

Correlated random effects: iidkd

This model is available for dimensions $k = 2$, to 24. We describe in detail the case for $k = 3$ as other ones are similar. This model do the same as models `iid2d`, `iid3d`, `iid4d`, `iid5d`, but uses a different and more efficient parameterisation.

Parametrization

The $(k = 3)$ -dimensional Normal-Wishard model is used if one want to define three vectors of “random effects”, u and v and w , say, for which (u_i, v_i, w_i) are iid bivariate Normals

$$\begin{pmatrix} u_i \\ v_i \\ w_i \end{pmatrix} \sim \mathcal{N}(\mathbf{0}, \mathbf{W}^{-1})$$

where the covariance matrix $\mathbf{W}^{-1}$ is parameterised as $\mathbf{W} = \mathbf{L}\mathbf{L}^T$, where

$$\mathbf{L} = \begin{pmatrix} \exp(\theta_1) & & \\ \theta_4 & \exp(\theta_2) & \\ \theta_5 & \theta_6 & \exp(\theta_3) \end{pmatrix} \quad (1)$$

and $\theta_1, \theta_2, \theta_3, \theta_4, \theta_5, \theta_6$ can take any value. The number of hyperparameters are $k(k+1)/2$, which is 3, 6, 10, 15, 21, 28, 36, 45, 55, ..., for $k = 2, 3, 4, 5, 6, 7, 8, 9, 10, \dots$

For these models the precision matrix $\mathbf{W}$ is Wishart distributed

$$\mathbf{W} \sim \text{Wishart}_k(r, \mathbf{R}^{-1}),$$

with density

$$\pi(\mathbf{W}) = c^{-1} |\mathbf{W}|^{(r-(k+1))/2} \exp \left\{ -\frac{1}{2} \text{Trace}(\mathbf{W}\mathbf{R}) \right\}, \quad r > k+1$$

and

$$c = 2^{(rk)/2} |\mathbf{R}|^{-r/2} \pi^{(k(k-1))/4} \prod_{j=1}^k \Gamma((r+1-j)/2).$$

Then,

$$\text{E}(\mathbf{W}) = r\mathbf{R}^{-1}, \quad \text{and} \quad \text{E}(\mathbf{W}^{-1}) = \mathbf{R}/(r - (k+1)).$$

Hyperparameters

The hyperparameters are $\theta_1, \theta_2, \theta_3, \theta_4, \theta_5, \theta_6$.

The prior-parameters are

$$(r, R_1, R_2, R_3, R_4, R_5, R_6)$$

where

$$\mathbf{R} = \begin{pmatrix} R_1 & R_4 & R_5 \\ R_4 & R_2 & R_6 \\ R_5 & R_6 & R_3 \end{pmatrix}$$

The `inla` function reports posterior distribution for the hyperparameters $\{\theta_i\}$, and the conversion into interpretable quantities can be done using simulation as described below.

The prior for θ is **fixed** to be `wishartkd`, and number of prior parameters required are $1 + k(k+1)/2$. By default the prior-parameters are

$$(r = 100, \underbrace{1, \dots, 1}_{k \text{ times}}, 0, \dots, 0)$$

Specification

The model `iidkd` is specified as

```
y ~ f(i, model="iidkd", order=3, n = <length>) + ...
```

where $\text{order} = k = 3$, and the `iidkd` model is represented internally as one vector of length n ,

$$(u_1, u_2, \dots, u_m, v_1, v_2, \dots, v_m, w_1, w_2, \dots, w_m)$$

where $n = 3m$, and n is the (required) argument in `f()`.

