

PriorHessian

Generated by Doxygen 1.8.11

## Contents

<b>1</b>	<b>Main Page</b>	<b>1</b>
<b>2</b>	<b>Namespace Index</b>	<b>3</b>
2.1	Namespace List . . . . .	3
<b>3</b>	<b>Hierarchical Index</b>	<b>4</b>
3.1	Class Hierarchy . . . . .	4
<b>4</b>	<b>Class Index</b>	<b>6</b>
4.1	Class List . . . . .	6
<b>5</b>	<b>File Index</b>	<b>9</b>
5.1	File List . . . . .	9
<b>6</b>	<b>Namespace Documentation</b>	<b>11</b>
6.1	prior_hessian Namespace Reference . . . . .	11
6.1.1	Typedef Documentation . . . . .	14
6.1.2	Function Documentation . . . . .	15
6.2	prior_hessian::constants Namespace Reference . . . . .	28
6.2.1	Variable Documentation . . . . .	28
6.3	prior_hessian::CopulaDistImpl Namespace Reference . . . . .	28
6.4	prior_hessian::detail Namespace Reference . . . . .	29
6.4.1	Typedef Documentation . . . . .	29
6.4.2	Function Documentation . . . . .	29
6.5	prior_hessian::genz Namespace Reference . . . . .	31
6.5.1	Function Documentation . . . . .	31
6.6	prior_hessian::genz::fortran Namespace Reference . . . . .	32
6.6.1	Function Documentation . . . . .	32
6.7	prior_hessian::helpers Namespace Reference . . . . .	32
6.7.1	Function Documentation . . . . .	32
6.8	prior_hessian::mcmc Namespace Reference . . . . .	33
6.9	prior_hessian::meta Namespace Reference . . . . .	33
6.9.1	Detailed Description . . . . .	35
6.9.2	Typedef Documentation . . . . .	36
6.9.3	Function Documentation . . . . .	39
6.10	prior_hessian::polylog Namespace Reference . . . . .	42
6.10.1	Function Documentation . . . . .	43

<b>7</b>	<b>Class Documentation</b>	<b>45</b>
7.1	<a href="#">prior_hessian::meta::all_dists_are_bounded&lt; DistTs &gt; Struct Template Reference</a>	45
7.1.1	Detailed Description	45
7.1.2	Member Data Documentation	45
7.2	<a href="#">prior_hessian::AMHCopula&lt; Ndim &gt; Class Template Reference</a>	46
7.2.1	Detailed Description	48
7.2.2	Member Typedef Documentation	48
7.2.3	Constructor & Destructor Documentation	48
7.2.4	Member Function Documentation	49
7.3	<a href="#">prior_hessian::ArchimedeanCopula Class Reference</a>	64
7.3.1	Detailed Description	65
7.4	<a href="#">prior_hessian::BaseDist Class Reference</a>	65
7.4.1	Detailed Description	66
7.5	<a href="#">prior_hessian::CompositeDist::ComponentDistAdaptor&lt; Dist, meta::EnableIfSubclassT&lt; Dist, MultivariateDist &gt; &gt; Class Template Reference</a>	66
7.5.1	Detailed Description	68
7.5.2	Member Typedef Documentation	68
7.5.3	Constructor & Destructor Documentation	68
7.5.4	Member Function Documentation	69
7.6	<a href="#">prior_hessian::CompositeDist::ComponentDistAdaptor&lt; Dist, meta::EnableIfSubclassT&lt; Dist, UnivariateDist &gt; &gt; Class Template Reference</a>	78
7.6.1	Detailed Description	79
7.6.2	Member Typedef Documentation	80
7.6.3	Constructor & Destructor Documentation	80
7.6.4	Member Function Documentation	80
7.7	<a href="#">prior_hessian::CompositeDist Class Reference</a>	89
7.7.1	Detailed Description	92
7.7.2	Class Documentation	92
7.7.3	Member Typedef Documentation	92

7.7.4	Constructor & Destructor Documentation	93
7.7.5	Member Function Documentation	95
7.8	prior_hessian::meta::conjunction<... > Struct Template Reference	134
7.8.1	Detailed Description	134
7.9	prior_hessian::meta::conjunction< B1 > Struct Template Reference	135
7.9.1	Detailed Description	135
7.10	prior_hessian::meta::conjunction< B1, Bn... > Struct Template Reference	136
7.10.1	Detailed Description	136
7.11	prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs > Class Template Reference	137
7.11.1	Detailed Description	139
7.11.2	Member Typedef Documentation	139
7.11.3	Constructor & Destructor Documentation	140
7.11.4	Member Function Documentation	141
7.12	prior_hessian::ArchimedeanCopula::D2_GenTerms Struct Reference	159
7.12.1	Detailed Description	160
7.12.2	Member Data Documentation	161
7.13	prior_hessian::ArchimedeanCopula::D2_IGenTerms Struct Reference	161
7.13.1	Detailed Description	162
7.13.2	Member Data Documentation	162
7.14	prior_hessian::ArchimedeanCopula::D2Theta_GenTerms Struct Reference	163
7.14.1	Detailed Description	164
7.14.2	Member Data Documentation	164
7.15	prior_hessian::ArchimedeanCopula::D2Theta_IGenTerms Struct Reference	164
7.15.1	Detailed Description	165
7.15.2	Member Data Documentation	165
7.16	prior_hessian::ArchimedeanCopula::D_GenTerms Struct Reference	166
7.16.1	Detailed Description	166

7.16.2	Member Data Documentation	166
7.17	prior_hessian::ArchimedeanCopula::D_IGenTerms Struct Reference	167
7.17.1	Detailed Description	167
7.17.2	Member Data Documentation	167
7.18	prior_hessian::meta::disjunction<... > Struct Template Reference	168
7.18.1	Detailed Description	169
7.19	prior_hessian::meta::disjunction< B1 > Struct Template Reference	169
7.19.1	Detailed Description	170
7.20	prior_hessian::meta::disjunction< B1, Bn... > Struct Template Reference	170
7.20.1	Detailed Description	171
7.21	prior_hessian::detail::dist_adaptor_traits< Dist > Class Template Reference	171
7.21.1	Detailed Description	171
7.21.2	Member Typedef Documentation	171
7.21.3	Member Data Documentation	172
7.22	prior_hessian::detail::dist_adaptor_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > > Struct Template Reference	172
7.22.1	Detailed Description	172
7.22.2	Member Typedef Documentation	172
7.22.3	Member Data Documentation	173
7.23	prior_hessian::detail::dist_adaptor_traits< GammaDist > Struct Template Reference	173
7.23.1	Detailed Description	173
7.23.2	Member Typedef Documentation	173
7.23.3	Member Data Documentation	174
7.24	prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > > Struct Template Reference	174
7.24.1	Detailed Description	174
7.24.2	Member Typedef Documentation	174
7.24.3	Member Data Documentation	175
7.25	prior_hessian::detail::dist_adaptor_traits< NormalDist > Struct Template Reference	175

7.25.1 Detailed Description . . . . .	175
7.25.2 Member Typedef Documentation . . . . .	175
7.25.3 Member Data Documentation . . . . .	176
7.26 prior_hessian::detail::dist_adaptor_traits< ParetoDist > Struct Template Reference . . . . .	176
7.26.1 Detailed Description . . . . .	176
7.26.2 Member Typedef Documentation . . . . .	176
7.26.3 Member Data Documentation . . . . .	177
7.27 prior_hessian::detail::dist_adaptor_traits< ScaledSymmetricBetaDist > Struct Template Reference . . . . .	177
7.27.1 Detailed Description . . . . .	177
7.27.2 Member Typedef Documentation . . . . .	177
7.27.3 Member Data Documentation . . . . .	178
7.28 prior_hessian::detail::dist_adaptor_traits< SymmetricBetaDist > Struct Template Reference . . . . .	178
7.28.1 Detailed Description . . . . .	178
7.28.2 Member Typedef Documentation . . . . .	178
7.28.3 Member Data Documentation . . . . .	179
7.29 prior_hessian::detail::dist_adaptor_traits< TruncatedGammaDist > Struct Template Reference . . . . .	179
7.29.1 Detailed Description . . . . .	179
7.29.2 Member Typedef Documentation . . . . .	179
7.29.3 Member Data Documentation . . . . .	180
7.30 prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > > Struct Template Reference . . . . .	180
7.30.1 Detailed Description . . . . .	180
7.30.2 Member Typedef Documentation . . . . .	180
7.30.3 Member Data Documentation . . . . .	181
7.31 prior_hessian::detail::dist_adaptor_traits< TruncatedNormalDist > Struct Template Reference . . . . .	181
7.31.1 Detailed Description . . . . .	181
7.31.2 Member Typedef Documentation . . . . .	181
7.31.3 Member Data Documentation . . . . .	182

7.32	<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; TruncatedParetoDist &gt; Struct Template Reference</a>	182
7.32.1	<a href="#">Detailed Description</a>	182
7.32.2	<a href="#">Member Typedef Documentation</a>	182
7.32.3	<a href="#">Member Data Documentation</a>	183
7.33	<a href="#">prior_hessian::ArchimedeanCopula::DTheta_GenTerms Struct Reference</a>	183
7.33.1	<a href="#">Detailed Description</a>	183
7.33.2	<a href="#">Member Data Documentation</a>	183
7.34	<a href="#">prior_hessian::ArchimedeanCopula::DTheta_IGenTerms Struct Reference</a>	184
7.34.1	<a href="#">Detailed Description</a>	184
7.34.2	<a href="#">Member Data Documentation</a>	184
7.35	<a href="#">prior_hessian::eulerian_number&lt; N, M &gt; Struct Template Reference</a>	185
7.35.1	<a href="#">Detailed Description</a>	186
7.36	<a href="#">prior_hessian::eulerian_number&lt; 0, M &gt; Struct Template Reference</a>	186
7.36.1	<a href="#">Detailed Description</a>	187
7.37	<a href="#">prior_hessian::GammaDist Class Reference</a>	187
7.37.1	<a href="#">Detailed Description</a>	189
7.37.2	<a href="#">Member Typedef Documentation</a>	189
7.37.3	<a href="#">Constructor &amp; Destructor Documentation</a>	189
7.37.4	<a href="#">Member Function Documentation</a>	190
7.38	<a href="#">prior_hessian::IndexError Struct Reference</a>	205
7.38.1	<a href="#">Detailed Description</a>	206
7.38.2	<a href="#">Constructor &amp; Destructor Documentation</a>	207
7.38.3	<a href="#">Member Function Documentation</a>	207
7.38.4	<a href="#">Member Data Documentation</a>	207
7.39	<a href="#">prior_hessian::InvalidOperationError Struct Reference</a>	208
7.39.1	<a href="#">Detailed Description</a>	209
7.39.2	<a href="#">Constructor &amp; Destructor Documentation</a>	209
7.39.3	<a href="#">Member Function Documentation</a>	210

7.39.4	Member Data Documentation . . . . .	210
7.40	prior_hessian::meta::is_copula< T, U > Class Template Reference . . . . .	210
7.40.1	Detailed Description . . . . .	210
7.40.2	Member Data Documentation . . . . .	211
7.41	prior_hessian::meta::is_numeric_template_of< class, typename > Struct Template Reference . . . . .	211
7.41.1	Detailed Description . . . . .	212
7.42	prior_hessian::meta::is_numeric_template_of< ClassNumericTemplate, ClassNumericTemplate< Is... > > Struct Template Reference . . . . .	212
7.42.1	Detailed Description . . . . .	213
7.43	prior_hessian::meta::is_subclass_of_numeric_template< T, U > Class Template Reference . . . . .	213
7.43.1	Detailed Description . . . . .	213
7.43.2	Member Data Documentation . . . . .	214
7.44	prior_hessian::meta::is_template_of< class, typename > Struct Template Reference . . . . .	214
7.44.1	Detailed Description . . . . .	215
7.45	prior_hessian::meta::is_template_of< ClassTemplate, ClassTemplate< Ts... > > Struct Template Ref- erence . . . . .	215
7.45.1	Detailed Description . . . . .	216
7.46	prior_hessian::mcmc::MCMCData< Ndim > Class Template Reference . . . . .	216
7.46.1	Detailed Description . . . . .	217
7.46.2	Member Typedef Documentation . . . . .	217
7.46.3	Constructor & Destructor Documentation . . . . .	217
7.46.4	Member Function Documentation . . . . .	217
7.46.5	Member Data Documentation . . . . .	218
7.47	prior_hessian::MultivariateDist Class Reference . . . . .	218
7.47.1	Detailed Description . . . . .	219
7.47.2	Constructor & Destructor Documentation . . . . .	219
7.47.3	Member Function Documentation . . . . .	219
7.48	prior_hessian::MultivariateNormalDist< Ndim > Class Template Reference . . . . .	220
7.48.1	Detailed Description . . . . .	222



