

The z-model

Parametrization

The z-model is an implementation of the “classical” way to define a mixed model, through

$$\eta = \dots + Zz$$

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

$$\tilde{z} = \begin{pmatrix} Z \\ 1 \end{pmatrix} z$$

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 be the diagonal matrix with the appropriate dimension. The `precision` parameter defines the precision for $Zz|z$.

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

Hyperparameter specification 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