For this model the argument `constr=TRUE` is interpreted as 3 sum-to-zero constraints

$$\sum u_i = 0, \quad \sum v_i = 0 \quad \text{and} \quad \sum w_i = 0.$$

Hyperparameter specification and default values

(**Note:** The value “1048576” is just a code for “replace this by the default value”. As the default value depends on `order`, this was the easy way out for the moment.)

doc Gaussian random effect in `dim=k` with Wishart prior

hyper

theta1

hyperid 29101

name theta1

short.name theta1

initial 1048576

fixed FALSE

prior wishartkd

param 30 1048576 1048576 1048576 1048576 1048576 1048576 1048576 1048576 1048576 1048576 1048576

to.theta function(x) x

from.theta function(x) x

theta2

hyperid 29102

name theta2

short.name theta2

initial 1048576

fixed FALSE

prior none

param

to.theta function(x) x

from.theta function(x) x

theta3

hyperid 29103

name theta3

short.name theta3

initial 1048576

fixed FALSE

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta4
    hyperid 29104
    name theta4
    short.name theta4
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta5
    hyperid 29105
    name theta5
    short.name theta5
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta6
    hyperid 29106
    name theta6
    short.name theta6
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta7
    hyperid 29107
    name theta7
    short.name theta7
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta8

hyperid 29108
name theta8
short.name theta8
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta9

hyperid 29109
name theta9
short.name theta9
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta10

hyperid 29110
name theta10
short.name theta10
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta11

hyperid 29111
name theta11
short.name theta11
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta12

hyperid 29112
name theta12
short.name theta12

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta13
    hyperid 29113
    name theta13
    short.name theta13
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta14
    hyperid 29114
    name theta14
    short.name theta14
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta15
    hyperid 29115
    name theta15
    short.name theta15
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta16
    hyperid 29116
    name theta16
    short.name theta16
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta17
  hyperid 29117
  name theta17
  short.name theta17
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta18
  hyperid 29118
  name theta18
  short.name theta18
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta19
  hyperid 29119
  name theta19
  short.name theta19
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta20
  hyperid 29120
  name theta20
  short.name theta20
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta21
  hyperid 29121

```

```

    name theta21
    short.name theta21
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta22
    hyperid 29122
    name theta22
    short.name theta22
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta23
    hyperid 29123
    name theta23
    short.name theta23
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta24
    hyperid 29124
    name theta24
    short.name theta24
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta25
    hyperid 29125
    name theta25
    short.name theta25
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta26
    hyperid 29126
    name theta26
    short.name theta26
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta27
    hyperid 29127
    name theta27
    short.name theta27
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta28
    hyperid 29128
    name theta28
    short.name theta28
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta29
    hyperid 29129
    name theta29
    short.name theta29
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta30

hyperid 29130
name theta30
short.name theta30
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta31

hyperid 29131
name theta31
short.name theta31
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta32

hyperid 29132
name theta32
short.name theta32
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta33

hyperid 29133
name theta33
short.name theta33
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta34

hyperid 29134
name theta34
short.name theta34

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta35
    hyperid 29135
    name theta35
    short.name theta35
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta36
    hyperid 29136
    name theta36
    short.name theta36
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta37
    hyperid 29137
    name theta37
    short.name theta37
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta38
    hyperid 29138
    name theta38
    short.name theta38
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta39
  hyperid 29139
  name theta39
  short.name theta39
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta40
  hyperid 29140
  name theta40
  short.name theta40
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta41
  hyperid 29141
  name theta41
  short.name theta41
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta42
  hyperid 29142
  name theta42
  short.name theta42
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta43
  hyperid 29143

```

```

    name theta43
    short.name theta43
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta44
    hyperid 29144
    name theta44
    short.name theta44
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta45
    hyperid 29145
    name theta45
    short.name theta45
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta46
    hyperid 29146
    name theta46
    short.name theta46
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta47
    hyperid 29147
    name theta47
    short.name theta47
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta48
    hyperid 29148
    name theta48
    short.name theta48
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta49
    hyperid 29149
    name theta49
    short.name theta49
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta50
    hyperid 29150
    name theta50
    short.name theta50
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta51
    hyperid 29151
    name theta51
    short.name theta51
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta52

hyperid 29152
name theta52
short.name theta52
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta53

hyperid 29153
name theta53
short.name theta53
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta54