7.48.2	Member Typedef Documentation	222
7.48.3	Constructor & Destructor Documentation	223
7.48.4	Member Function Documentation	224
7.49	prior_hessian::NormalDist Class Reference	248
7.49.1	Detailed Description	250
7.49.2	Member Typedef Documentation	250
7.49.3	Constructor & Destructor Documentation	251
7.49.4	Member Function Documentation	252
7.50	prior_hessian::NotImplementedError Struct Reference	272
7.50.1	Detailed Description	273
7.50.2	Constructor & Destructor Documentation	273
7.50.3	Member Function Documentation	274
7.50.4	Member Data Documentation	274
7.51	prior_hessian::NumericalOverflowError Struct Reference	274
7.51.1	Detailed Description	275
7.51.2	Constructor & Destructor Documentation	275
7.51.3	Member Function Documentation	276
7.51.4	Member Data Documentation	276
7.52	prior_hessian::ParameterNameError Struct Reference	276
7.52.1	Detailed Description	277
7.52.2	Constructor & Destructor Documentation	277
7.52.3	Member Function Documentation	278
7.52.4	Member Data Documentation	278
7.53	prior_hessian::ParameterNameUniquenessError Struct Reference	278
7.53.1	Detailed Description	279
7.53.2	Constructor & Destructor Documentation	279
7.53.3	Member Function Documentation	280
7.53.4	Member Data Documentation	280

7.54	<a href="#">prior_hessian::ParameterSizeError Struct Reference</a>	280
7.54.1	<a href="#">Detailed Description</a>	281
7.54.2	<a href="#">Constructor &amp; Destructor Documentation</a>	281
7.54.3	<a href="#">Member Function Documentation</a>	282
7.54.4	<a href="#">Member Data Documentation</a>	282
7.55	<a href="#">prior_hessian::ParameterValueError Struct Reference</a>	282
7.55.1	<a href="#">Detailed Description</a>	283
7.55.2	<a href="#">Constructor &amp; Destructor Documentation</a>	283
7.55.3	<a href="#">Member Function Documentation</a>	284
7.55.4	<a href="#">Member Data Documentation</a>	284
7.56	<a href="#">prior_hessian::ParetoDist Class Reference</a>	284
7.56.1	<a href="#">Detailed Description</a>	286
7.56.2	<a href="#">Member Typedef Documentation</a>	286
7.56.3	<a href="#">Constructor &amp; Destructor Documentation</a>	287
7.56.4	<a href="#">Member Function Documentation</a>	287
7.57	<a href="#">prior_hessian::PriorHessianError Class Reference</a>	319
7.57.1	<a href="#">Detailed Description</a>	320
7.57.2	<a href="#">Constructor &amp; Destructor Documentation</a>	320
7.57.3	<a href="#">Member Function Documentation</a>	321
7.57.4	<a href="#">Member Data Documentation</a>	321
7.58	<a href="#">prior_hessian::RuntimeConvergenceError Struct Reference</a>	321
7.58.1	<a href="#">Detailed Description</a>	322
7.58.2	<a href="#">Constructor &amp; Destructor Documentation</a>	322
7.58.3	<a href="#">Member Function Documentation</a>	323
7.58.4	<a href="#">Member Data Documentation</a>	323
7.59	<a href="#">prior_hessian::RuntimeSamplingError Struct Reference</a>	323
7.59.1	<a href="#">Detailed Description</a>	324
7.59.2	<a href="#">Constructor &amp; Destructor Documentation</a>	324

7.59.3	Member Function Documentation	325
7.59.4	Member Data Documentation	325
7.60	prior_hessian::RuntimeTypeError Struct Reference	325
7.60.1	Detailed Description	326
7.60.2	Constructor & Destructor Documentation	326
7.60.3	Member Function Documentation	327
7.60.4	Member Data Documentation	327
7.61	prior_hessian::ScaledDist< Dist > Class Template Reference	327
7.61.1	Detailed Description	329
7.61.2	Constructor & Destructor Documentation	329
7.61.3	Member Function Documentation	331
7.61.4	Member Data Documentation	343
7.62	prior_hessian::SymmetricBetaDist Class Reference	344
7.62.1	Detailed Description	346
7.62.2	Member Typedef Documentation	346
7.62.3	Constructor & Destructor Documentation	346
7.62.4	Member Function Documentation	347
7.63	prior_hessian::TruncatedDist< Dist > Class Template Reference	361
7.63.1	Detailed Description	363
7.63.2	Constructor & Destructor Documentation	363
7.63.3	Member Function Documentation	366
7.63.4	Member Data Documentation	375
7.64	prior_hessian::TruncatedMultivariateDist< Dist > Class Template Reference	377
7.64.1	Detailed Description	379
7.64.2	Constructor & Destructor Documentation	379
7.64.3	Member Function Documentation	379
7.64.4	Member Data Documentation	381
7.65	prior_hessian::UnivariateDist Class Reference	383
7.65.1	Detailed Description	384
7.65.2	Constructor & Destructor Documentation	384
7.65.3	Member Function Documentation	384
7.66	prior_hessian::UpperTruncatedDist< Dist > Class Template Reference	385
7.66.1	Detailed Description	386
7.66.2	Constructor & Destructor Documentation	386
7.66.3	Member Function Documentation	388

<b>8 File Documentation</b>	<b>395</b>
8.1 AMHCopula.h File Reference . . . . .	395
8.2 ArchimedeanCopula.h File Reference . . . . .	395
8.2.1 Detailed Description . . . . .	396
8.3 BaseDist.h File Reference . . . . .	397
8.3.1 Detailed Description . . . . .	397
8.4 BoundsAdaptedDist.h File Reference . . . . .	397
8.4.1 Detailed Description . . . . .	399
8.5 CompositeDist.cpp File Reference . . . . .	400
8.5.1 Detailed Description . . . . .	401
8.6 CompositeDist.h File Reference . . . . .	401
8.6.1 Detailed Description . . . . .	402
8.6.2 Class Documentation . . . . .	403
8.7 copula.h File Reference . . . . .	403
8.8 CopulaDist.h File Reference . . . . .	403
8.8.1 Detailed Description . . . . .	404
8.9 EulerianPolynomial.h File Reference . . . . .	404
8.9.1 Detailed Description . . . . .	405
8.10 GammaDist.cpp File Reference . . . . .	405
8.10.1 Detailed Description . . . . .	406
8.11 GammaDist.h File Reference . . . . .	406
8.11.1 Detailed Description . . . . .	407
8.12 Meta.h File Reference . . . . .	408
8.12.1 Detailed Description . . . . .	411
8.12.2 Macro Definition Documentation . . . . .	411
8.13 MultivariateDist.h File Reference . . . . .	412
8.13.1 Detailed Description . . . . .	413
8.14 MultivariateNormalDist.h File Reference . . . . .	413

8.14.1 Detailed Description . . . . .	414
8.15 mvn_cdf.cpp File Reference . . . . .	414
8.15.1 Detailed Description . . . . .	415
8.16 mvn_cdf.h File Reference . . . . .	415
8.16.1 Detailed Description . . . . .	417
8.17 NormalDist.cpp File Reference . . . . .	417
8.17.1 Detailed Description . . . . .	417
8.18 NormalDist.h File Reference . . . . .	418
8.18.1 Detailed Description . . . . .	419
8.19 ParetoDist.cpp File Reference . . . . .	419
8.19.1 Detailed Description . . . . .	419
8.20 ParetoDist.h File Reference . . . . .	420
8.20.1 Detailed Description . . . . .	421
8.21 PolyLog.h File Reference . . . . .	421
8.21.1 Detailed Description . . . . .	422
8.22 PriorHessianError.h File Reference . . . . .	422
8.22.1 Detailed Description . . . . .	423
8.22.2 Macro Definition Documentation . . . . .	424
8.23 README.md File Reference . . . . .	424
8.24 ScaledDist.h File Reference . . . . .	424
8.24.1 Detailed Description . . . . .	425
8.25 ScaledSymmetricBetaDist.h File Reference . . . . .	425
8.25.1 Detailed Description . . . . .	426
8.26 SymmetricBetaDist.cpp File Reference . . . . .	426
8.26.1 Detailed Description . . . . .	427
8.27 SymmetricBetaDist.h File Reference . . . . .	427
8.27.1 Detailed Description . . . . .	428
8.28 TruncatedDist.h File Reference . . . . .	429

8.28.1 Detailed Description . . . . .	430
8.29 TruncatedGammaDist.h File Reference . . . . .	430
8.29.1 Detailed Description . . . . .	431
8.30 TruncatedMultivariateDist.h File Reference . . . . .	431
8.30.1 Detailed Description . . . . .	432
8.31 TruncatedMultivariateNormalDist.h File Reference . . . . .	433
8.31.1 Detailed Description . . . . .	434
8.32 TruncatedNormalDist.h File Reference . . . . .	434
8.32.1 Detailed Description . . . . .	435
8.33 TruncatedParetoDist.h File Reference . . . . .	435
8.33.1 Detailed Description . . . . .	436
8.34 UnivariateDist.cpp File Reference . . . . .	436
8.34.1 Detailed Description . . . . .	437
8.35 UnivariateDist.h File Reference . . . . .	437
8.35.1 Detailed Description . . . . .	438
8.36 UpperTruncatedDist.h File Reference . . . . .	438
8.36.1 Detailed Description . . . . .	439
8.37 util.cpp File Reference . . . . .	440
8.37.1 Detailed Description . . . . .	440
8.38 util.h File Reference . . . . .	441
8.38.1 Detailed Description . . . . .	442

## Prior Hessian

Library for fast computation of log-likelihoods, and derivatives, of multivariate priors defined as composites of univariate distributions and multivariate distributions especially Archimedean copulas.

## Documentation

The PriorHessian Doxygen documentation can be build with the `OPT_DOC` CMake option and is also available on online:

- [PriorHessian HTML Manual](#)
- [PriorHessian PDF Manual](#)
- [PriorHessian github repository](#)

## Installation

The PriorHessian library uses CMake and is designed to be installed either to a base system, or run from within an arbitrary install prefix. The default build script will install to the `_install` directory underneath the repository root.

```
$ ./build.sh <cmake-extra-opts>
```

## Dependencies

- [Armadillo](#) - A high-performance array library for C++.
- [BLAS](#) - A BLAS implementation: [Netlib BLAS reference](#) or [OpenBlas](#)
- [LAPACK](#) - A Lapack implementation: [Netlib LAPACK reference](#)

Note the `OPT_BLAS_INT64` CMake option controls whether Armadillo uses BLAS and LAPACK libraries that use 64-bit interger indexing. Matlab uses 64-bit by default, and to link PriorHessian to Matlab MEX libraries, this option must be on. Many linux systems only provide 32-bit integer versions of BLAS and Lapack, and the option can be disabled if Matlab support is not a concern and 64-bit support is difficult to manage on

## External Projects

These packages are specialized CMake projects. If they are not currently installed on the development machines we use the [AddExternalDependency.cmake](#) which will automatically download, configure, build and install to the `CMAKE_INSTALL_PREFIX`, enabling their use through the normal CMake `find_package()` system.

- [BacktraceException](#) - For exception backtraces when debugging (especially in Matlab).

## Motivation

For many likelihood-based methods, they can be extended to Bayesian methods like MAP Estimation and MCMC Posterior sampling, by incorporating a prior. This prior must provide fast methods for computing log-likelihood and it's derivatives over the parameter space. The prior log-likelihood, as well as it's gradient and hessian are then added to the equivalent quantities from the likelihood to create a Bayesian objective for MAP Estimation.

## Static Polymorphism

The PriorHessian library is designed using static polymorphism (templates), and as such avoids virtual functions for small-grained tasks, and instead uses templates, which allow many small functions to be inlined. This aggressive inlining by the compiler produces log-likelihood, gradient, and hessian functions that are nearly as fast as hand-coded functions. But our flexible `[CompositeDist]()` class is able to be easily created with any mix of `[UnivariateDist]()` and `[MultivariateDist]()` elements.

In [Mappel](#) we use this ability to create heterogeneous priors for each Model's parameters, (e.g., `[x,y,l,bg,sigma]`).

Functionally, the PriorHessian library stores sequences of distributions as `std::tuples`. Using this approach as opposed to the runtime polymorphism of using `std::vector<std::unique_ptr<Base>>` gains several advantages. Most importantly, without the need for virtual functions, the tuple-based approach has the ability to inline the many small computational functions that must be combined for every call to compute the log-likelihood or other computationally important quantities.

