

## Flat prior

### Parametrization

The flat prior has density

$$\pi(\theta) \propto 1 \tag{1}$$

for continuous  $\theta$ .

### Specification

The flat prior for the hyperparameters is specified inside the `f()` function as the following using the old style:

```
f(<whatever>,prior="flat")
```

or better, the new style

```
f(<whatever>, hyper = list( <theta> = list(prior="flat", param = numeric())))
```

In the case where there is one hyperparameter for that particular f-model. In the case where we want to specify the prior for the hyperparameter of an observation model, for example the negative Binomial, the the prior spesification will appear inside the `control.family()`-argument; see the following example for illustration.

### Example

In the following example we estimate the parameters in a simulated example with gaussian responses and assign for the log-precision  $\log \tau$ , a flat prior; see the Notes.

```
n=100
z=rnorm(n)
y=rnorm(n,z,1)
data=list(y=y,z=z)
formula=y~1+z
result=inla(formula,family="gaussian",data=data,control.family=list(prior="flat"))
```

### Notes

The `inla` program uses  $\pi(\theta) = 1$  for computations. Note that for precision  $\tau$ , a flat prior for  $\log \tau$  corresponds to the prior  $1/\tau$  for  $\tau$ .