hyperid 29154
name theta54
short.name theta54
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta55

hyperid 29155
name theta55
short.name theta55
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta56

hyperid 29156
name theta56
short.name theta56

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta57
    hyperid 29157
    name theta57
    short.name theta57
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta58
    hyperid 29158
    name theta58
    short.name theta58
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta59
    hyperid 29159
    name theta59
    short.name theta59
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta60
    hyperid 29160
    name theta60
    short.name theta60
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta61
  hyperid 29161
  name theta61
  short.name theta61
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta62
  hyperid 29162
  name theta62
  short.name theta62
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta63
  hyperid 29163
  name theta63
  short.name theta63
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta64
  hyperid 29164
  name theta64
  short.name theta64
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta65
  hyperid 29165

```

```

    name theta65
    short.name theta65
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta66
    hyperid 29166
    name theta66
    short.name theta66
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta67
    hyperid 29167
    name theta67
    short.name theta67
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta68
    hyperid 29168
    name theta68
    short.name theta68
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta69
    hyperid 29169
    name theta69
    short.name theta69
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta70
    hyperid 29170
    name theta70
    short.name theta70
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta71
    hyperid 29171
    name theta71
    short.name theta71
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta72
    hyperid 29172
    name theta72
    short.name theta72
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta73
    hyperid 29173
    name theta73
    short.name theta73
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta74

hyperid 29174
name theta74
short.name theta74
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta75

hyperid 29175
name theta75
short.name theta75
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta76

hyperid 29176
name theta76
short.name theta76
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta77

hyperid 29177
name theta77
short.name theta77
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta78

hyperid 29178
name theta78
short.name theta78

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta79
    hyperid 29179
    name theta79
    short.name theta79
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta80
    hyperid 29180
    name theta80
    short.name theta80
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta81
    hyperid 29181
    name theta81
    short.name theta81
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta82
    hyperid 29182
    name theta82
    short.name theta82
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta83
  hyperid 29183
  name theta83
  short.name theta83
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta84
  hyperid 29184
  name theta84
  short.name theta84
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta85
  hyperid 29185
  name theta85
  short.name theta85
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta86
  hyperid 29186
  name theta86
  short.name theta86
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta87
  hyperid 29187

```

```

    name theta87
    short.name theta87
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta88
    hyperid 29188
    name theta88
    short.name theta88
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta89
    hyperid 29189
    name theta89
    short.name theta89
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta90
    hyperid 29190
    name theta90
    short.name theta90
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta91
    hyperid 29191
    name theta91
    short.name theta91
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta92
    hyperid 29192
    name theta92
    short.name theta92
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta93
    hyperid 29193
    name theta93
    short.name theta93
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta94
    hyperid 29194
    name theta94
    short.name theta94
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta95
    hyperid 29195
    name theta95
    short.name theta95
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta96

hyperid 29196
name theta96
short.name theta96
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta97

hyperid 29197
name theta97
short.name theta97
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta98

hyperid 29198
name theta98
short.name theta98
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta99

hyperid 29199
name theta99
short.name theta99
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta100

hyperid 29200
name theta100
short.name theta100

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta101
    hyperid 29201
    name theta101
    short.name theta101
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta102
    hyperid 29202
    name theta102
    short.name theta102
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta103
    hyperid 29203
    name theta103
    short.name theta103
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta104
    hyperid 29204
    name theta104
    short.name theta104
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta105
  hyperid 29205
  name theta105
  short.name theta105
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta106
  hyperid 29206
  name theta106
  short.name theta106
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta107
  hyperid 29207
  name theta107
  short.name theta107
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta108
  hyperid 29208
  name theta108
  short.name theta108
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta109
  hyperid 29209

```

