The z-model

Parametrization

The z-model is an implementation of the "classical" way to define the "random effect" part of a mixed model, through

$$\eta = \ldots + Zz$$

where Z is a $n \times m$ matrix and z a vector of length m representing zero-mean "random effects". The z-model is defined as the augmented model

$$\widetilde{z} = \begin{pmatrix} v \\ z \end{pmatrix}$$

where $v \sim \mathcal{N}_n(Zz, \kappa I)$, where κ is a high fixed precision, and where the precision matrix for z is τC where $C > 0$ is a $m \times m$ (fixed) matrix.

Hyperparameters

The precision parameter of the z-model is represented as

$$\theta = \log(\tau)$$

and prior is assigned to θ

Specification

The z-model is specified inside the `f()` function as

```
 f(<whatever>, model="z", Z = <Z>, Cmatrix = <Cmat>, hyper = <hyper>,
precision = <precision>)
```

where the `Z`-matrix argument defines the Z matrix and is required. The `Cmatrix` defines the C matrix and if not given, taken to the the diagonal matrix with dimension m. The `precision` parameter defines the value of κ.

If Z is a $n \times m$ matrix then the C matrix must be $m \times m$ matrix, and $\widetilde{z}$ has length $n + m$. The n first terms of $\widetilde{z}$ is then v and the last m terms of $\widetilde{z}$ is then z.

Hyperparameter spesification and default values

hyper

theta

name log precision
short.name prec
initial 4
fixed FALSE
prior loggamma
param 1 5e-05
to.theta `function(x) log(x)`
from.theta `function(x) exp(x)`

constr FALSE

nrow.ncol FALSE

augmented FALSE

aug.factor 1

aug.constr

n.div.by

n.required TRUE

set.default.values TRUE

pdf z.pdf

Example

Notes