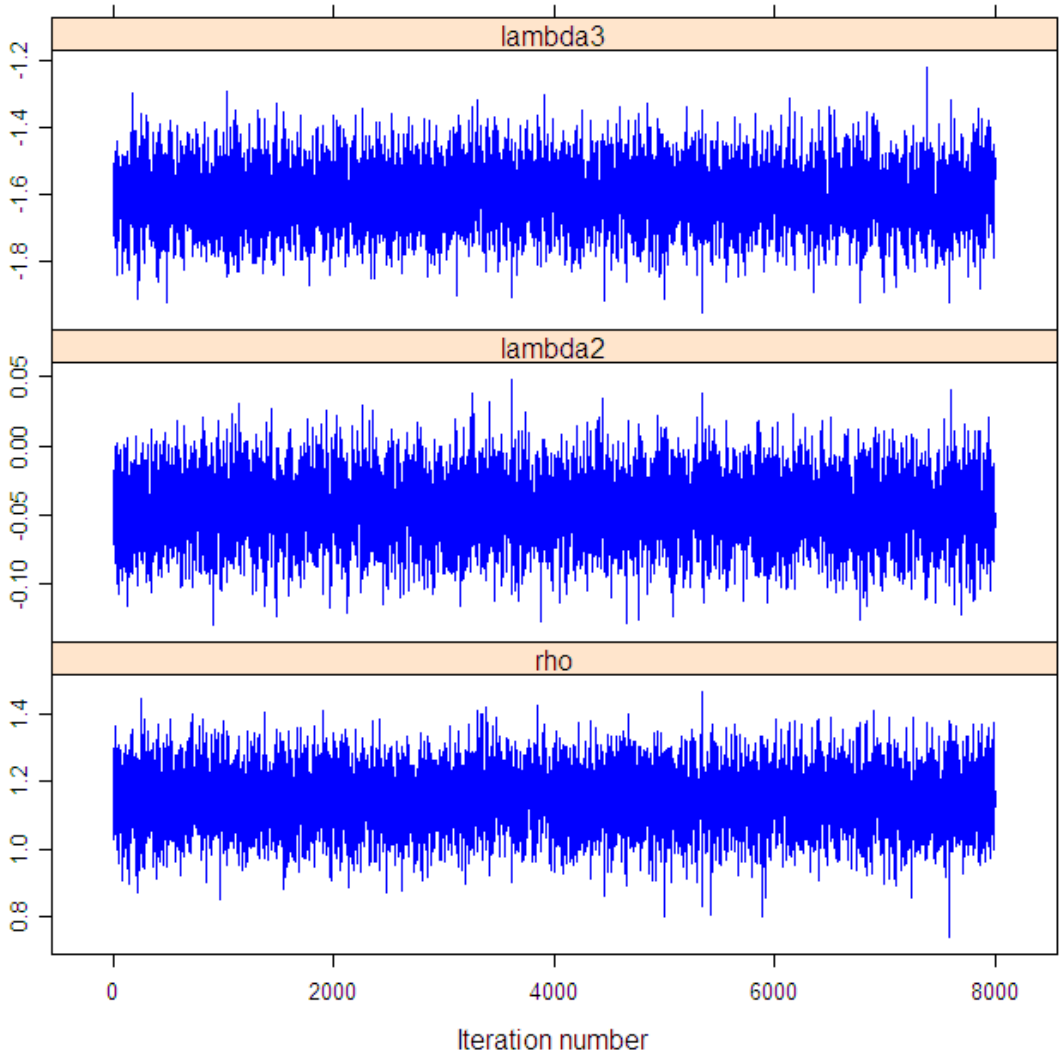
Standard Maximum Likelihood

```
 results
            [,1]       [,2]       [,3]         [,4]
[1,]  1.14217375 0.08810331  12.964027 1.187315e-06
[2,] -0.04587087 0.02420965  -1.894735 9.473289e-02
[3,] -1.60468315 0.09017014 -17.796169 1.017642e-07
```