## Computations available

- `cdf` - cumulative distribution function
- `pdf` - probability density function
- `llh` - log-likelihood (log of pdf)
- `rllh` - relative log-likelihood (log of pdf without constant terms)
- `grad` - derivative of log-likelihood (or equivalently of relative-llh)
- `grad2` - 2nd-derivative of log-likelihood

Including PriorHessian as an ExternalProject

## 2 Namespace Index

### 2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

<a href="#"><code>prior_hessian</code></a>	11
<a href="#"><code>prior_hessian::constants</code></a>	28



<a href="#">prior_hessian::CopulaDistImpl</a>	28
<a href="#">prior_hessian::detail</a>	29
<a href="#">prior_hessian::genz</a>	31
<a href="#">prior_hessian::genz::fortran</a>	32
<a href="#">prior_hessian::helpers</a>	32
<a href="#">prior_hessian::mcmc</a>	33
<a href="#">prior_hessian::meta</a>	
Class templates to utilize sequencing behaviour of std::initializer_list expressions	33
<a href="#">prior_hessian::polylog</a>	42

### 3 Hierarchical Index

#### 3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

<a href="#">prior_hessian::meta::all_dists_are_bounded&lt; DistTs &gt;</a>	45
<a href="#">prior_hessian::ArchimedeanCopula</a>	64
<a href="#">prior_hessian::AMHCopula&lt; Ndim &gt;</a>	46
B1	
<a href="#">prior_hessian::meta::conjunction&lt; B1 &gt;</a>	135
<a href="#">prior_hessian::meta::disjunction&lt; B1 &gt;</a>	169
<a href="#">prior_hessian::BaseDist</a>	65
<a href="#">prior_hessian::MultivariateDist</a>	218
<a href="#">prior_hessian::CopulaDistImpl::CopulaDist&lt; CopulaTemplate, MarginalDistTs &gt;</a>	137
<a href="#">prior_hessian::MultivariateNormalDist&lt; Ndim &gt;</a>	220
<a href="#">prior_hessian::UnivariateDist</a>	383
<a href="#">prior_hessian::GammaDist</a>	187
<a href="#">prior_hessian::NormalDist</a>	248
<a href="#">prior_hessian::ParetoDist</a>	284
<a href="#">prior_hessian::SymmetricBetaDist</a>	344
<a href="#">prior_hessian::CompositeDist::ComponentDistAdaptor&lt; DistT, Enable &gt;</a>	89

prior_hessian::CompositeDist conditional_t	89
prior_hessian::meta::conjunction< B1, Bn... >	136
prior_hessian::meta::disjunction< B1, Bn... >	170
prior_hessian::ArchimedeanCopula::D_GenTerms	166
prior_hessian::ArchimedeanCopula::D2_GenTerms	159
prior_hessian::ArchimedeanCopula::D_IGenTerms	167
prior_hessian::ArchimedeanCopula::D2_IGenTerms	161
Dist	
prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >	66
prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >	78
prior_hessian::ScaledDist< Dist >	327
prior_hessian::TruncatedDist< Dist >	361
prior_hessian::TruncatedMultivariateDist< Dist >	377
prior_hessian::UpperTruncatedDist< Dist >	385
prior_hessian::detail::dist_adaptor_traits< Dist >	171
prior_hessian::detail::dist_adaptor_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >	172
prior_hessian::detail::dist_adaptor_traits< GammaDist >	173
prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > >	174
prior_hessian::detail::dist_adaptor_traits< NormalDist >	175
prior_hessian::detail::dist_adaptor_traits< ParetoDist >	176
prior_hessian::detail::dist_adaptor_traits< ScaledSymmetricBetaDist >	177
prior_hessian::detail::dist_adaptor_traits< SymmetricBetaDist >	178
prior_hessian::detail::dist_adaptor_traits< TruncatedGammaDist >	179
prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > >	180
prior_hessian::detail::dist_adaptor_traits< TruncatedNormalDist >	181
prior_hessian::detail::dist_adaptor_traits< TruncatedParetoDist >	182
prior_hessian::ArchimedeanCopula::DTheta_GenTerms	183
prior_hessian::ArchimedeanCopula::D2Theta_GenTerms	163

<code>prior_hessian::ArchimedeanCopula::DTheta_I GenTerms</code>	184
<code>prior_hessian::ArchimedeanCopula::D2Theta_I GenTerms</code>	164
<code>std::exception</code>	
<code>prior_hessian::PriorHessianError</code>	319
<code>prior_hessian::IndexError</code>	205
<code>prior_hessian::InvalidOperationError</code>	208
<code>prior_hessian::NotImplementedError</code>	272
<code>prior_hessian::NumericalOverflowError</code>	274
<code>prior_hessian::ParameterNameError</code>	276
<code>prior_hessian::ParameterNameUniquenessError</code>	278
<code>prior_hessian::ParameterSizeError</code>	280
<code>prior_hessian::ParameterValueError</code>	282
<code>prior_hessian::RuntimeConvergenceError</code>	321
<code>prior_hessian::RuntimeSamplingError</code>	323
<code>prior_hessian::RuntimeTypeError</code>	325
<code>false_type</code>	
<code>prior_hessian::meta::is_numeric_template_of&lt; class, typename &gt;</code>	211
<code>prior_hessian::meta::is_template_of&lt; class, typename &gt;</code>	214
<code>integral_constant</code>	
<code>prior_hessian::eulerian_number&lt; N, M &gt;</code>	185
<code>prior_hessian::eulerian_number&lt; 0, M &gt;</code>	186
<code>prior_hessian::meta::is_copula&lt; T, U &gt;</code>	210
<code>prior_hessian::meta::is_subclass_of_numeric_template&lt; T, U &gt;</code>	213
<code>prior_hessian::mcmc::MCMCData&lt; Ndim &gt;</code>	216
<code>prior_hessian::mcmc::MCMCData&lt; Dist::num_dim()&gt;</code>	216
<code>true_type</code>	
<code>prior_hessian::meta::conjunction&lt;... &gt;</code>	134
<code>prior_hessian::meta::disjunction&lt;... &gt;</code>	168
<code>prior_hessian::meta::is_numeric_template_of&lt; ClassNumericTemplate, ClassNumericTemplate&lt; Is... &gt; &gt;</code>	212
<code>prior_hessian::meta::is_template_of&lt; ClassTemplate, ClassTemplate&lt; Ts... &gt; &gt;</code>	215

## 4 Class Index

### 4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">prior_hessian::meta::all_dists_are_bounded&lt; DistTs &gt;</a>	45
<a href="#">prior_hessian::AMHCopula&lt; Ndim &gt;</a>	46
<a href="#">prior_hessian::ArchimedeanCopula</a>	64
<a href="#">prior_hessian::BaseDist</a>	65
<a href="#">prior_hessian::CompositeDist::ComponentDistAdaptor&lt; Dist, meta::EnableIfSubclassT&lt; Dist, MultivariateDist &gt; &gt;</a>	66
<a href="#">prior_hessian::CompositeDist::ComponentDistAdaptor&lt; Dist, meta::EnableIfSubclassT&lt; Dist, UnivariateDist &gt; &gt;</a>	78
<a href="#">prior_hessian::CompositeDist</a> A probability distribution made of independent component distributions composing groups of 1 or more variables	89
<a href="#">prior_hessian::meta::conjunction&lt;... &gt;</a>	134
<a href="#">prior_hessian::meta::conjunction&lt; B1 &gt;</a>	135
<a href="#">prior_hessian::meta::conjunction&lt; B1, Bn... &gt;</a>	136
<a href="#">prior_hessian::CopulaDistImpl::CopulaDist&lt; CopulaTemplate, MarginalDistTs &gt;</a>	137
<a href="#">prior_hessian::ArchimedeanCopula::D2_GenTerms</a>	159
<a href="#">prior_hessian::ArchimedeanCopula::D2_IGenTerms</a>	161
<a href="#">prior_hessian::ArchimedeanCopula::D2Theta_GenTerms</a>	163
<a href="#">prior_hessian::ArchimedeanCopula::D2Theta_IGenTerms</a>	164
<a href="#">prior_hessian::ArchimedeanCopula::D_GenTerms</a>	166
<a href="#">prior_hessian::ArchimedeanCopula::D_IGenTerms</a>	167
<a href="#">prior_hessian::meta::disjunction&lt;... &gt;</a>	168
<a href="#">prior_hessian::meta::disjunction&lt; B1 &gt;</a>	169
<a href="#">prior_hessian::meta::disjunction&lt; B1, Bn... &gt;</a>	170
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; Dist &gt;</a>	171
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; CopulaDistImpl::CopulaDist&lt; CopulaTemplate, DistTs... &gt; &gt;</a>	172
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; GammaDist &gt;</a>	173

<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; MultivariateNormalDist&lt; Ndim &gt; &gt;</a>	174
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; NormalDist &gt;</a>	175
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; ParetoDist &gt;</a>	176
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; ScaledSymmetricBetaDist &gt;</a>	177
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; SymmetricBetaDist &gt;</a>	178
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; TruncatedGammaDist &gt;</a>	179
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; TruncatedMultivariateNormalDist&lt; Ndim &gt; &gt;</a>	180
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; TruncatedNormalDist &gt;</a>	181
<a href="#">prior_hessian::detail::dist_adaptor_traits&lt; TruncatedParetoDist &gt;</a>	182
<a href="#">prior_hessian::ArchimedeanCopula::DTheta_GenTerms</a>	183
<a href="#">prior_hessian::ArchimedeanCopula::DTheta_IGenTerms</a>	184
<a href="#">prior_hessian::eulerian_number&lt; N, M &gt;</a>	185
<a href="#">prior_hessian::eulerian_number&lt; 0, M &gt;</a>	186
<a href="#">prior_hessian::GammaDist</a>	
Single parameter beta distribution where = , leading to symmetric bounded distribution	187
<a href="#">prior_hessian::IndexError</a>	
Indicates a index access was out of bounds	205
<a href="#">prior_hessian::InvalidOperationError</a>	208
<a href="#">prior_hessian::meta::is_copula&lt; T, U &gt;</a>	210
<a href="#">prior_hessian::meta::is_numeric_template_of&lt; class, typename &gt;</a>	211
<a href="#">prior_hessian::meta::is_numeric_template_of&lt; ClassNumericTemplate, ClassNumericTemplate&lt; Is... &gt; &gt;</a>	212
<a href="#">prior_hessian::meta::is_subclass_of_numeric_template&lt; T, U &gt;</a>	213
<a href="#">prior_hessian::meta::is_template_of&lt; class, typename &gt;</a>	214
<a href="#">prior_hessian::meta::is_template_of&lt; ClassTemplate, ClassTemplate&lt; Ts... &gt; &gt;</a>	215
<a href="#">prior_hessian::mcmc::MCMCData&lt; Ndim &gt;</a>	216
<a href="#">prior_hessian::MultivariateDist</a>	218
<a href="#">prior_hessian::MultivariateNormalDist&lt; Ndim &gt;</a>	
Multivariate Normal distribution	220
<a href="#">prior_hessian::NormalDist</a>	
Normal distribution with truncation	248
<a href="#">prior_hessian::NotImplementedError</a>	272

<a href="#">prior_hessian::NumericalOverflowError</a>	274
<a href="#">prior_hessian::ParameterNameError</a>	276
<a href="#">prior_hessian::ParameterNameUniquenessError</a>	278
<a href="#">prior_hessian::ParameterSizeError</a>	280
<a href="#">prior_hessian::ParameterValueError</a>	282
<a href="#">prior_hessian::ParetoDist</a>	
Pareto dist with infinite upper bound	284
<a href="#">prior_hessian::PriorHessianError</a>	319
<a href="#">prior_hessian::RuntimeConvergenceError</a>	321
<a href="#">prior_hessian::RuntimeSamplingError</a>	323
<a href="#">prior_hessian::RuntimeTypeError</a>	325
<a href="#">prior_hessian::ScaledDist&lt; Dist &gt;</a>	327
<a href="#">prior_hessian::SymmetricBetaDist</a>	
Single parameter beta distribution where $\alpha = \beta$ , leading to symmetric bounded distribution	344
<a href="#">prior_hessian::TruncatedDist&lt; Dist &gt;</a>	361
<a href="#">prior_hessian::TruncatedMultivariateDist&lt; Dist &gt;</a>	377
<a href="#">prior_hessian::UnivariateDist</a>	383
<a href="#">prior_hessian::UpperTruncatedDist&lt; Dist &gt;</a>	385

## 5 File Index

### 5.1 File List

Here is a list of all files with brief descriptions:

<a href="#">AMHCopula.h</a>	395
<a href="#">ArchimedeanCopula.h</a>	
CopulaDist base class	395
<a href="#">BaseDist.h</a>	
The Base classes for UnivariateDist and MultivariateDist	397
<a href="#">BoundsAdaptedDist.h</a>	
Functions and type-traits to enable easy wrapping of distributions in bounds-modifiable adapters	397
<a href="#">CompositeDist.cpp</a>	
CompositeDist and associated classes and nested classes	400

<a href="#">CompositeDist.h</a>	
The Frank copula computations	401
<a href="#">copula.h</a>	403
<a href="#">CopulaDist.h</a>	
CopulaDist base class	403
<a href="#">EulerianPolynomial.h</a>	
EulerianPolynomial computation	404
<a href="#">GammaDist.cpp</a>	
GammaDist class defintion	405
<a href="#">GammaDist.h</a>	
GammaDist class declaration and templated methods	406
<a href="#">Meta.h</a>	
Enables the use of variadic templates in interesting ways	408
<a href="#">MultivariateDist.h</a>	
MultivariateDist base class	412
<a href="#">MultivariateNormalDist.h</a>	
MultivariateNormalDist base class	413
<a href="#">mvn_cdf.cpp</a>	
NormalDist class defintion	414
<a href="#">mvn_cdf.h</a>	
Numerical computation of multivariate normal cdfs in 2,3 and higher dims	415
<a href="#">NormalDist.cpp</a>	
NormalDist class defintion	417
<a href="#">NormalDist.h</a>	
NormalDist class declaration and templated methods	418
<a href="#">ParetoDist.cpp</a>	
ParetoDist class defintion	419
<a href="#">ParetoDist.h</a>	
ParetoDist class declaration and templated methods	420
<a href="#">PolyLog.h</a>	
Poly log computation for negative integer valued paramters	421
<a href="#">PriorHessianError.h</a>	
The Exception classes for the PriorHessian library	422
<a href="#">ScaledDist.h</a>	
SemilnfiniteDist class declaration and templated methods	424
<a href="#">ScaledSymmetricBetaDist.h</a>	
SymmetricBetaDist class declaration and templated methods	425

