

The RW2dX3-model

Parametrization

This is a specialised model for a certain application, for which the linear predictor require three different contributions from the RW2D model. Similar to the `2diidwishartpart0/1` and `3diidwishartpart0/1/2` models, this is also defined similarly.

Let \mathbf{z}_0 be a RW2D model with precision κ , then define \mathbf{z}_1 and \mathbf{z}_2 conditionally on \mathbf{z}_0 , as

$$\mathbf{z}_1 \mid \mathbf{z}_0 \sim \mathcal{N}(\beta_1 \mathbf{z}_0, \kappa_1 \mathbf{I})$$

and

$$\mathbf{z}_2 \mid \mathbf{z}_0 \sim \mathcal{N}(\beta_2 \mathbf{z}_0, \kappa_2 \mathbf{I}).$$

The joint density $\pi(\mathbf{z}_0, \mathbf{z}_1, \mathbf{z}_2 \mid \kappa, \kappa_1, \kappa_2, \beta_1, \beta_2)$ is then proportional to

$$\exp \left(-\frac{1}{2} \mathbf{z}_0^T \mathbf{Q}(\kappa) \mathbf{z}_0 - \frac{\kappa_1}{2} (\mathbf{z}_1 - \beta_1 \mathbf{z}_0)^T (\mathbf{z}_1 - \beta_1 \mathbf{z}_0) - \frac{\kappa_2}{2} (\mathbf{z}_2 - \beta_2 \mathbf{z}_0)^T (\mathbf{z}_2 - \beta_2 \mathbf{z}_0) \right)$$

where $\mathbf{Q}(\kappa)$ is the precision matrix for the RW2D model.

The models components are named as `rw2dx3part0` for \mathbf{z}_0 , `rw2dx3part1` for \mathbf{z}_1 and `rw2dx3part2` for \mathbf{z}_2 .

Hyperparameters

The hyperparameters are

$$\theta = (\log \kappa, \log \kappa_1, \log \kappa_2, \beta_1, \beta_2).$$

Specification

Example

Notes