indepmetrop: Independence Metropolis from LearnBayes Package

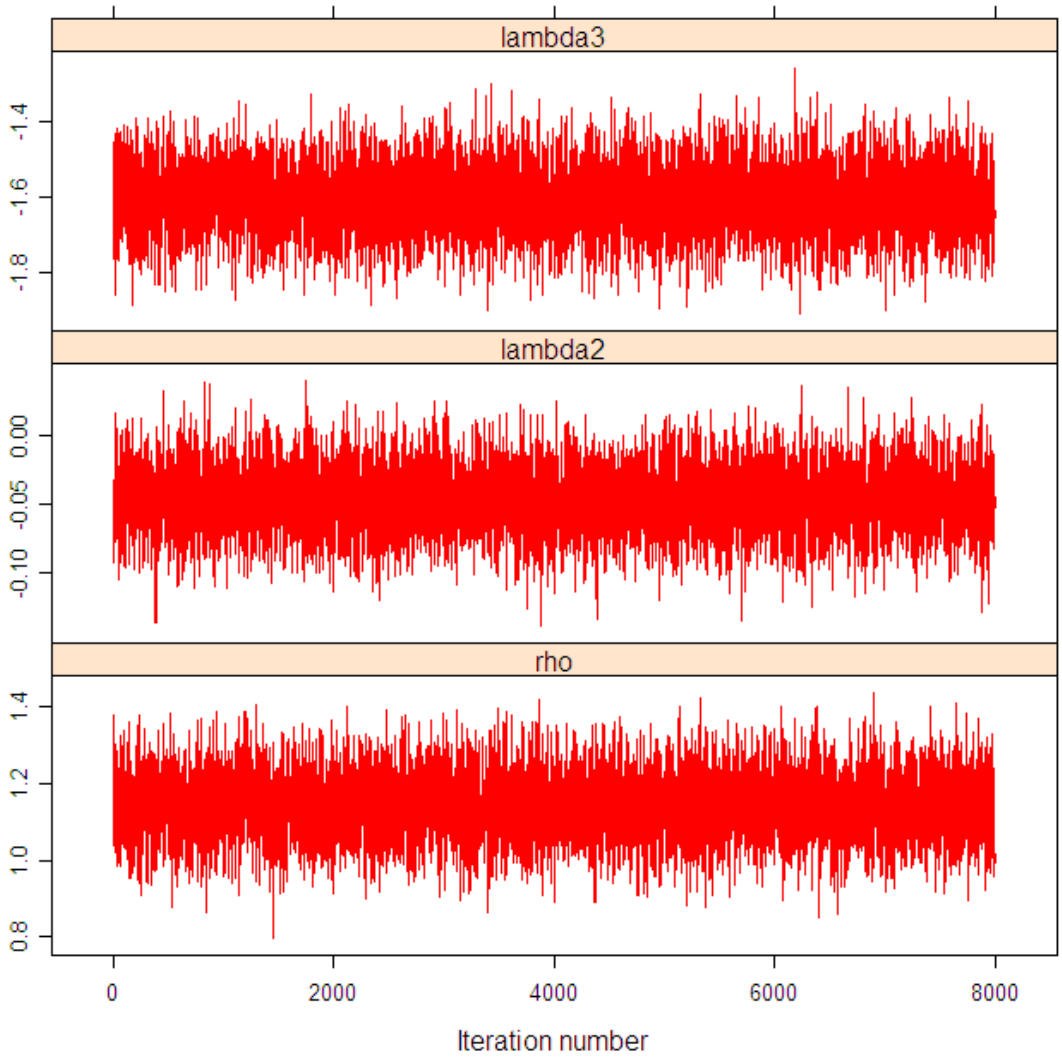


Summary of the Chains Using Coda Package

mysummary

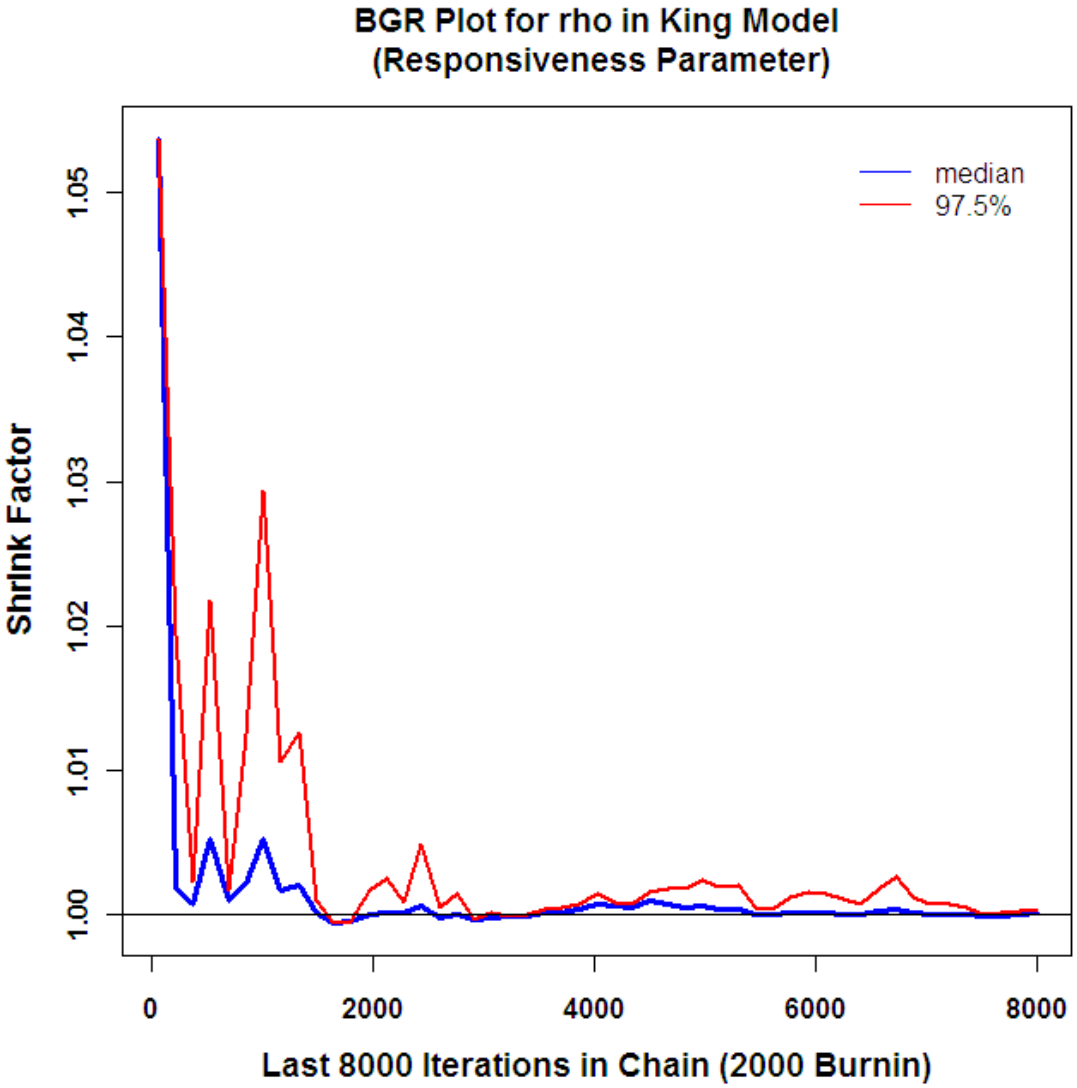
```
Iterations = 1:8000
Thinning interval = 1
Number of chains = 1
Sample size per chain = 8000

1. Empirical mean and standard deviation for each variable,
   plus standard error of the mean:

            Mean      SD  Naive SE Time-series SE
rho      1.14474 0.08771 0.0009807      0.0010026
lambda2 -0.04579 0.02409 0.0002693      0.0002611
lambda3 -1.60594 0.09065 0.0010135      0.0010926

2. Quantiles for each variable:

            2.5%      25%      50%      75%     97.5%
rho      0.97443  1.08458  1.14294  1.20338  1.322551
lambda2 -0.09289 -0.06173 -0.04569 -0.02981  0.002116
lambda3 -1.78262 -1.66692 -1.60536 -1.54535 -1.431593


results2 -- directly calculated as a check
            [,1]       [,2]         [,3]         [,4]
[1,]  1.14473830 0.08771387 0.0009806708 0.0010026214
[2,] -0.04579455 0.02408571 0.0002692865 0.0002611464
[3,] -1.60593679 0.09065315 0.0010135330 0.0010925770

results22 -- Time-series SE Using 40 Group Means of Size 200 each
           [,1]         [,2]        [,3]
[1,] 0.00092631 0.0002238574 0.001105145
```

