

Documentation of the MATLAB function VARinvcovmat.m

The function's arguments and returned quantities are listed in the help section of the function which is reproduced below.

```
function [W]=VARinvcovmatC(Phi,SigPhi,K)
% forms the inverse covariance matrix W of the stacked states up to order K of a VAR(p) model
% The method is based on formula (2.61) in the book, using the forward and a backward models
% The backward model is derived from the forward model by factorising its transposed covariance function
```

To be specific, the given array `Phi` has elements `Phi(i,j,k)` which are coefficients Φ_{ijk} for $i, j = 1 \dots m$ and $k = 1 \dots p$ of matrices Φ_k . These are the coefficients of a VAR(p) model for a process x_t , whose dimension m and order p are inferred from the size of `Phi`. The given quantity `SigPhi` is the innovation variance of the model, which is

$$x_t = \Phi_1 x_{t-1} + \Phi_2 x_{t-2} + \dots + \Phi_p x_{t-p} + e_t. \quad (1)$$

The returned quantity `G` has elements `G(i,j,k+1)` which are coefficients Γ_{ijk} for $i, j = 1 \dots m$ and $k = 0 \dots K$ of the lagged covariance matrices Γ_k of the process defined by

$$\Gamma_{ijk} = \text{Cov}(x_{i,t}, x_{j,t-k}).$$

A document describing the method by which these covariances are derived is given in the Derivations/Proofs pages for Chapter 2.