```

    name theta109
    short.name theta109
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta110
    hyperid 29210
    name theta110
    short.name theta110
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta111
    hyperid 29211
    name theta111
    short.name theta111
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta112
    hyperid 29212
    name theta112
    short.name theta112
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta113
    hyperid 29213
    name theta113
    short.name theta113
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta114
    hyperid 29214
    name theta114
    short.name theta114
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta115
    hyperid 29215
    name theta115
    short.name theta115
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta116
    hyperid 29216
    name theta116
    short.name theta116
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta117
    hyperid 29217
    name theta117
    short.name theta117
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta118
hyperid 29218
name theta118
short.name theta118
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta119
hyperid 29219
name theta119
short.name theta119
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta120
hyperid 29220
name theta120
short.name theta120
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta121
hyperid 29221
name theta121
short.name theta121
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta122
hyperid 29222
name theta122
short.name theta122

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta123
    hyperid 29223
    name theta123
    short.name theta123
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta124
    hyperid 29224
    name theta124
    short.name theta124
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta125
    hyperid 29225
    name theta125
    short.name theta125
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta126
    hyperid 29226
    name theta126
    short.name theta126
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta127
  hyperid 29227
  name theta127
  short.name theta127
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta128
  hyperid 29228
  name theta128
  short.name theta128
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta129
  hyperid 29229
  name theta129
  short.name theta129
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta130
  hyperid 29230
  name theta130
  short.name theta130
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta131
  hyperid 29231

```

```

    name theta131
    short.name theta131
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta132
    hyperid 29232
    name theta132
    short.name theta132
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta133
    hyperid 29233
    name theta133
    short.name theta133
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta134
    hyperid 29234
    name theta134
    short.name theta134
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta135
    hyperid 29235
    name theta135
    short.name theta135
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta136
    hyperid 29236
    name theta136
    short.name theta136
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta137
    hyperid 29237
    name theta137
    short.name theta137
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta138
    hyperid 29238
    name theta138
    short.name theta138
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta139
    hyperid 29239
    name theta139
    short.name theta139
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

```

theta140
  hyperid 29240
  name theta140
  short.name theta140
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta141
  hyperid 29241
  name theta141
  short.name theta141
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta142
  hyperid 29242
  name theta142
  short.name theta142
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta143
  hyperid 29243
  name theta143
  short.name theta143
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta144
  hyperid 29244
  name theta144
  short.name theta144

```

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta145
    hyperid 29245
    name theta145
    short.name theta145
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta146
    hyperid 29246
    name theta146
    short.name theta146
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta147
    hyperid 29247
    name theta147
    short.name theta147
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta148
    hyperid 29248
    name theta148
    short.name theta148
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta149
  hyperid 29249
  name theta149
  short.name theta149
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta150
  hyperid 29250
  name theta150
  short.name theta150
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta151
  hyperid 29251
  name theta151
  short.name theta151
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta152
  hyperid 29252
  name theta152
  short.name theta152
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta153
  hyperid 29253

```

```

    name theta153
    short.name theta153
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta154
    hyperid 29254
    name theta154
    short.name theta154
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta155
    hyperid 29255
    name theta155
    short.name theta155
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta156
    hyperid 29256
    name theta156
    short.name theta156
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta157
    hyperid 29257
    name theta157
    short.name theta157
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta158
    hyperid 29258
    name theta158
    short.name theta158
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta159
    hyperid 29259
    name theta159
    short.name theta159
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta160
    hyperid 29260
    name theta160
    short.name theta160
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta161
    hyperid 29261
    name theta161
    short.name theta161
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta162

hyperid 29262
name theta162
short.name theta162
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta163

hyperid 29263
name theta163
short.name theta163
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta164

hyperid 29264
name theta164
short.name theta164
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta165

hyperid 29265
name theta165
short.name theta165
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta166

hyperid 29266
name theta166
short.name theta166

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta167
    hyperid 29267
    name theta167
    short.name theta167
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta168
    hyperid 29268
    name theta168
    short.name theta168
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta169
    hyperid 29269
    name theta169
    short.name theta169
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta170
    hyperid 29270
    name theta170
    short.name theta170
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta171
  hyperid 29271
  name theta171
  short.name theta171
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta172
  hyperid 29272
  name theta172
  short.name theta172
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta173
  hyperid 29273
  name theta173
  short.name theta173
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta174
  hyperid 29274
  name theta174
  short.name theta174
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta175
  hyperid 29275

```