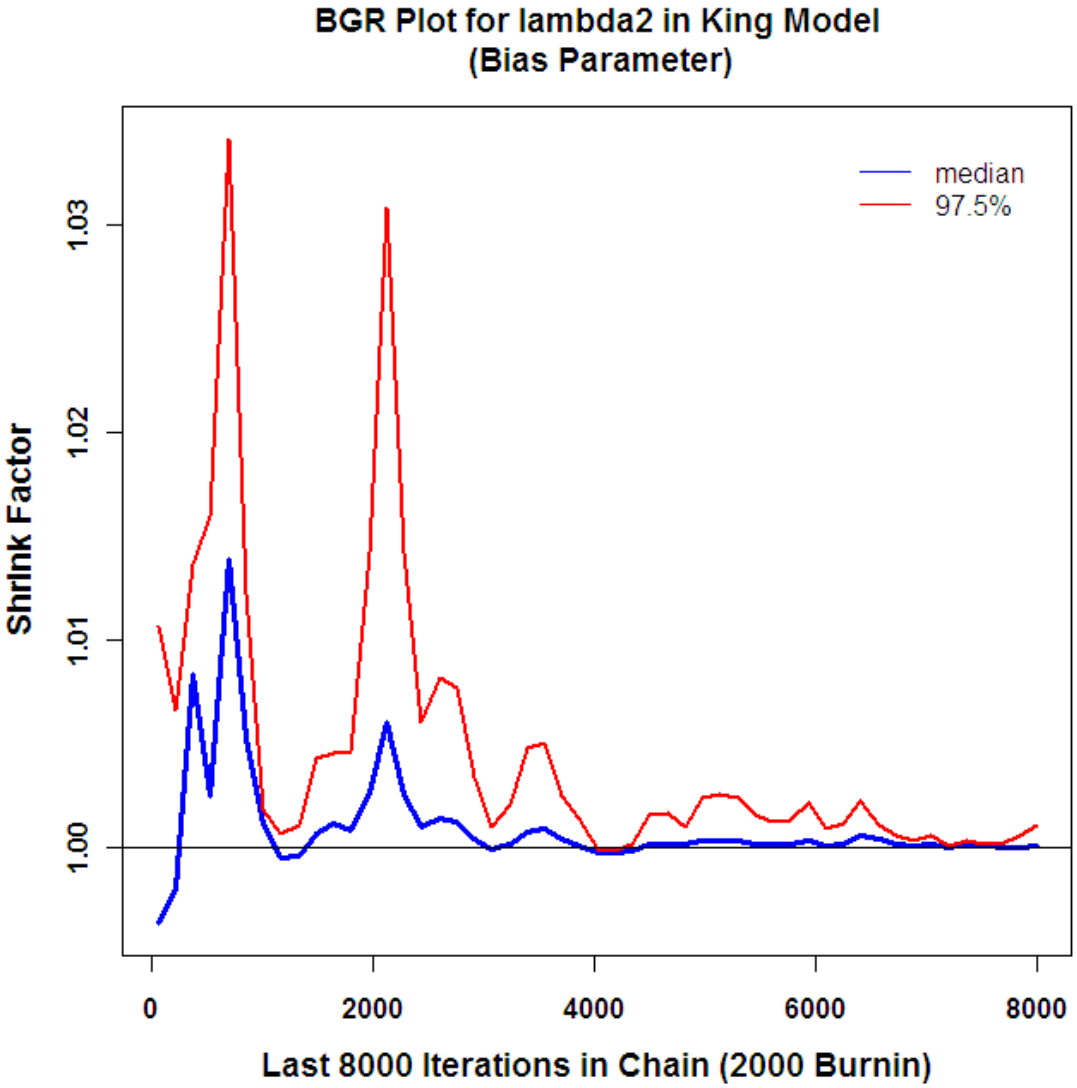
indepmetrop: Independence Metropolis from LearnBayes Package with very diffuse starts

