Package ‘BayesianGLasso’

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Title  Bayesian Graphical Lasso
Version  0.2.0
Description  Implements a data-augmented block Gibbs sampler for simulating the posterior distribution of concentration matrices for specifying the topology and parameterization of a Gaussian Graphical Model (GGM). This sampler was originally proposed in Wang (2012) <doi:10.1214/12-BA729>.
Depends  R (>= 3.0.0)
License  GPL-3
Encoding  UTF-8
LazyData  true
Imports  statmod, MASS
RoxygenNote  6.0.1
NeedsCompilation  no
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**blockGLasso**  

*Block Gibbs sampler function*

**Description**

Blockwise sampling from the conditional distribution of a permuted column/row for simulating the posterior distribution for the concentration matrix specifying a Gaussian Graphical Model

**Usage**

```r
blockGLasso(x, iterations = 2000, burnIn = 1000, lambdaPriora = 1, lambdapriorb = 1/10, verbose = TRUE)
```

**Arguments**

- `x`  
  Data matrix

- `iterations`  
  Length of Markov chain after burn-in

- `burnIn`  
  Number of burn-in iterations

- `lambdaPriora`  
  Shrinkage hyperparameter (lambda) gamma distribution shape

- `lambdapriorb`  
  Shrinkage hyperparameter (lambda) gamma distribution scale

- `verbose`  
  logical; if TRUE return MCMC progress

**Details**

Implements the block Gibbs sampler for the Bayesian graphical lasso introduced in Wang (2012). Samples from the conditional distribution of a permuted column/row for simulating the posterior distribution for the concentration matrix specifying a Gaussian Graphical Model

**Value**

- `Sigma`  
  List of covariance matrices from the Markov chain

- `Omega`  
  List of concentration matrices from the Markov chains

- `Lambda`  
  Vector of simulated lambda parameters

**Author(s)**

- Patrick Trainor (University of Louisville)
- Hao Wang

**References**

Examples

# Generate true covariance matrix:
s<-.9**toeplitz(0:9)
# Generate multivariate normal distribution:
set.seed(5)
x<-MASS::mvrnorm(n=100,mu=rep(0,10),Sigma=s)
blockGLasso(X=x)

# Same example with short MCMC chain:
s<-.9**toeplitz(0:9)
set.seed(6)
x<-MASS::mvrnorm(n=100,mu=rep(0,10),Sigma=s)
blockGLasso(X=x,iterations=100,burnIn=100)
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