<a href="#">SymmetricBetaDist.cpp</a>	
SymmetricBetaDist class defintion	426
<a href="#">SymmetricBetaDist.h</a>	
SymmetricBetaDist class declaration and templated methods	427
<a href="#">TruncatedDist.h</a>	
TruncatedDist declaration and templated methods definitions	429
<a href="#">TruncatedGammaDist.h</a>	
TruncatedGammaDist class declaration and templated methods	430
<a href="#">TruncatedMultivariateDist.h</a>	
TruncatedMultivariateDist declaration and templated methods definitions	431
<a href="#">TruncatedMultivariateNormalDist.h</a>	
TruncatedMultivariateNormalDist class declaration	433
<a href="#">TruncatedNormalDist.h</a>	
TruncatedNormalDist class declaration	434
<a href="#">TruncatedParetoDist.h</a>	
ParetoDist class declaration and templated methods	435
<a href="#">UnivariateDist.cpp</a>	
UnivariateDist base class method definition	436
<a href="#">UnivariateDist.h</a>	
UnivariateDist base class	437
<a href="#">UpperTruncatedDist.h</a>	
UpperTruncatedDist declaration and templated methods definitions	438
<a href="#">util.cpp</a>	440
<a href="#">util.h</a>	
Utilities and namespace globals	441

## 6 Namespace Documentation

### 6.1 prior\_hessian Namespace Reference

#### Namespaces

- [constants](#)
- [CopulaDistImpl](#)
- [detail](#)
- [genz](#)
- [helpers](#)
- [mcmc](#)
- [meta](#)

*Class templates to utilize sequencing behaviour of `std::initializer_list` expressions.*

- [polylog](#)



## Classes

- class [AMHCopula](#)
- class [ArchimedeanCopula](#)
- class [BaseDist](#)
- class [CompositeDist](#)
  - A probability distribution made of independent component distributions composing groups of 1 or more variables.*
- struct [eulerian\\_number](#)
- struct [eulerian\\_number< 0, M >](#)
- class [GammaDist](#)
  - Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.*
- struct [IndexError](#)
  - Indicates a index access was out of bounds.*
- struct [InvalidOperationError](#)
- class [MultivariateDist](#)
- class [MultivariateNormalDist](#)
  - Multivariate Normal distribution.*
- class [NormalDist](#)
  - Normal distribution with truncation.*
- struct [NotImplementedError](#)
- struct [NumericalOverflowError](#)
- struct [ParameterNameError](#)
- struct [ParameterNameUniquenessError](#)
- struct [ParameterSizeError](#)
- struct [ParameterValueError](#)
- class [ParetoDist](#)
  - Pareto dist with infinite upper bound.*
- class [PriorHessianError](#)
- struct [RuntimeConvergenceError](#)
- struct [RuntimeSamplingError](#)
- struct [RuntimeTypeError](#)
- class [ScaledDist](#)
- class [SymmetricBetaDist](#)
  - Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.*
- class [TruncatedDist](#)
- class [TruncatedMultivariateDist](#)
- class [UnivariateDist](#)
- class [UpperTruncatedDist](#)

## Typedefs

- `template<class DistT >`  
`using BoundsAdaptedDistT = typename detail::dist\_adaptor\_traits< std::decay_t< DistT >>::bounds_adapted←  
_dist`
- `template<template< int > class CopulaTemplate, class... MarginalDistTs>`  
`using CopulaDist = CopulaDistImpl::CopulaDist< CopulaTemplate, BoundsAdaptedDistT< MarginalDistTs >...`  
`>`
- `using ScaledSymmetricBetaDist = ScaledDist< SymmetricBetaDist >`
- `using TruncatedGammaDist = TruncatedDist< GammaDist >`

- `template<int Ndim>`  
  using `TruncatedMultivariateNormalDist` = `TruncatedMultivariateDist`< `MultivariateNormalDist`< `Ndim` >>
- using `TruncatedNormalDist` = `TruncatedDist`< `NormalDist` >
- using `TruncatedParetoDist` = `UpperTruncatedDist`< `ParetoDist` >
- using `IdxT` = `arma::uword`
- using `UVecT` = `arma::Col`< `IdxT` >
- using `VecT` = `arma::Col`< `double` >
- using `MatT` = `arma::Mat`< `double` >
- using `StringVecT` = `std::vector`< `std::string` >
- using `TypeInfoVecT` = `std::vector`< `std::type_index` >

## Functions

- `std::ostream & operator<<` (`std::ostream &out`, `const CompositeDist &comp_dist`)
- `double unit_normal_cdf` (`double t`)
- `double unit_normal_icdf` (`double u`)
- `double bounded` (`double x`)
- `double owen_t_integral` (`double h`, `double a`, `double gh`)
- `double owen_b_integral` (`double h`, `double k`, `double r`)
- `double donnelly_bvn_integral` (`double ah`, `double ak`, `double r`)
- `double donnelly_bvn_integral_orig` (`double ah`, `double ak`, `double r`)
- `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>>`  
  `std::enable_if_t< detail::DistTraitsT< Dist >::adaptable_bounds, Dist >` `make_adapted_bounded_dist` (`Dist &&dist`)
- `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>>`  
  `std::enable_if_t< detail::DistTraitsT< Dist >::adaptable_bounds, BoundsAdaptedDistT< Dist > >` `make_←`  
  `adapted_bounded_dist` (`Dist &&dist`)
- `template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>>`  
  `std::enable_if_t< detail::DistTraitsT< Dist >::adaptable_bounds, Dist >` `make_adapted_bounded_dist` (`Dist &&dist`, `Vec &&lbound`, `Vec &&ubound`)
- `template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>>`  
  `std::enable_if_t<!detail::DistTraitsT< Dist >::adaptable_bounds, BoundsAdaptedDistT< Dist > >` `make_←`  
  `adapted_bounded_dist` (`Dist &&dist`, `Vec &&lbound`, `Vec &&ubound`)
- `template<class... Ts>`  
  `std::tuple< BoundsAdaptedDistT< Ts >... >` `make_adapted_bounded_dist_tuple` (`Ts &&...ts`)
- `template<class... Ts>`  
  `std::tuple< BoundsAdaptedDistT< Ts >... >` `make_adapted_bounded_dist_tuple` (`std::tuple< Ts... > &&dists`)
- `template<class... Ts>`  
  `std::tuple< BoundsAdaptedDistT< Ts >... >` `make_adapted_bounded_dist_tuple` (`const std::tuple< Ts... > &dists`)
- `template<template< int > class CopulaTemplate, class... MarginalDistTs>`  
  `CopulaDist`< `CopulaTemplate`, `MarginalDistTs...` > `make_copula_dist` (`CopulaTemplate< sizeof...(MarginalDistTs)> &&copula`, `MarginalDistTs &&...dists`)
- `template<long N>`  
  `VecT eulerian_polynomial` ()
- `double owen_t_integral` (`double h`, `double a`)
- `template<class Vec , class Mat >`  
  `double donnelly_bvn_cdf` (`const Vec &b`, `const Mat &sigma`)
- `template<class Vec , class Mat >`  
  `double owen_bvn_cdf` (`const Vec &b`, `const Mat &sigma`)

- `template<class Vec , class Mat >`  
`double mc_mvn_integral (const Vec &a, const Vec &b, const Mat &U, double &error, int &niter)`
- `template<class Vec , class Mat >`  
`double mc_mvn_cdf_core (const Vec &b, const Mat &U, double &error, int &niter)`
- `template<class Vec , class Mat >`  
`double mc_mvn_cdf (const Vec &b, const Mat &S, double &error)`
- `ScaledSymmetricBetaDist make_scaled_symmetric_beta_dist (double beta, std::pair< double, double > bounds)`
- `TruncatedGammaDist make_bounded_gamma_dist (double scale, double shape, std::pair< double, double > bounds)`
- `template<int Ndim, class Vec , class Mat , class Vec2 >`  
`TruncatedMultivariateNormalDist< Ndim > make_bounded_multivariate_normal_dist (Vec &&mu, Mat &&sigma, Vec2 &&lbound, Vec2 &&ubound)`
- `TruncatedNormalDist make_bounded_normal_dist (double mu, double sigma, std::pair< double, double > bounds)`
- `TruncatedParetoDist make_bounded_pareto_dist (double alpha, std::pair< double, double > bounds)`
- `template<class T >`  
`T square (T t)`

### 6.1.1 Typedef Documentation

- 6.1.1.1 `template<class DistT > using prior_hessian::BoundsAdaptedDistT = typedef typename detail::dist_adaptor_traits<std::decay_t<DistT>>::bounds_adapted_dist`

The bounds-adapted distribution type for a given distribution type DistT This is the adapted version of the class, i.e., the class that allows truncation or scaling so that the lower and upper bounds are settable.

Definition at line 59 of file BoundsAdaptedDist.h.

- 6.1.1.2 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_hessian::CopulaDist = typedef CopulaDistImpl::CopulaDist<CopulaTemplate, BoundsAdaptedDistT<MarginalDistTs>...>`

Definition at line 182 of file CopulaDist.h.

- 6.1.1.3 `using prior_hessian::IdxT = typedef arma::uword`

Definition at line 30 of file util.h.

- 6.1.1.4 `using prior_hessian::MatT = typedef arma::Mat<double>`

Definition at line 33 of file util.h.

- 6.1.1.5 `using prior_hessian::ScaledSymmetricBetaDist = typedef ScaledDist<SymmetricBetaDist>`

Definition at line 15 of file ScaledSymmetricBetaDist.h.

- 6.1.1.6 `using prior_hessian::StringVecT = typedef std::vector<std::string>`

Definition at line 34 of file util.h.

6.1.1.7 `using prior_hessian::TruncatedGammaDist = typedef TruncatedDist<GammaDist>`

Definition at line 15 of file TruncatedGammaDist.h.

6.1.1.8 `template<int Ndim> using prior_hessian::TruncatedMultivariateNormalDist = typedef TruncatedMultivariateDist<MultivariateNormalDist<Ndim>>`

Definition at line 18 of file TruncatedMultivariateNormalDist.h.

6.1.1.9 `using prior_hessian::TruncatedNormalDist = typedef TruncatedDist<NormalDist>`

Definition at line 17 of file TruncatedNormalDist.h.

6.1.1.10 `using prior_hessian::TruncatedParetoDist = typedef UpperTruncatedDist<ParetoDist>`

Definition at line 16 of file TruncatedParetoDist.h.

6.1.1.11 `using prior_hessian::TypeInfoVecT = typedef std::vector<std::type_index>`

Definition at line 35 of file util.h.

6.1.1.12 `using prior_hessian::UVecT = typedef arma::Col<IdxT>`

Definition at line 31 of file util.h.

6.1.1.13 `using prior_hessian::VecT = typedef arma::Col<double>`

Definition at line 32 of file util.h.

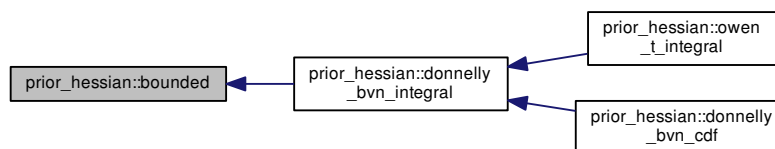
## 6.1.2 Function Documentation

6.1.2.1 `double prior_hessian::bounded ( double x )`

Definition at line 42 of file mvn\_cdf.cpp.

Referenced by `donnelly_bvn_integral()`.

Here is the caller graph for this function:

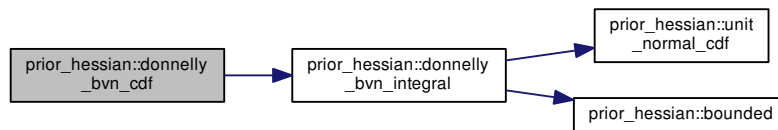


### 6.1.2.2 `template<class Vec , class Mat > double prior_hessian::donnelly_bvn_cdf ( const Vec & b, const Mat & sigma )`

Definition at line 55 of file `mvn_cdf.h`.

References `donnelly_bvn_integral()`.

Here is the call graph for this function:



### 6.1.2.3 `double prior_hessian::donnelly_bvn_integral ( double ah, double ak, double r )`

compute the bivariate normal cdf integral computes the probability for two normal variates X and Y whose correlation is R, that  $AH \leq X$  and  $AK \leq Y$ .

Adapted to modern C++ with efficiency improvements by: Mark Olah ([mjo@cs.unm.edu](mailto:mjo@cs.unm.edu) DOT edu) 10/2018

Reference: Thomas Donnelly, Algorithm 462: Bivariate Normal Distribution, Communications of the ACM, October 1973, Volume 16, Number 10, page 638.

compute the upper-right tail of the bivariate normal distribution computes the probability for two normal variates X and Y whose correlation is R, that  $AH \leq X$  and  $AK \leq Y$ .

Adapted to modern C++ with efficiency improvements by: Mark Olah ([mjo@cs.unm.edu](mailto:mjo@cs.unm.edu) DOT edu) 10/2018

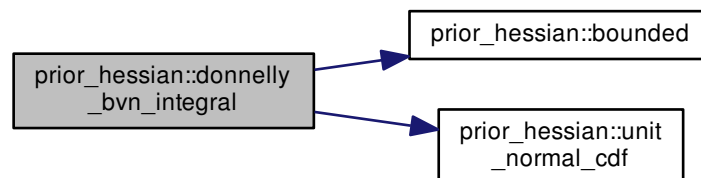
Reference: Thomas Donnelly, Algorithm 462: Bivariate Normal Distribution, Communications of the ACM, October 1973, Volume 16, Number 10, page 638.

Definition at line 161 of file `mvn_cdf.cpp`.

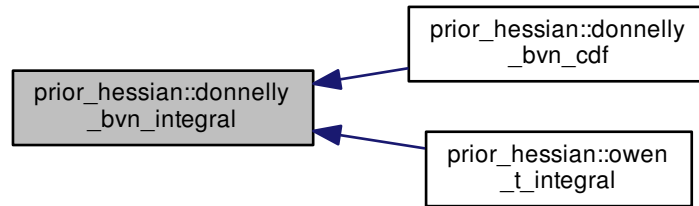
References `bounded()`, and `unit_normal_cdf()`.

Referenced by `donnelly_bvn_cdf()`, and `owen_t_integral()`.

Here is the call graph for this function:



Here is the caller graph for this function:



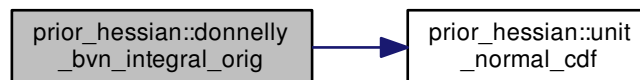
#### 6.1.2.4 double prior\_hessian::donnelly\_bvn\_integral\_orig ( double *ah*, double *ak*, double *r* )

Definition at line 271 of file `mvn_cdf.cpp`.

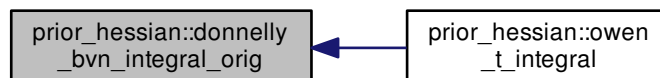
References `unit_normal_cdf()`.

Referenced by `owen_t_integral()`.

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.1.2.5 `template<long N> VecT prior_hessian::eulerian_polynomial ( )`

Definition at line 33 of file EulerianPolynomial.h.

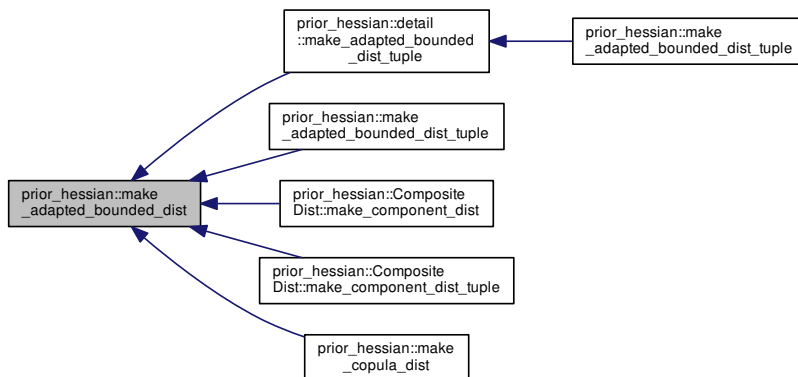
### 6.1.2.6 `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>> std::enable_if_t< detail::DistTraitsT<Dist>::adaptable_bounds, Dist> prior_hessian::make_adapted_bounded_dist ( Dist && dist )`

[make\\_adapted\\_bounded\\_dist\(\)](#) [4-forms] If the given distribution is not bounded then the appropriate bounding distribution is wrapped around it. We detect the boundedness of the distribution using `detail::adaptable_bounds` type-traits class. Can be replaced with `constexpr` if in c++17. Uses SFINAE in c++14.

Definition at line 99 of file BoundsAdaptedDist.h.

Referenced by `prior_hessian::detail::make_adapted_bounded_dist_tuple()`, `make_adapted_bounded_dist_tuple()`, `prior_hessian::CompositeDist::make_component_dist()`, `prior_hessian::CompositeDist::make_component_dist_tuple()`, and `make_copula_dist()`.

Here is the caller graph for this function:



### 6.1.2.7 `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>> std::enable_if_t< !detail::DistTraitsT<Dist>::adaptable_bounds, BoundsAdaptedDistT<Dist> > prior_hessian::make_adapted_bounded_dist ( Dist && dist )`

Definition at line 104 of file BoundsAdaptedDist.h.

### 6.1.2.8 `template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>> std::enable_if_t< detail::DistTraitsT<Dist>::adaptable_bounds, Dist> prior_hessian::make_adapted_bounded_dist ( Dist && dist, Vec && lbound, Vec && ubound )`

Definition at line 109 of file BoundsAdaptedDist.h.

```
6.1.2.9  template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>> std::enable_if_t<!detail::DistTraitsT<Dist>::adaptable_bounds, BoundsAdaptedDistT<Dist> > prior_hessian::make_adapted_bounded_dist (
    Dist && dist, Vec && lbound, Vec && ubound )
```

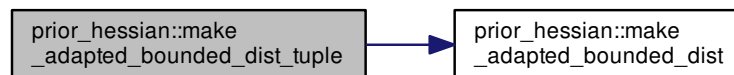
Definition at line 117 of file BoundsAdaptedDist.h.

```
6.1.2.10  template<class... Ts> std::tuple<BoundsAdaptedDistT<Ts>...> prior_hessian::make_adapted_bounded_dist_tuple
    ( Ts &&... ts )
```

Definition at line 132 of file BoundsAdaptedDist.h.

References `make_adapted_bounded_dist()`.

Here is the call graph for this function:

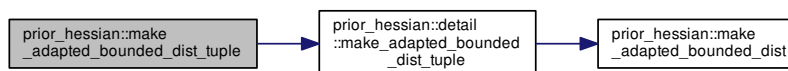


```
6.1.2.11  template<class... Ts> std::tuple<BoundsAdaptedDistT<Ts>...> prior_hessian::make_adapted_bounded_dist_tuple
    ( std::tuple< Ts... > && dists )
```

Definition at line 139 of file BoundsAdaptedDist.h.

References `prior_hessian::detail::make_adapted_bounded_dist_tuple()`.

Here is the call graph for this function:



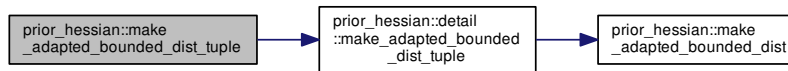


6.1.2.12 `template<class... Ts> std::tuple<BoundsAdaptedDistT<Ts>...> prior_hessian::make_adapted_bounded_dist_tuple ( const std::tuple< Ts... > & dists )`

Definition at line 146 of file BoundsAdaptedDist.h.

References `prior_hessian::detail::make_adapted_bounded_dist_tuple()`.

Here is the call graph for this function:



6.1.2.13 `TruncatedGammaDist prior_hessian::make_bounded_gamma_dist ( double scale, double shape, std::pair< double, double > bounds ) [inline]`

Definition at line 18 of file TruncatedGammaDist.h.

6.1.2.14 `template<int Ndim, class Vec, class Mat, class Vec2> TruncatedMultivariateNormalDist<Ndim> prior_hessian::make_bounded_multivariate_normal_dist ( Vec && mu, Mat && sigma, Vec2 && lbound, Vec2 && ubound )`

Definition at line 22 of file TruncatedMultivariateNormalDist.h.

6.1.2.15 `TruncatedNormalDist prior_hessian::make_bounded_normal_dist ( double mu, double sigma, std::pair< double, double > bounds ) [inline]`

Definition at line 20 of file TruncatedNormalDist.h.

6.1.2.16 `TruncatedParetoDist prior_hessian::make_bounded_pareto_dist ( double alpha, std::pair< double, double > bounds ) [inline]`

Definition at line 19 of file TruncatedParetoDist.h.

6.1.2.17 `template<template< int > class CopulaTemplate, class... MarginalDistTs> CopulaDist<CopulaTemplate, MarginalDistTs...> prior_hessian::make_copula_dist ( CopulaTemplate< sizeof...(MarginalDistTs)> && copula, MarginalDistTs &&... dists )`

Definition at line 187 of file CopulaDist.h.

References `make_adapted_bounded_dist()`.

Here is the call graph for this function:



6.1.2.18 **ScaledSymmetricBetaDist** prior\_hessian::make\_scaled\_symmetric\_beta\_dist ( double *beta*, std::pair< double, double > *bounds* ) [inline]

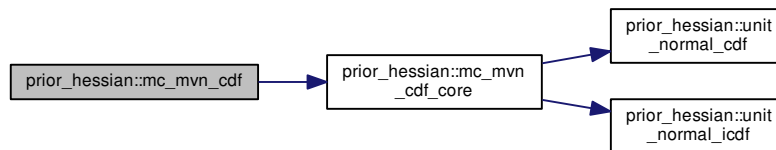
Definition at line 18 of file ScaledSymmetricBetaDist.h.

6.1.2.19 **template<class Vec , class Mat > double** prior\_hessian::mc\_mvn\_cdf ( const Vec & *b*, const Mat & *S*, double & *error* )

Definition at line 171 of file mvn\_cdf.h.

References mc\_mvn\_cdf\_core().

Here is the call graph for this function:



6.1.2.20 **template<class Vec , class Mat > double** prior\_hessian::mc\_mvn\_cdf\_core ( const Vec & *b*, const Mat & *U*, double & *error*, int & *niter* )

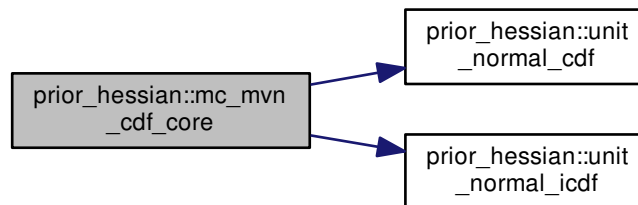
For the cdf  $a=-\text{Infinity}$ , so  $d=0$ .

Definition at line 130 of file mvn\_cdf.h.

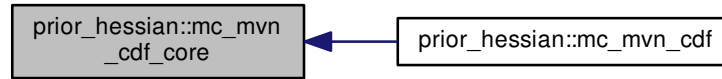
References `unit_normal_cdf()`, and `unit_normal_icdf()`.

Referenced by `mc_mvn_cdf()`.

Here is the call graph for this function:



Here is the caller graph for this function:



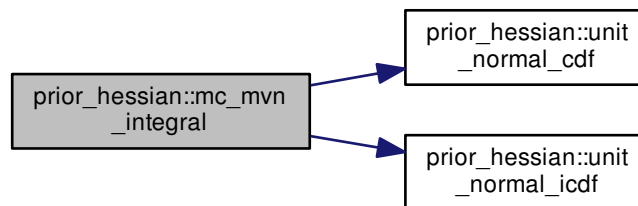
**6.1.2.21** `template<class Vec , class Mat > double prior_hessian::mc_mvn_integral ( const Vec & a, const Vec & b, const Mat & U, double & error, int & niter )`

compute the multivariate normal cdf integral

Definition at line 81 of file `mvn_cdf.h`.

References `unit_normal_cdf()`, and `unit_normal_icdf()`.

Here is the call graph for this function:



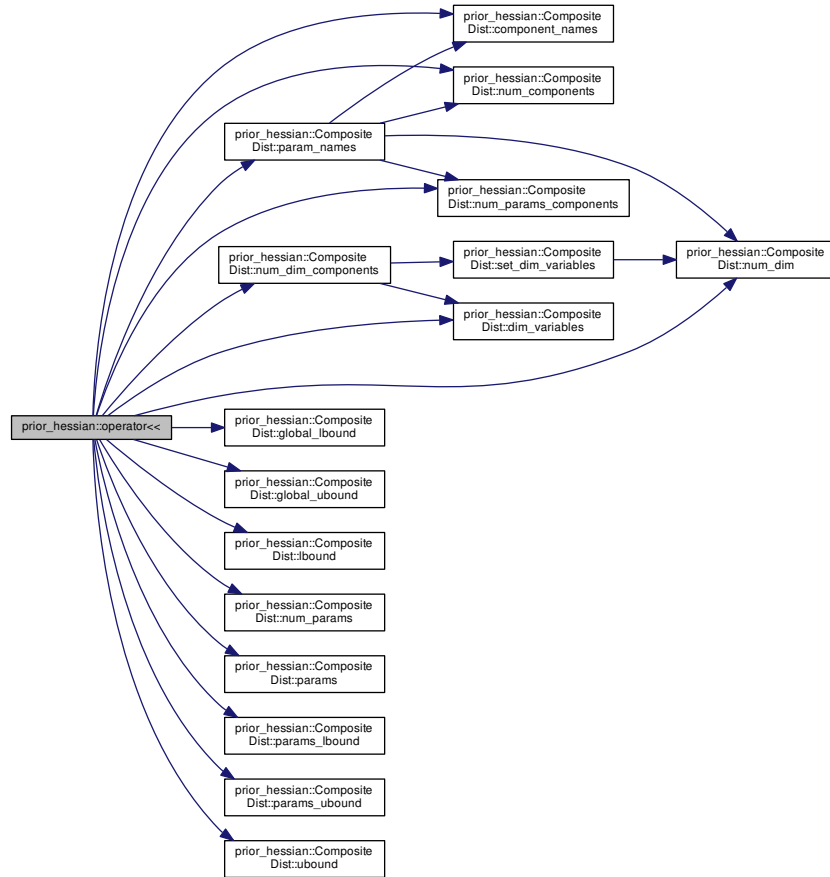
**6.1.2.22** `std::ostream & prior_hessian::operator<< ( std::ostream & out, const CompositeDist & comp_dist )`

Definition at line 80 of file `CompositeDist.cpp`.

