

## ME-fixed effect

### Parametrisation

This family is part of the “ME” (measurement error) family to emulate various measurement error models. This ME-fixed-effect represent this model

$$\beta(x + u)$$

where  $\beta$  is the fixed-effect,  $x$  is the observed covariate, and  $u$  is the Gaussian error with precision  $\tau$ .

### Link-function

Not relevant.

### Hyperparameters

This model has two hyperparameters. The fixed-effect  $\beta$  is  $\theta_1$ ,

$$\theta_1 = \beta$$

and the log-precision of the Gaussian error is  $\theta_2$ ,

$$\theta_2 = \log(\tau)$$

The prior is defined on  $(\theta_1, \theta_2)$ .

### Specification

- family = `mefixedeffect`
- Required arguments:  $x$  (as the response)

### Hyperparameter spesification and default values

hyper

**theta1**

**name** beta  
**short.name** beta  
**initial** 1  
**fixed** FALSE  
**prior** normal  
**param** 0 0.01  
**to.theta**  
**from.theta**

**theta2**

**name** log precision  
**short.name** prec  
**initial** 4  
**fixed** FALSE  
**prior** loggamma  
**param** 1 5e-04

**to.theta**  
**from.theta**

**survival** FALSE

**discrete** FALSE

**link** default identity

**pdf** mefixedeffect

## Example

```
n = 1000
beta.x = -2
prec.x = 100
prec.y = 1000 ## fixed

x.true = rnorm(n)
x = x.true + rnorm(n, sd = sqrt(1/prec.x))
y = 1 + beta.x * x.true + rnorm(n, sd = sqrt(1/prec.y))

formula = Y ~ -1 + intercept +
  f(me.fixed.effect, model="iid",
    hyper = list(prec = list(initial = -5, fixed=TRUE)))

intercept = c(rep(1, n), rep(0, n))
me.fixed.effect = rep(1:n, 2)

Y = matrix(NA, 2*n, 2)
Y[1:n, 1] = y
Y[(1:n) + n, 2] = x

r = inla(formula,
  data = list(Y=Y, intercept=intercept,
    me.fixed.effect = me.fixed.effect),
  family = c("gaussian", "mefixedeffect"),
  control.data = list(list(
    hyper = list(
      prec = list(
        initial = log(prec.y),
        fixed=TRUE)
      ),
    ),
  list()),
  verbose=TRUE)
```

## Notes

This model is classified as “work in progress” and can be changed without further notice. In the future, it will appear as a “f()” model, but the internal structure in the code prevent this from happen right now.