# Beta prior for correlation parameters: betacorrelation

This is a prior for the correlation parameter  $\rho \in (-1,1)$  which is internally represented as

$$\theta = \log \frac{1+\rho}{1-\rho}$$

#### Parametrization

The prior defined on  $\theta$  so that the correlation parameter  $\rho$  has a Beta(a,b) distribution scaled to have domain in (-1,1):

$$\pi(\rho|a,b) = 0.5 \frac{\Gamma(a+b)}{\Gamma(a)\Gamma(b)} \rho^{a-1} (1-\rho)^{b-1}$$

## Specification

The Beta prior for the correlation is specified in the hyper argument as follows:

```
hyper = list(<theta> = list(prior = "betacorrelation", param=c(<a>,<b>)))
```

### Example

### Notes

The prior is internally defined on the  $\theta$  parameter therefore initial values have to be provided in the  $\theta$ -scale. For example if the desired initial value is  $\rho = 0.5$ , which means  $\theta = \log(3) = 1.098$  the following specification has to be provided: