Code Examples

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4/14/2021

Chapter 1

Section 1.3

```
set.seed(23)
P <- RM_norm(N = 4, mean = 0, sd = 1)
P
```

```
##            [,1]       [,2]        [,3]       [,4]
## [1,]  0.1932123  0.9966051  0.04543718 -0.2886886
## [2,] -0.4346821  1.1074905  1.57577959  0.4815503
## [3,]  0.9132671 -0.2780863  0.21828845 -1.2163764
## [4,]  1.7933881  1.0192055 -1.04653534  0.3081369
```

```
# Using the RMAT package
library(RMAT)
P <- RM_norm(N = 4, mean = 0, sd = 1)
# Outputs the following
P
```

```
           [,1]       [,2]        [,3]       [,4]
[1,]  0.1932123  0.9966051  0.04543718 -0.2886886
[2,] -0.4346821  1.1074905  1.57577959  0.4815503
[3,]  0.9132671 -0.2780863  0.21828845 -1.2163764
[4,]  1.7933881  1.0192055 -1.04653534  0.3081369
```

Section 2

```
ensemble <- RME_norm(N = 4, cplx = TRUE, herm = TRUE, size = 2)
# Outputs the following
ensemble
```

```
## [[1]]
##                         [,1]                  [,2]                   [,3]
## [1,] -0.5201783-1.1466659i -0.4423138+1.249927i -0.5993128+0.2021117i
## [2,] -0.4423138-1.2499273i -0.5660151-1.342935i  0.7884194-0.8610830i
## [3,] -0.5993128-0.2021117i  0.7884194+0.861083i -0.5125624+0.9459580i
## [4,]  1.2945778+0.1775003i -1.1659293+0.232875i  1.2428675-0.9856255i
##                         [,4]
## [1,]  1.29457783-0.17750032i
## [2,] -1.16592933-0.23287500i
## [3,]  1.24286751+0.98562550i
## [4,]  0.09818141-0.02211742i
```

```
##
## [[2]]
##                       [,1]                   [,2]                  [,3]
## [1,]  0.513478+1.830764i -0.2295536+1.1053050i 1.2615159+0.9704793i
## [2,] -0.229554-1.105305i  0.7010760-1.2133785i 1.2208190-0.7260075i
## [3,]  1.261516-0.970479i  1.2208190+0.7260075i 0.9707189+0.0069714i
## [4,] -0.238436-1.333301i -0.8509239-0.4299248i 0.9526308+0.4334090i
##                        [,4]
## [1,] -0.2384356+1.3333014i
## [2,] -0.8509239+0.4299248i
## [3,]  0.9526308-0.4334090i
## [4,]  0.0398952-0.4794000i
```

```
# Using the RMAT package
library(RMAT)
# Note that RM_norm takes mean = 0 and sd = 1 as default values.
ensemble <- RME_norm(N = 4, cplx = TRUE, herm = TRUE, size = 10)
# Outputs the following
ensemble
...
[[10]]
                     [,1]                   [,2]                   [,3]                   [,4]
[1,]  1.830764+0.011014i -1.1053050-0.6287441i -0.9704793-1.9760633i -1.3333014-0.4615582i
[2,] -1.105305+0.628744i -1.2133785-2.0501832i  0.7260075+0.5508336i -0.4299248+0.5792750i
[3,] -0.970479+1.976063i  0.7260075-0.5508336i  0.0069714+1.5459379i  0.4334090-1.1737369i
[4,] -1.333301+0.461558i -0.4299248-0.5792750i  0.4334090+1.1737369i -0.4794000-0.2823131i
```