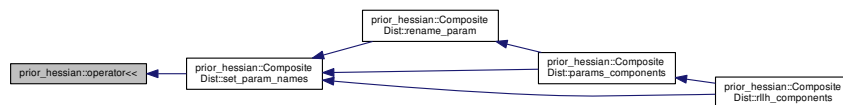
References `prior_hessian::CompositeDist::component_names()`, `prior_hessian::CompositeDist::dim_variables()`, `prior_hessian::CompositeDist::global_lbound()`, `prior_hessian::CompositeDist::global_ubound()`, `prior_hessian::CompositeDist::lbound()`, `prior_hessian::CompositeDist::num_components()`, `prior_hessian::CompositeDist::num_dim_components()`, `prior_hessian::CompositeDist::num_params()`, `prior_hessian::CompositeDist::num_params_components()`, `prior_hessian::CompositeDist::param_names()`, `prior_hessian::CompositeDist::params()`, `prior_hessian::CompositeDist::params_lbound()`, `prior_hessian::CompositeDist::params_ubound()`, and `prior_hessian::CompositeDist::ubound()`.

Referenced by `prior_hessian::CompositeDist::set_param_names()`.

Here is the call graph for this function:



Here is the caller graph for this function:



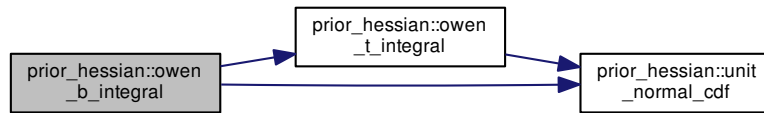
### 6.1.2.23 double prior\_hessian::owen\_b\_integral ( double *h*, double *k*, double *r* )

Definition at line 110 of file `mvn_cdf.cpp`.

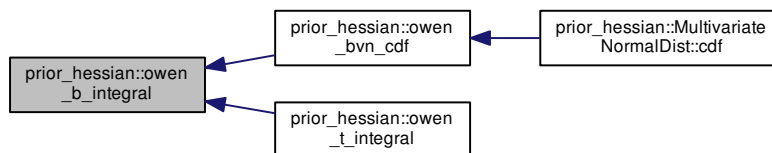
References `owen_t_integral()`, and `unit_normal_cdf()`.

Referenced by `owen_bvn_cdf()`, and `owen_t_integral()`.

Here is the call graph for this function:



Here is the caller graph for this function:



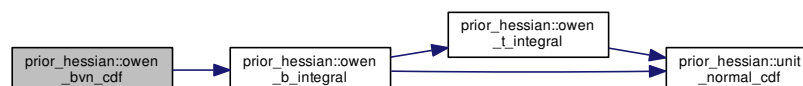
**6.1.2.24** `template<class Vec , class Mat > double prior_hessian::owen_bvn_cdf ( const Vec & b, const Mat & sigma )`

Definition at line 67 of file `mvn_cdf.h`.

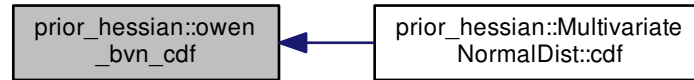
References `owen_b_integral()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::cdf()`.

Here is the call graph for this function:



Here is the caller graph for this function:

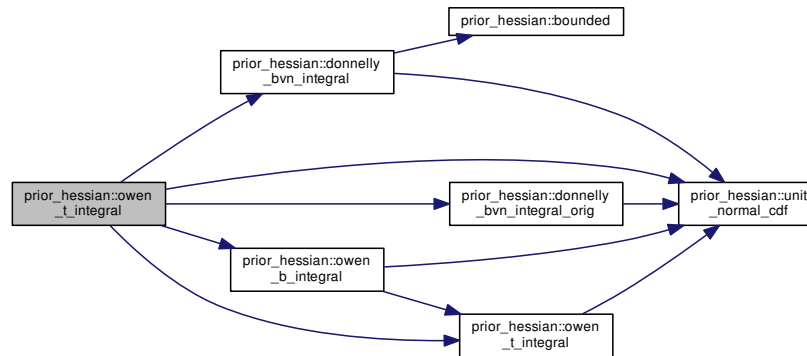


6.1.2.25 `double prior_hessian::owen_t_integral ( double h, double a ) [inline]`

Definition at line 26 of file `mvn_cdf.h`.

References `donnelly_bvn_integral()`, `donnelly_bvn_integral_orig()`, `owen_b_integral()`, `owen_t_integral()`, and `unit_normal_cdf()`.

Here is the call graph for this function:



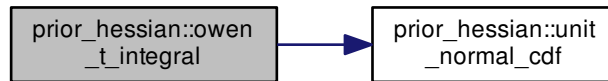
6.1.2.26 `double prior_hessian::owen_t_integral ( double h, double a, double gh )`

Definition at line 54 of file `mvn_cdf.cpp`.

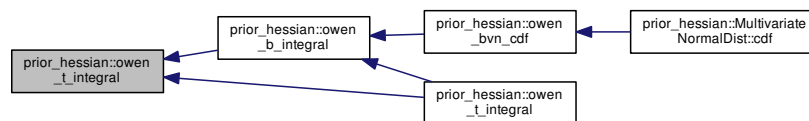
References `unit_normal_cdf()`.

Referenced by `owen_b_integral()`, and `owen_t_integral()`.

Here is the call graph for this function:



Here is the caller graph for this function:

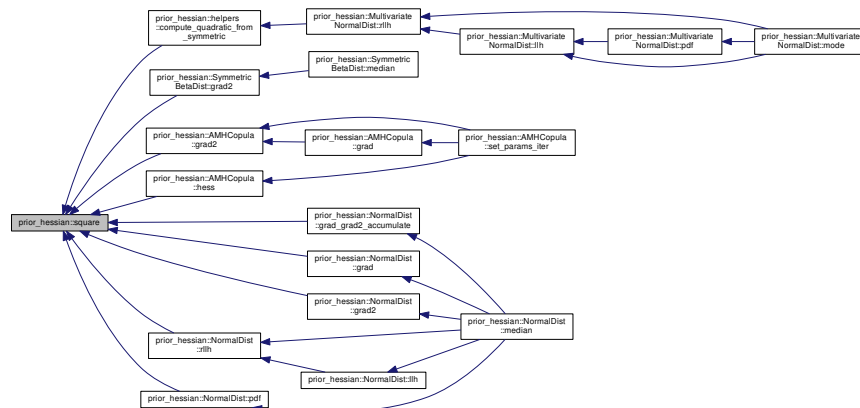


#### 6.1.2.27 `template<class T> T prior_hessian::square ( T t )`

Definition at line 46 of file `util.h`.

Referenced by `prior_hessian::helpers::compute_quadratic_from_symmetric()`, `prior_hessian::NormalDist::grad()`, `prior_hessian::SymmetricBetaDist::grad2()`, `prior_hessian::NormalDist::grad2()`, `prior_hessian::AMHCopula< Ndim >::grad2()`, `prior_hessian::NormalDist::grad_grad2_accumulate()`, `prior_hessian::AMHCopula< Ndim >::hess()`, `prior_hessian::NormalDist::pdf()`, and `prior_hessian::NormalDist::rllh()`.

Here is the caller graph for this function:



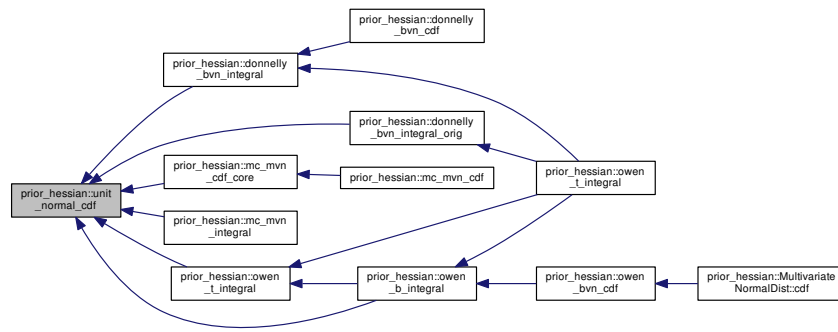
### 6.1.2.28 double prior\_hessian::unit\_normal\_cdf ( double t )

area of the lower tail of the unit normal curve below t.

Definition at line 28 of file mvn\_cdf.cpp.

Referenced by donnelly\_bvn\_integral(), donnelly\_bvn\_integral\_orig(), mc\_mvn\_cdf\_core(), mc\_mvn\_integral(), owen\_b\_integral(), and owen\_t\_integral().

Here is the caller graph for this function:



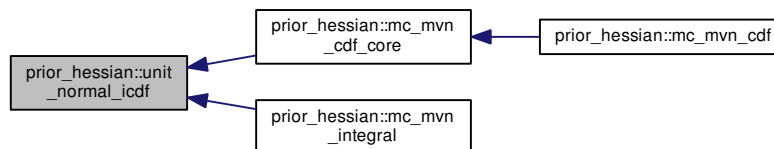
### 6.1.2.29 double prior\_hessian::unit\_normal\_icdf ( double u )

Definition at line 35 of file mvn\_cdf.cpp.

References prior\_hessian::constants::sqrt2.

Referenced by mc\_mvn\_cdf\_core(), and mc\_mvn\_integral().

Here is the caller graph for this function:





## 6.2 prior\_hessian::constants Namespace Reference

### Variables

- const double [sqrt2](#) = std::sqrt(2.)
- const double [sqrt2\\_inv](#) = 1./std::sqrt(2.)
- const double [sqrt2pi](#) = std::sqrt(2.\*arma::datum::pi)
- const double [sqrt2pi\\_inv](#) = 1./std::sqrt(2.\*arma::datum::pi)
- const double [log2pi](#) = std::log(2.\*arma::datum::pi)

### 6.2.1 Variable Documentation

#### 6.2.1.1 const double prior\_hessian::constants::log2pi = std::log(2.\*arma::datum::pi)

Definition at line 19 of file util.cpp.

Referenced by prior\_hessian::NormalDist::llh(), and prior\_hessian::MultivariateNormalDist< Ndim >::sample().

#### 6.2.1.2 const double prior\_hessian::constants::sqrt2 = std::sqrt(2.)

Definition at line 15 of file util.cpp.

Referenced by prior\_hessian::NormalDist::icdf(), and prior\_hessian::unit\_normal\_icdf().

#### 6.2.1.3 const double prior\_hessian::constants::sqrt2\_inv = 1./std::sqrt(2.)

Definition at line 16 of file util.cpp.

Referenced by prior\_hessian::NormalDist::cdf().

#### 6.2.1.4 const double prior\_hessian::constants::sqrt2pi = std::sqrt(2.\*arma::datum::pi)

Definition at line 17 of file util.cpp.

#### 6.2.1.5 const double prior\_hessian::constants::sqrt2pi\_inv = 1./std::sqrt(2.\*arma::datum::pi)

Definition at line 18 of file util.cpp.

Referenced by prior\_hessian::NormalDist::pdf().

