Package ‘GHS’

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Title Graphical Horseshoe MCMC Sampler Using Data Augmented Block Gibbs Sampler

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GHS_est

**Description**

GHS_est returns a tuple whose first element is a p by p by nmc matrices of saved posterior samples of precision matrix, second element is the p*(p-1)/2 by nmc vector of saved samples of the local tuning parameter and the third element is the 1 by nmc vector of saved samples of the global tuning parameter.

**Usage**

```r
GHS_est(S, n, burnin, nmc)
```

**Arguments**

- `S`: sample covariance matrix
- `n`: sample size
- `burnin`: number of MCMC burnins
- `nmc`: number of saved samples

**Examples**

```r
# This function generates positive definite matrices for testing purposes
# with specified eigenvalues
Posdef <- function (n,ev) {
  Z <- matrix(ncol=n, rnorm(n^2))
  decomp <- qr(Z)
  Q <- qr.Q(decomp)
  R <- qr.R(decomp)
  d <- diag(R)
  ph <- d / abs(d)
  O <- Q %*% diag(ph)
  Z <- t(O) %*% diag(ev) %*% O
  return(Z)
}

eig1 <- rep(1,2)
eig2 <- rep(0.75,3)
#eig3 <- rep(0.25,3)
eig_val <- c(eig1,eig2)
z <- Posdef(5,eig_val)
Mu <- rep(0,5)
Sigma <- solve(z)
Y <- mvrnorm(n=5,mu=Mu,Sigma=Sigma)
S <- t(Y)**Y
out <- GHS_est(S,50,100,5000)
```
est_matrix <- apply(out[[1]],c(1,2),mean)
image(est_matrix)
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