The RW2dX3-model

Parametrization

!!!NOT USED ANY MORE!!!

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