## 6.3 prior\_hessian::CopulaDistImpl Namespace Reference

### Classes

- class [CopulaDist](#)

## 6.4 prior\_hessian::detail Namespace Reference

### Classes

- class [dist\\_adaptor\\_traits](#)
- struct [dist\\_adaptor\\_traits](#)< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >
- struct [dist\\_adaptor\\_traits](#)< GammaDist >
- struct [dist\\_adaptor\\_traits](#)< MultivariateNormalDist< Ndim > >
- struct [dist\\_adaptor\\_traits](#)< NormalDist >
- struct [dist\\_adaptor\\_traits](#)< ParetoDist >
- struct [dist\\_adaptor\\_traits](#)< ScaledSymmetricBetaDist >
- struct [dist\\_adaptor\\_traits](#)< SymmetricBetaDist >
- struct [dist\\_adaptor\\_traits](#)< TruncatedGammaDist >
- struct [dist\\_adaptor\\_traits](#)< TruncatedMultivariateNormalDist< Ndim > >
- struct [dist\\_adaptor\\_traits](#)< TruncatedNormalDist >
- struct [dist\\_adaptor\\_traits](#)< TruncatedParetoDist >

### Typedefs

- template<class DistT >  
using [DistTraitsT](#) = [detail::dist\\_adaptor\\_traits](#)< std::decay\_t< DistT >>

### Functions

- template<class... Ts, std::size\_t... I>  
std::tuple< [BoundsAdaptedDistT](#)< Ts >... > [make\\_adapted\\_bounded\\_dist\\_tuple](#) (std::tuple< Ts... > &&dists,  
std::index\_sequence< I... >)
- template<class... Ts, std::size\_t... I>  
std::tuple< [BoundsAdaptedDistT](#)< Ts >... > [make\\_adapted\\_bounded\\_dist\\_tuple](#) (const std::tuple< Ts... >  
&dists, std::index\_sequence< I... >)
- template<long N, long... I>  
[VecT](#) [eulerian\\_polynomial](#) ( )

#### 6.4.1 Typedef Documentation

- 6.4.1.1 `template<class DistT > using prior_hessian::detail::DistTraitsT = typedef detail::dist_adaptor_traits<std::decay_t<DistT>>`

Type traits class for distribution type DistT.

The traits class describes the Adaptor classes applicable to each individual distribution

Definition at line 52 of file BoundsAdaptedDist.h.

#### 6.4.2 Function Documentation

- 6.4.2.1 `template<long N, long... I> VecT prior_hessian::detail::eulerian_polynomial ( )`

Definition at line 26 of file EulerianPolynomial.h.

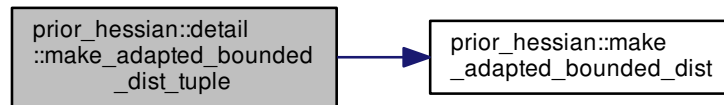
```
6.4.2.2 template<class... Ts, std::size_t... I> std::tuple<BoundsAdaptedDistT<Ts>...> prior_hessian←
      ::detail::make_adapted_bounded_dist_tuple ( std::tuple< Ts... > && dists, std::index_sequence< I... >
      )
```

Definition at line 66 of file BoundsAdaptedDist.h.

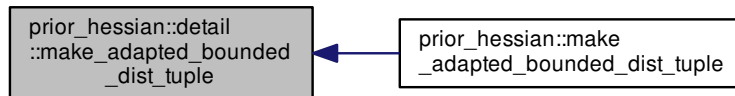
References prior\_hessian::make\_adapted\_bounded\_dist().

Referenced by prior\_hessian::make\_adapted\_bounded\_dist\_tuple().

Here is the call graph for this function:



Here is the caller graph for this function:

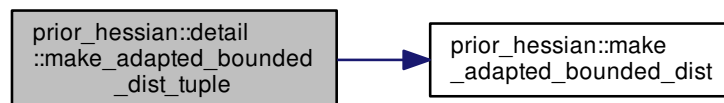


```
6.4.2.3 template<class... Ts, std::size_t... I> std::tuple<BoundsAdaptedDistT<Ts>...> prior_hessian::detail←
      ::make_adapted_bounded_dist_tuple ( const std::tuple< Ts... > & dists, std::index_sequence< I... >
      )
```

Definition at line 73 of file BoundsAdaptedDist.h.

References prior\_hessian::make\_adapted\_bounded\_dist().

Here is the call graph for this function:



## 6.5 prior\_hessian::genz Namespace Reference

### Namespaces

- [fortran](#)

### Functions

- `template<class Vec , class Mat >`  
`double mvn_cdf_genz (const Vec &b, const Mat &S, double &error)`

#### 6.5.1 Function Documentation

6.5.1.1 `template<class Vec , class Mat > double prior_hessian::genz::mvn_cdf_genz ( const Vec & b, const Mat & S, double & error )`

Definition at line 219 of file mvn\_cdf.h.

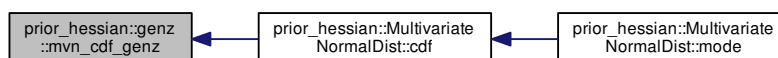
References `prior_hessian::genz::fortran::mvndst_()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::cdf()`.

Here is the call graph for this function:



Here is the caller graph for this function:



## 6.6 prior\_hessian::genz::fortran Namespace Reference

### Functions

- int [mvndst\\_](#) (int \*n, double lower[], double upper[], int infin[], double correl[], int \*maxpts, double \*abseps, double \*releps, double \*error, double \*value, int \*inform)

### 6.6.1 Function Documentation

6.6.1.1 int prior\_hessian::genz::fortran::mvndst\_ ( int \* *n*, double *lower*[], double *upper*[], int *infin*[], double *correl*[], int \* *maxpts*, double \* *abseps*, double \* *releps*, double \* *error*, double \* *value*, int \* *inform* )

Referenced by prior\_hessian::genz::mvn\_cdf\_genz().

Here is the caller graph for this function:



## 6.7 prior\_hessian::helpers Namespace Reference

### Functions

- template<class Vec , class Mat >  
double [compute\\_quadratic\\_from\\_symmetric](#) (IdxT Ndim, const Vec &v, const Mat &A)

### 6.7.1 Function Documentation

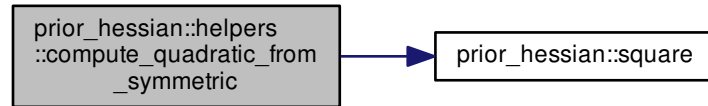
6.7.1.1 template<class Vec , class Mat > double prior\_hessian::helpers::compute\_quadratic\_from\_symmetric ( IdxT *Ndim*, const Vec & *v*, const Mat & *A* )

Definition at line 139 of file MultivariateNormalDist.h.

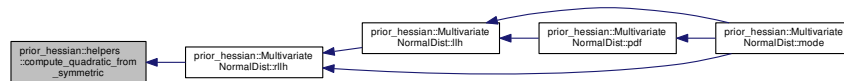
References prior\_hessian::square().

Referenced by prior\_hessian::MultivariateNormalDist< Ndim >::rllh().

Here is the call graph for this function:



Here is the caller graph for this function:



## 6.8 prior\_hessian::mcmc Namespace Reference

### Classes

- class [MCMCData](#)

## 6.9 prior\_hessian::meta Namespace Reference

Class templates to utilize sequencing behaviour of `std::initializer_list` expressions.

### Classes

- struct [all\\_dists\\_are\\_bounded](#)
- struct [conjunction](#)
- struct [conjunction< B1 >](#)
- struct [conjunction< B1, Bn... >](#)
- struct [disjunction](#)
- struct [disjunction< B1 >](#)
- struct [disjunction< B1, Bn... >](#)
- class [is\\_copula](#)
- struct [is\\_numeric\\_template\\_of](#)
- struct [is\\_numeric\\_template\\_of< ClassNumericTemplate, ClassNumericTemplate< Is... > >](#)
- class [is\\_subclass\\_of\\_numeric\\_template](#)
- struct [is\\_template\\_of](#)
- struct [is\\_template\\_of< ClassTemplate, ClassTemplate< Ts... > >](#)

## Typedefs

- `template<class... DistTs>`  
using `ConstructableIfAllDistsAreBoundedT` = `std::enable_if< all_dists_are_bounded< DistTs... >::value, bool >`
- `template<class... DistTs>`  
using `ConstructableIfNotAllDistsAreBoundedT` = `std::enable_if<!all_dists_are_bounded< DistTs... >::value, bool >`
- `template<template< template< int > class, class... > class CopulaT, class U >`  
using `ConstructableIfsCopulaT` = `std::enable_if_t< is_copula< CopulaT, U >::value, bool >`
- `template<class ReturnT, class BoolT >`  
using `ReturnIfT` = `std::enable_if_t< BoolT::value, ReturnT >`
- `template<bool val>`  
using `ConstructableIf` = `std::enable_if_t< val, bool >`
- `template<bool val>`  
using `ConstructableIfNot` = `std::enable_if_t<!val, bool >`
- `template<class T, class SelfT >`  
using `ConstructableIfNotSelfT` = `std::enable_if_t<!std::is_same< std::decay_t< T >, SelfT >::value, bool >`
- `template<class T, class BaseT >`  
using `EnableIfSubclassT` = `std::enable_if_t< std::is_base_of< std::remove_reference_t< BaseT >, std::remove_reference_t< T >>::value >`
- `template<class T, template< int > class ClassNumericTemplate>`  
using `EnableIfSubclassOfNumericTemplateT` = `std::enable_if_t< is_subclass_of_numeric_template< ClassNumericTemplate, std::remove_reference_t< T >>::value >`
- `template<class ReturnT, class T, template< int > class ClassNumericTemplate>`  
using `ReturnIfSubclassOfNumericTemplateT` = `std::enable_if_t< is_subclass_of_numeric_template< ClassNumericTemplate, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class T, class SelfT >`  
using `EnableIfNotIsSelfT` = `std::enable_if_t< !std::is_same< std::decay_t< T >, SelfT >::value >`
- `template<class ReturnT, class T, class BaseT >`  
using `ReturnIfSubclassT` = `std::enable_if_t< std::is_base_of< std::remove_reference_t< BaseT >, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class BaseT, class... Ts>`  
using `EnableIfIsSuperclassOfAllT` = `std::enable_if_t< conjunction< std::is_base_of< std::remove_reference_t< BaseT >, std::remove_reference_t< Ts >>... >::value >`
- `template<class T, template< typename... > class ClassTemplate>`  
using `EnableIfInstantiatedFromT` = `std::enable_if_t< is_template_of< ClassTemplate, std::remove_reference_t< T >>::value >`
- `template<class T, template< int > class ClassTemplate>`  
using `EnableIfInstantiatedFromNumericT` = `std::enable_if_t< is_numeric_template_of< ClassTemplate, std::remove_reference_t< T >>::value >`
- `template<class ReturnT, class T, template< int > class ClassTemplate>`  
using `ReturnIfInstantiatedFromNumericT` = `std::enable_if_t< is_numeric_template_of< ClassTemplate, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class T, template< typename... > class ClassTemplate>`  
using `EnableIfNotInstantiatedFromT` = `std::enable_if_t< !is_template_of< ClassTemplate, std::remove_reference_t< T >>::value >`
- `template<class ReturnT, class TestT, template< typename... > class ClassTemplate>`  
using `ReturnIfInstantiatedFromT` = `std::enable_if_t< is_template_of< ClassTemplate, std::remove_reference_t< TestT >>::value, ReturnT >`
- `template<class ReturnT, class TestT, template< typename... > class ClassTemplate>`  
using `ReturnIfNotInstantiatedFromT` = `std::enable_if_t< !is_template_of< ClassTemplate, std::remove_reference_t< TestT >>::value, ReturnT >`

- `template<template< typename > class ClassTemplate, class... Ts>  
using EnableIfIsTemplateForAllT = std::enable_if_t< conjunction< is\_template\_of< ClassTemplate, std::remove_reference_t< Ts >>... >::value >`
- `template<template< typename... > class ClassTemplate, class... Ts>  
using ConstructableIfIsTemplateForAllT = std::enable_if_t< conjunction< is\_template\_of< ClassTemplate, std::remove_reference_t< Ts >>... >::value, bool >`
- `template<class SuperClass , class T >  
using ConstructableIfIsSuperClassT = std::enable_if_t< std::is_base_of< std::remove_reference_t< SuperClass >, std::remove_reference_t< T >>::value, bool >`
- `template<class SuperClass , class... Ts>  
using ConstructableIfIsSuperClassForAllT = std::enable_if_t< conjunction< std::is_base_of< std::remove_reference_t< SuperClass >, std::remove_reference_t< Ts >>... >::value, bool >`
- `template<class T , template< int > class ClassTemplate>  
using ConstructableIfInstantiatedFromNumericT = std::enable_if_t< is\_numeric\_template\_of< ClassTemplate, std::remove_reference_t< T >>::value, bool >`
- `template<class T >  
using EnableIfIsNotTupleT = std::enable_if_t< !is\_template\_of< std::tuple, std::remove_reference_t< T >>::value >`
- `template<class... Ts>  
using EnableIfNonEmpty = std::enable_if_t< (sizeof...(Ts)>0) >`
- `template<class... Ts>  
using EnableIfAllAreNotTupleT = std::enable_if_t< !disjunction< is\_template\_of< std::tuple, std::remove_reference_t< Ts >>... >::value >`
- `template<class SelfT , class T >  
using EnableIfIsNotTupleAndIsNotSelfT = std::enable_if_t< !is\_template\_of< std::tuple, std::remove_reference_t< T >>::value && !std::is_same< std::decay_t< T >, SelfT >::value >`
- `template<class T , class... Ts>  
using ConstructableIfAllAreNotTupleAndAreNotT = std::enable_if_t< !disjunction< is\_template\_of< std::tuple, std::remove_reference_t< Ts >>... >::value && !disjunction< std::is_same< std::decay_t< Ts >, T >... >::value, bool >`
- `template<class Dist , class BaseDist >  
using DerivedFrom = std::enable_if_t< std::is_base_of< std::decay_t< BaseDist >, std::decay_t< Dist >>::value, std::decay_t< Dist >>`

## Functions

- `template<class T >  
void call\_in\_order (std::initializer_list< T >)`
- `template<class InputIterator , class ResultT , class BinaryOperation >  
PRIOR\_HESSIAN\_META\_CONSTEXPR ResultT constexpr\_accumulate (InputIterator first, InputIterator last, ResultT init, BinaryOperation op)`
- `PRIOR\_HESSIAN\_META\_CONSTEXPR bool logical\_and\_in\_order (std::initializer_list< bool > L)`
- `template<class T >  
PRIOR\_HESSIAN\_META\_CONSTEXPR T sum\_in\_order (std::initializer_list< T > L)`
- `template<class T >  
PRIOR\_HESSIAN\_META\_CONSTEXPR T prod\_in\_order (std::initializer_list< T > L)`

### 6.9.1 Detailed Description

Class templates to utilize sequencing behaviour of `std::initializer_list` expressions.

