Log-gamma prior

Parametrization

The Gamma distribution has density

$$\pi(\tau) = \frac{b^a}{\Gamma(a)} \tau^{a-1} \exp(-b\ \tau) \tag{1}$$

for positeve τ where:

$a > 0$ is the shape parameter

$b > 0$ is the inverse-scale parameter

The mean of τ is a/b and the variance is a/b^2.

The variable θ has a *log-Gamma* distribution if $\tau = \exp \theta$ has a Gamma distribution.

Specification

The Log-Gamma prior for the hyperparameters is specified inside the `f()` function as following:

```
f(<whatever>,prior=loggamma,param=c(<a>,<b>))
```

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 Gaussian, the the prior spesification will appear inside the control.data()-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 the hyperparameter (the precision parameter), a log-Gamma prior with parameters $a = 0.1$ and $b = 0.1$

```
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.data=list(prior="loggamma",param=c(0.1,0.1)))
```

Notes

None