```

    name theta175
    short.name theta175
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta176
    hyperid 29276
    name theta176
    short.name theta176
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta177
    hyperid 29277
    name theta177
    short.name theta177
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta178
    hyperid 29278
    name theta178
    short.name theta178
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta179
    hyperid 29279
    name theta179
    short.name theta179
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta180
    hyperid 29280
    name theta180
    short.name theta180
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta181
    hyperid 29281
    name theta181
    short.name theta181
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta182
    hyperid 29282
    name theta182
    short.name theta182
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta183
    hyperid 29283
    name theta183
    short.name theta183
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

```

theta184
  hyperid 29284
  name theta184
  short.name theta184
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta185
  hyperid 29285
  name theta185
  short.name theta185
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta186
  hyperid 29286
  name theta186
  short.name theta186
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta187
  hyperid 29287
  name theta187
  short.name theta187
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta188
  hyperid 29288
  name theta188
  short.name theta188

```

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta189
    hyperid 29289
    name theta189
    short.name theta189
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta190
    hyperid 29290
    name theta190
    short.name theta190
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta191
    hyperid 29291
    name theta191
    short.name theta191
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta192
    hyperid 29292
    name theta192
    short.name theta192
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta193
  hyperid 29293
  name theta193
  short.name theta193
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta194
  hyperid 29294
  name theta194
  short.name theta194
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta195
  hyperid 29295
  name theta195
  short.name theta195
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta196
  hyperid 29296
  name theta196
  short.name theta196
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta197
  hyperid 29297

```

```

    name theta197
    short.name theta197
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta198
    hyperid 29298
    name theta198
    short.name theta198
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta199
    hyperid 29299
    name theta199
    short.name theta199
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta200
    hyperid 29300
    name theta200
    short.name theta200
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta201
    hyperid 29301
    name theta201
    short.name theta201
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta202
    hyperid 29302
    name theta202
    short.name theta202
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta203
    hyperid 29303
    name theta203
    short.name theta203
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta204
    hyperid 29304
    name theta204
    short.name theta204
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta205
    hyperid 29305
    name theta205
    short.name theta205
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta206

hyperid 29306
name theta206
short.name theta206
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta207

hyperid 29307
name theta207
short.name theta207
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta208

hyperid 29308
name theta208
short.name theta208
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta209

hyperid 29309
name theta209
short.name theta209
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta210

hyperid 29310
name theta210
short.name theta210

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta211
    hyperid 29311
    name theta211
    short.name theta211
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta212
    hyperid 29312
    name theta212
    short.name theta212
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta213
    hyperid 29313
    name theta213
    short.name theta213
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta214
    hyperid 29314
    name theta214
    short.name theta214
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta215
  hyperid 29315
  name theta215
  short.name theta215
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta216
  hyperid 29316
  name theta216
  short.name theta216
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta217
  hyperid 29317
  name theta217
  short.name theta217
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta218
  hyperid 29318
  name theta218
  short.name theta218
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta219
  hyperid 29319

```

```

    name theta219
    short.name theta219
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta220
    hyperid 29320
    name theta220
    short.name theta220
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta221
    hyperid 29321
    name theta221
    short.name theta221
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta222
    hyperid 29322
    name theta222
    short.name theta222
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta223
    hyperid 29323
    name theta223
    short.name theta223
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta224
    hyperid 29324
    name theta224
    short.name theta224
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta225
    hyperid 29325
    name theta225
    short.name theta225
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta226
    hyperid 29326
    name theta226
    short.name theta226
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta227
    hyperid 29327
    name theta227
    short.name theta227
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta228

hyperid 29328
name theta228
short.name theta228
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta229

hyperid 29329
name theta229
short.name theta229
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta230

hyperid 29330
name theta230
short.name theta230
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta231

hyperid 29331
name theta231
short.name theta231
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta232

hyperid 29332
name theta232
short.name theta232

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta233
    hyperid 29333
    name theta233
    short.name theta233
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta234
    hyperid 29334
    name theta234
    short.name theta234
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta235
    hyperid 29335
    name theta235
    short.name theta235
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta236
    hyperid 29336
    name theta236
    short.name theta236
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta237
  hyperid 29337
  name theta237
  short.name theta237
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta238
  hyperid 29338
  name theta238
  short.name theta238
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta239
  hyperid 29339
  name theta239
  short.name theta239
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta240
  hyperid 29340
  name theta240
  short.name theta240
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta241
  hyperid 29341

```

```

name theta241
short.name theta241
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta242
hyperid 29342
name theta242
short.name theta242
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta243
hyperid 29343
name theta243
short.name theta243
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta244
hyperid 29344
name theta244
short.name theta244
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta245
hyperid 29345
name theta245
short.name theta245
initial 1048576
fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta246
    hyperid 29346
    name theta246
    short.name theta246
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta247
    hyperid 29347
    name theta247
    short.name theta247
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta248
    hyperid 29348
    name theta248
    short.name theta248
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta249
    hyperid 29349
    name theta249
    short.name theta249
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

```

theta250
  hyperid 29350
  name theta250
  short.name theta250
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta251
  hyperid 29351
  name theta251
  short.name theta251
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta252
  hyperid 29352
  name theta252
  short.name theta252
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta253
  hyperid 29353
  name theta253
  short.name theta253
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta254
  hyperid 29354
  name theta254
  short.name theta254

```

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta255
    hyperid 29355
    name theta255
    short.name theta255
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta256
    hyperid 29356
    name theta256
    short.name theta256
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta257
    hyperid 29357
    name theta257
    short.name theta257
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta258
    hyperid 29358
    name theta258
    short.name theta258
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta259
  hyperid 29359
  name theta259
  short.name theta259
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta260
  hyperid 29360
  name theta260
  short.name theta260
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta261
  hyperid 29361
  name theta261
  short.name theta261
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta262
  hyperid 29362
  name theta262
  short.name theta262
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta263
  hyperid 29363

```

```

    name theta263
    short.name theta263
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta264
    hyperid 29364
    name theta264
    short.name theta264
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta265
    hyperid 29365
    name theta265
    short.name theta265
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta266
    hyperid 29366
    name theta266
    short.name theta266
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta267
    hyperid 29367
    name theta267
    short.name theta267
    initial 1048576
    fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta268
    hyperid 29368
    name theta268
    short.name theta268
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta269
    hyperid 29369
    name theta269
    short.name theta269
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta270
    hyperid 29370
    name theta270
    short.name theta270
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta271
    hyperid 29371
    name theta271
    short.name theta271
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta272

hyperid 29372
name theta272
short.name theta272
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta273

hyperid 29373
name theta273
short.name theta273
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta274

hyperid 29374
name theta274
short.name theta274
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta275

hyperid 29375
name theta275
short.name theta275
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta276

hyperid 29376
name theta276
short.name theta276

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta277
    hyperid 29377
    name theta277
    short.name theta277
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta278
    hyperid 29378
    name theta278
    short.name theta278
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta279
    hyperid 29379
    name theta279
    short.name theta279
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta280
    hyperid 29380
    name theta280
    short.name theta280
    initial 1048576
    fixed FALSE
    prior none
    param

```

