

## The PC prior for the correlation $\rho$ with $\rho = 0$ base-model

### Parametrization

This prior is the PC prior for the correlation  $\rho$  with  $\rho = 0$  as the base-model.. The density for  $\rho$  is

$$\pi(\rho) = \lambda \exp(-\lambda \mu(\rho)) J(\rho)$$

where

$$\mu(\rho) = \sqrt{-\log(1 - \rho^2)}$$

and

$$J(\rho) = \frac{|\rho|}{\mu(\rho)(1 - \rho^2)}.$$

The parameter  $\lambda$  is defined through

$$\text{Prob}(|\rho| > u) = \alpha, \quad 0 \leq u < 1, \quad 0 < \alpha < 1$$

where  $(u, \alpha)$  are the parameters to this prior. The solution is explicite

$$\lambda = -\log(\alpha)/\mu(u).$$

### Specification

This prior for the hyperparameters is specified inside the **hyper**-spesification, as

```
hyper = list(<theta> = list(prior="pc.rho0", param=c(<u>,<alpha>)))
```

### Example

#### Notes

See also functions `inla.pc.{d,p,q,r}rho0`