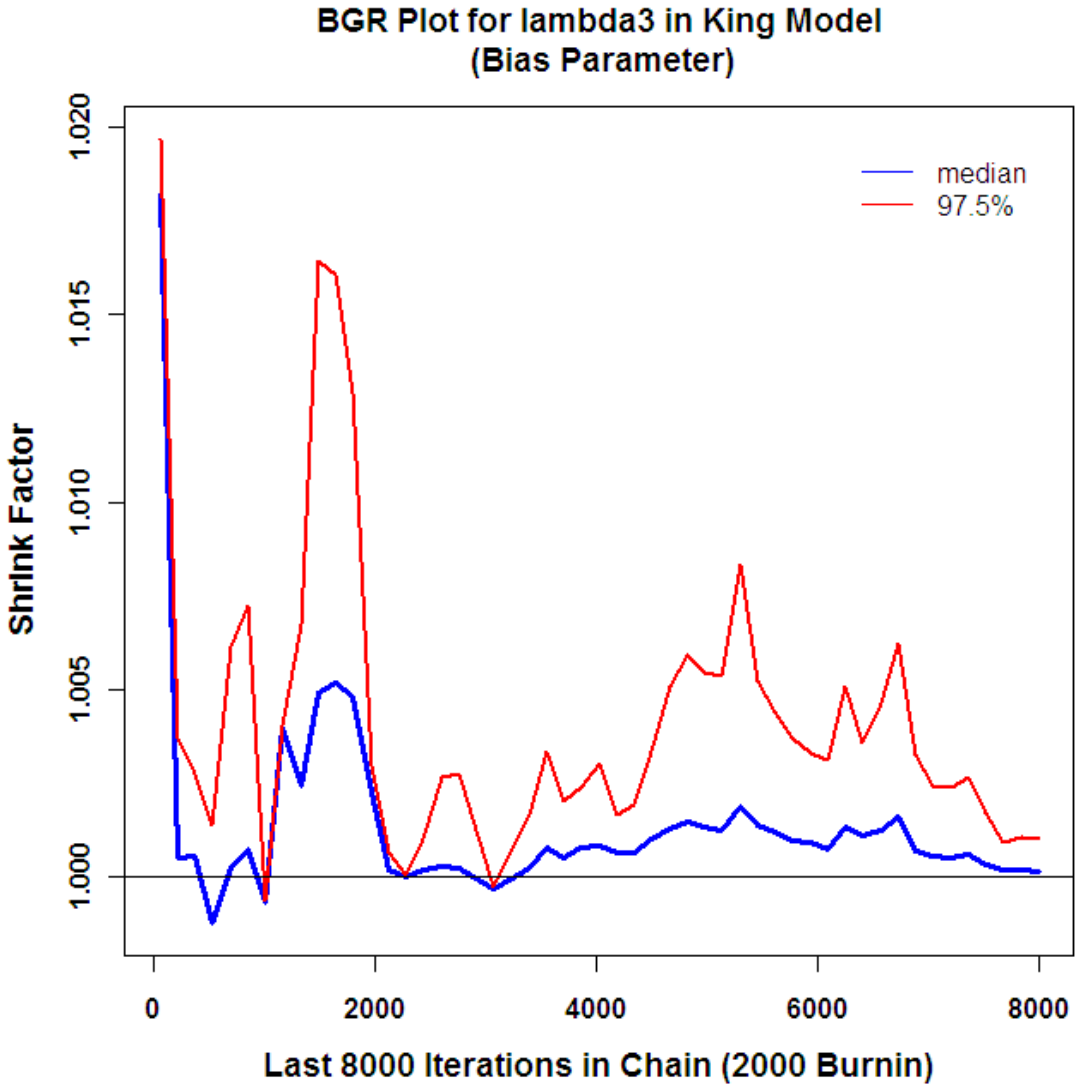


Summary of the Chains Using Coda Package

```
mysummary2

Iterations = 1:8000
Thinning interval = 1
Number of chains = 1
Sample size per chain = 8000

1. Empirical mean and standard deviation for each variable,
   plus standard error of the mean:

            Mean      SD  Naive SE Time-series SE
rho      1.14345 0.08712 0.0009740      0.0009403
lambda2 -0.04603 0.02405 0.0002689      0.0003020
lambda3 -1.60609 0.08984 0.0010045      0.0011330

2. Quantiles for each variable:

            2.5%      25%      50%      75%     97.5%
rho      0.97530  1.08494  1.14284  1.20024  1.320920
lambda2 -0.09372 -0.06213 -0.04627 -0.03007  0.001493
lambda3 -1.78643 -1.66650 -1.60572 -1.54568 -1.432794


results3 – directly calculated as a check
            [,1]       [,2]         [,3]         [,4]
[1,]  1.14344752 0.08712141 0.0009740470 0.0009402934
[2,] -0.04602794 0.02405318 0.0002689228 0.0003020055
[3,] -1.60608607 0.08984496 0.0010044972 0.0011329925

results33 -- Time-series SE Using 40 Group Means of Size 200 each
            [,1]        [,2]        [,3]
[1,] 0.001038452 0.000241781 0.001081453
```


BGR Plot for rho in King Model
(Responsiveness Parameter)
median
97.5%
ShrInk Factor
1.00
1.01
1.02
1.03
1.04
1.05
0
2000
4000
6000
8000
Last 8000 Iterations in Chain (2000 Burnin)


BGR Plot for lambda2 in King Model
(Bias Parameter)
median
97.5%
ShrInk Factor
1.00
1.01
1.02
1.03
0
2000
4000
6000
8000
Last 8000 Iterations in Chain (2000 Burnin)



The Gelman-Rubin Statistics from gelman.diag function – These are the final values above

```
results4
         [,1]     [,2]
[1,] 1.000124 1.000409
[2,] 1.000128 1.001102
[3,] 1.000174 1.001043
```

Autocorrelation Plots of the two Independence Metropolis Chains