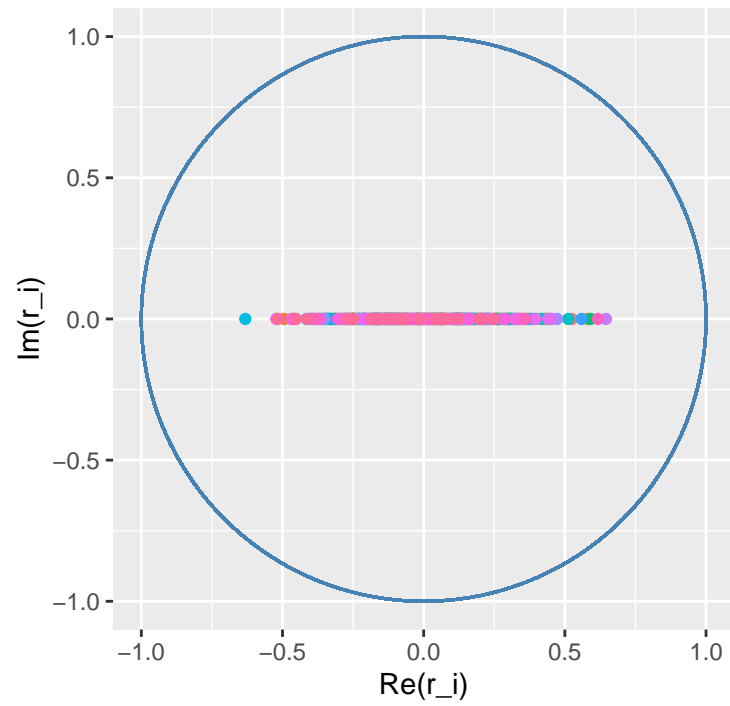### Eigenvectors: Normal Symmetric (Mu = 1) Matrix


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

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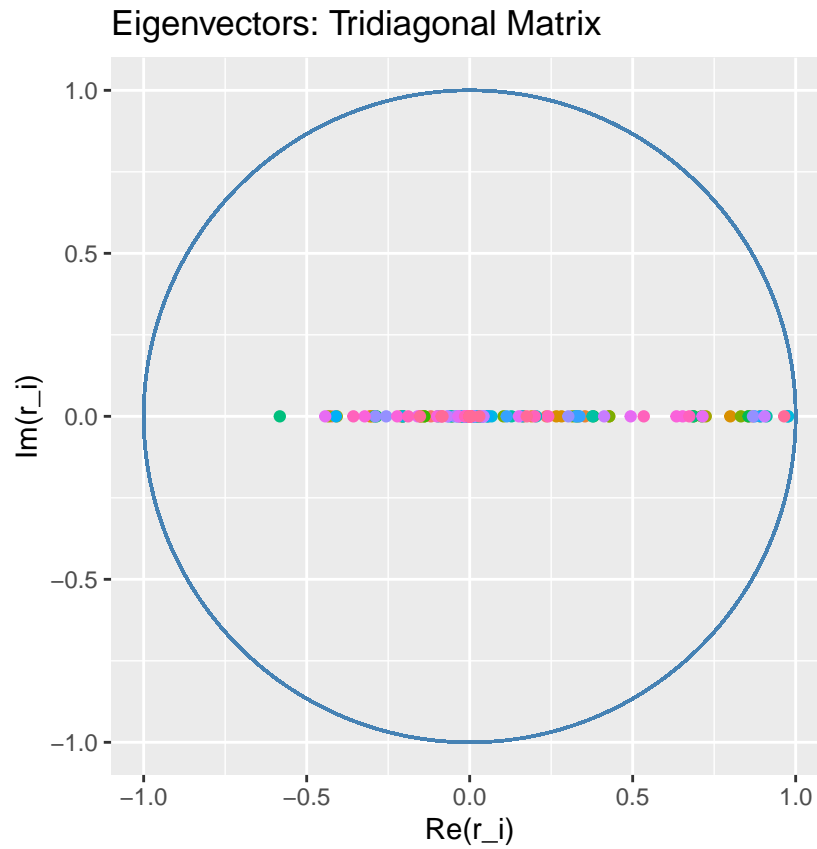```

Eigenvectors: Transpose Matrix
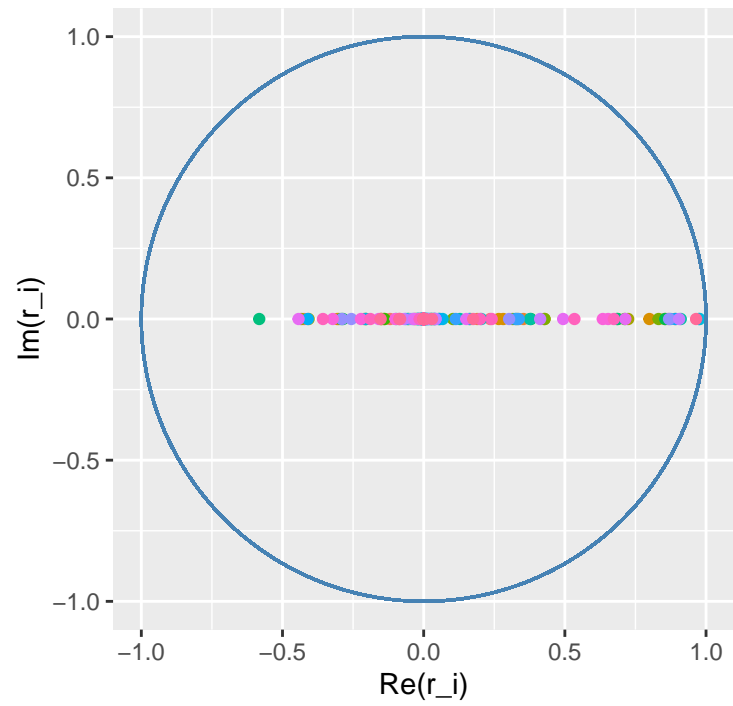


Eigenvectors: Original Matrix

## Tridiagonal Matrix

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


Eigenvectors: Tridiagonal Matrix

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

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

Eigenvectors: Transpose Matrix

Eigenvectors: Original Matrix