```

    to.theta function(x) x
    from.theta function(x) x
theta281
  hyperid 29381
  name theta281
  short.name theta281
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta282
  hyperid 29382
  name theta282
  short.name theta282
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta283
  hyperid 29383
  name theta283
  short.name theta283
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta284
  hyperid 29384
  name theta284
  short.name theta284
  initial 1048576
  fixed FALSE
  prior none
  param
  to.theta function(x) x
  from.theta function(x) x
theta285
  hyperid 29385

```

```

name theta285
short.name theta285
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta286
hyperid 29386
name theta286
short.name theta286
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta287
hyperid 29387
name theta287
short.name theta287
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta288
hyperid 29388
name theta288
short.name theta288
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x
theta289
hyperid 29389
name theta289
short.name theta289
initial 1048576
fixed FALSE

```

```

    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta290
    hyperid 29390
    name theta290
    short.name theta290
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta291
    hyperid 29391
    name theta291
    short.name theta291
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta292
    hyperid 29392
    name theta292
    short.name theta292
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta293
    hyperid 29393
    name theta293
    short.name theta293
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

```

theta294

hyperid 29394
name theta294
short.name theta294
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta295

hyperid 29395
name theta295
short.name theta295
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta296

hyperid 29396
name theta296
short.name theta296
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta297

hyperid 29397
name theta297
short.name theta297
initial 1048576
fixed FALSE
prior none
param
to.theta function(x) x
from.theta function(x) x

theta298

hyperid 29398
name theta298
short.name theta298

```

    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta299
    hyperid 29399
    name theta299
    short.name theta299
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x
theta300
    hyperid 29400
    name theta300
    short.name theta300
    initial 1048576
    fixed FALSE
    prior none
    param
    to.theta function(x) x
    from.theta function(x) x

constr FALSE

nrow.ncol FALSE

augmented TRUE

aug.factor 1

aug.constr 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

n.div.by -1

n.required TRUE

set.default.values TRUE

pdf iidkd

```

Example

Just simulate some data and estimate the parameters back. This is for `order=4`.

```
library(mvtnorm)

n <- 300
m <- 4
N <- m*n
rho <- 0.8

Sigma <- matrix(NA, m, m)
diag(Sigma) <- (1/(1:m))^2
for(i in 1:m) {
  for (j in 1:m) {
    if (i != j) {
      Sigma[i, j] <- rho^abs(i-j) * sqrt(Sigma[i, i] * Sigma[j, j])
    }
  }
}

y <- c()
yy <- rmvnorm(n, sigma = Sigma)
for(i in 1:m) {
  y <- c(y, yy[, i])
}

r <- inla(y ~ f(i, model = "iidkd", order = m, n=N,
  ## set parameters using 'theta1'.
  ## these are the default parameters.
  hyper = list(theta1 = list(
    param = c(100, rep(1, m), rep(0, m*(m-1)/2)))),
  data = data.frame(i = 1:N, y),
  ## fix precision as we have exact observations
  control.family = list(hyper = list(
    prec = list(initial = 15, fixed = TRUE))),
  verbose = FALSE)

## this is how the internal parameters are defined
L <- t(chol(solve(Sigma)))
diag(L) <- log(diag(L))
LL <- t(chol(solve(cov(yy))))
diag(LL) <- log(diag(LL))

## compare the estimated (internal) parameters with MLE and the truth
round(dig = 3, cbind(true = c(diag(L), L[lower.tri(L)]),
  mle = c(diag(LL), LL[lower.tri(LL)]),
  inla = r$mode$theta))

## this gives a list of sampled matrices (stdev's and correlations)
xx <- inla.iidkd.sample(10^4, r, "i")
## compute the mean
qq <- matrix(rowMeans(matrix(unlist(xx), nrow = m^2)), m, m)

iSigma <- 1/sqrt(diag(Sigma))
Cor <- diag(iSigma) %*% Sigma %*% diag(iSigma)
round(dig = 3, cbind(inla = c(diag(qq), qq[lower.tri(qq)]),
  true = c(sqrt(diag(Sigma)), Cor[lower.tri(Cor)])))
```

Notes

Note that for higher values of k the only integration scheme that is supported is `control.inla=list(int.strategy="eb")`.