These class templates are intended to be used in variadic template functions to sequence the order of calls as a `std::initializer_list`.



## 6.9.2 Typedef Documentation

6.9.2.1 `template<bool val> using prior_hessian::meta::ConstructableIf = typedef std::enable_if_t<val,bool>`

Definition at line 117 of file Meta.h.

6.9.2.2 `template<class T , class... Ts> using prior_hessian::meta::ConstructableIfAllAreNotTupleAndAreNotT =  
typedef std::enable_if_t< !disjunction<is_template_of<std::tuple,std::remove_reference_t<Ts>>...>::value &&  
!disjunction<std::is_same<std::decay_t<Ts>,T>...>::value, bool>`

Definition at line 214 of file Meta.h.

6.9.2.3 `template<class... DistTs> using prior_hessian::meta::ConstructableIfAllDistsAreBoundedT = typedef  
std::enable_if<all_dists_are_bounded<DistTs...>::value,bool>`

Definition at line 87 of file BoundsAdaptedDist.h.

6.9.2.4 `template<class T , template< int > class ClassTemplate> using prior_hessian::meta::ConstructableIfInstantiatedFromNumericT = typedef std::enable_if_t< is_numeric_template_of<ClassTemplate,  
std::remove_reference_t<T>>::value, bool >`

Definition at line 194 of file Meta.h.

6.9.2.5 `template<template< template< int > class, class... > class CopulaT, class U > using prior_hessian::meta::ConstructableIfIsCopulaT = typedef std::enable_if_t<is_copula<CopulaT,U>::value  
,bool>`

Definition at line 111 of file Meta.h.

6.9.2.6 `template<class SuperClass , class... Ts> using prior_hessian::meta::ConstructableIfIsSuperClassForAllT = typedef std::enable_if_t< conjunction< std::is_base_of<std::remove_reference_t<SuperClass>,std::remove_↵  
reference_t<Ts>>... >::value, bool>`

Definition at line 190 of file Meta.h.

6.9.2.7 `template<class SuperClass , class T > using prior_hessian::meta::ConstructableIfIsSuperClassT = typedef  
std::enable_if_t< std::is_base_of<std::remove_reference_t<SuperClass>,std::remove_reference_t<T>>::value, bool>`

Definition at line 186 of file Meta.h.

6.9.2.8 `template<template< typename... > class ClassTemplate, class... Ts> using prior_hessian::meta::ConstructableIfIsTemplateForAllT = typedef std::enable_if_t< conjunction<  
is_template_of<ClassTemplate,std::remove_reference_t<Ts>> ... >::value, bool>`

Definition at line 182 of file Meta.h.

6.9.2.9 `template<bool val> using prior_hessian::meta::ConstructableIfNot = typedef std::enable_if_t<!val,bool>`

Definition at line 120 of file Meta.h.

6.9.2.10 `template<class... DistTs> using prior_hessian::meta::ConstructableIfNotAllDistsAreBoundedT = typedef std::enable_if_t<!all_dists_are_bounded<DistTs...>::value,bool>`

Definition at line 89 of file BoundsAdaptedDist.h.

6.9.2.11 `template<class T , class SelfT > using prior_hessian::meta::ConstructableIfNotSelfT = typedef std::enable_if_t<!std::is_same<std::decay_t<T>,SelfT>::value,bool>`

Definition at line 123 of file Meta.h.

6.9.2.12 `template<class Dist , class BaseDist > using prior_hessian::meta::DerivedFrom = typedef std::enable_if_t<std::is_base_of<std::decay_t<BaseDist>,std::decay_t<Dist>>::value,std::decay_t<Dist>>`

Definition at line 228 of file Meta.h.

6.9.2.13 `template<class... Ts> using prior_hessian::meta::EnableIfAllAreNotTupleT = typedef std::enable_if_t<!disjunction< is_template_of<std::tuple,std::remove_reference_t<Ts>>... >::value >`

Definition at line 204 of file Meta.h.

6.9.2.14 `template<class T , template< int > class ClassTemplate> using prior_hessian::meta::EnableIfInstantiatedFromNumericT = typedef std::enable_if_t< is_numeric_template_of<ClassTemplate, std::remove_reference_t<T>>::value >`

Definition at line 158 of file Meta.h.

6.9.2.15 `template<class T , template< typename... > class ClassTemplate> using prior_hessian::meta::EnableIfInstantiatedFromT = typedef std::enable_if_t< is_template_of<ClassTemplate, std::remove_reference_t<T>>::value >`

Definition at line 150 of file Meta.h.

6.9.2.16 `template<class SelfT , class T > using prior_hessian::meta::EnableIfIsNotTupleAndIsNotSelfT = typedef std::enable_if_t< !is_template_of<std::tuple,std::remove_reference_t<T>>::value && !std::is_same<std::decay_t<T>,SelfT>::value >`

Definition at line 209 of file Meta.h.

6.9.2.17 `template<class T > using prior_hessian::meta::EnableIfIsNotTupleT = typedef std::enable_if_t<!is_template_of<std::tuple,std::remove_reference_t<T>>::value >`

Definition at line 197 of file Meta.h.

```
6.9.2.18 template<class BaseT , class... Ts> using prior_hessian::meta::EnableIfIsSuperclassOfAllT = typedef
std::enable_if_t<conjunction< std::is_base_of<std::remove_reference_t<BaseT>,std::remove_reference_t<Ts>>>
... >::value >
```

Definition at line 146 of file Meta.h.

```
6.9.2.19 template<template< typename > class ClassTemplate, class... Ts> using prior_↵
hessian::meta::EnableIfIsTemplateForAllT = typedef std::enable_if_t< conjunction<
is_template_of<ClassTemplate,std::remove_reference_t<Ts>>> ... >::value >
```

Definition at line 178 of file Meta.h.

```
6.9.2.20 template<class... Ts> using prior_hessian::meta::EnableIfNonEmpty = typedef std::enable_if_t< (sizeof...(Ts)>0)
>
```

Definition at line 200 of file Meta.h.

```
6.9.2.21 template<class T , template< typename... > class ClassTemplate> using prior_hessian::meta_↵
::EnableIfNotInstantiatedFromT = typedef std::enable_if_t< !is_template_of<ClassTemplate,
std::remove_reference_t<T>>>::value >
```

Definition at line 166 of file Meta.h.

```
6.9.2.22 template<class T , class SelfT > using prior_hessian::meta::EnableIfNotIsSelfT = typedef std::enable_if_t<
!std::is_same<std::decay_t<T>,SelfT>::value >
```

Definition at line 138 of file Meta.h.

```
6.9.2.23 template<class T , template< int > class ClassNumericTemplate> using prior_hessian::meta::EnableIfSubclass_↵
OfNumericTemplateT = typedef std::enable_if_t< is_subclass_of_numeric_template<ClassNumericTemplate,
std::remove_reference_t<T>>>::value>
```

Definition at line 131 of file Meta.h.

```
6.9.2.24 template<class T , class BaseT > using prior_hessian::meta::EnableIfSubclassT = typedef std::enable_if_t<
std::is_base_of<std::remove_reference_t<BaseT>,std::remove_reference_t<T>>>::value>
```

Definition at line 127 of file Meta.h.

```
6.9.2.25 template<class ReturnT , class T , template< int > class ClassTemplate> using prior_hessian::meta::_↵
ReturnIfInstantiatedFromNumericT = typedef std::enable_if_t< is_numeric_template_of<ClassTemplate,
std::remove_reference_t<T>>>::value, ReturnT>
```

Definition at line 162 of file Meta.h.

```
6.9.2.26 template<class ReturnT , class TestT , template< typename... > class ClassTemplate> using
prior_hessian::meta::ReturnIfInstantiatedFromT = typedef std::enable_if_t< is_template_of<ClassTemplate,
std::remove_reference_t<TestT>>>::value, ReturnT>
```

Definition at line 170 of file Meta.h.

6.9.2.27 `template<class ReturnT , class TestT , template< typename... > class ClassTemplate> using prior_hessian::meta::ReturnIfNotInstantiatedFromT = typedef std::enable_if_t< !is_template_of<ClassTemplate, std::remove_reference_t<TestT>>::value, ReturnT>`

Definition at line 174 of file Meta.h.

6.9.2.28 `template<class ReturnT , class T , template< int > class ClassNumericTemplate> using prior_hessian::meta::ReturnIfSubclassOfNumericTemplateT = typedef std::enable_if_t< is_subclass_of_numeric_template<ClassNumericTemplate, std::remove_reference_t<T>>::value, ReturnT>`

Definition at line 135 of file Meta.h.

6.9.2.29 `template<class ReturnT , class T , class BaseT > using prior_hessian::meta::ReturnIfSubclassT = typedef std::enable_if_t< std::is_base_of<std::remove_reference_t<BaseT>,std::remove_reference_t<T>>::value, ReturnT>`

Definition at line 142 of file Meta.h.

6.9.2.30 `template<class ReturnT , class BoolT > using prior_hessian::meta::ReturnIfT = typedef std::enable_if_t<BoolT::value,ReturnT>`

Definition at line 114 of file Meta.h.

### 6.9.3 Function Documentation

6.9.3.1 `template<class T > void prior_hessian::meta::call_in_order ( std::initializer_list< T > )`

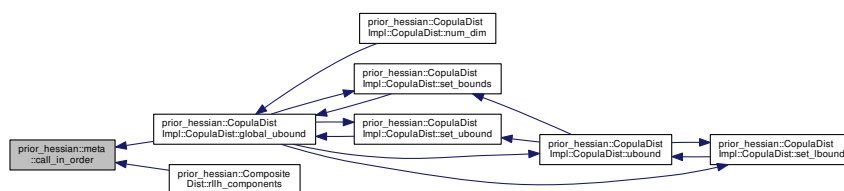
NOOP function which is used to ensure call order on a variadic sequence of function calls

Definition at line 41 of file Meta.h.

References PRIOR\_HESSIAN\_META\_CONSTEXPR.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CompositeDist::rlh_components()`.

Here is the caller graph for this function:



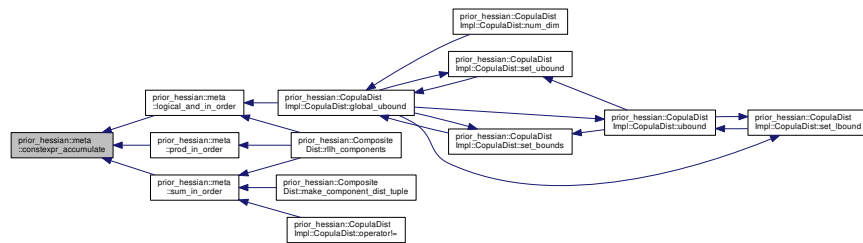
6.9.3.2 `template<class InputIterator , class ResultT , class BinaryOperation > PRIOR_HESSIAN_META_CONSTEXPR  
ResultT prior_hessian::meta::constexpr_accumulate ( InputIterator first, InputIterator last, ResultT init, BinaryOperation op  
)`

Definition at line 46 of file Meta.h.

References PRIOR\_HESSIAN\_META\_CONSTEXPR.

Referenced by `logical_and_in_order()`, `prod_in_order()`, and `sum_in_order()`.

Here is the caller graph for this function:



6.9.3.3 `PRIOR_HESSIAN_META_CONSTEXPR bool prior_hessian::meta::logical_and_in_order ( std::initializer_list< bool >  
L ) [inline]`

Definition at line 53 of file Meta.h.

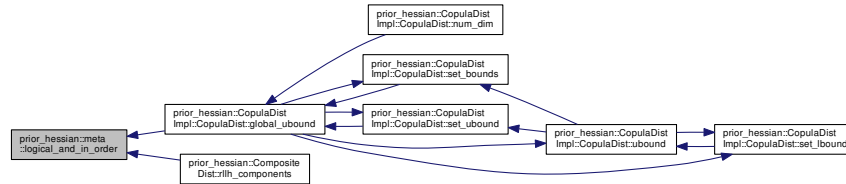
References `constexpr_accumulate()`, and PRIOR\_HESSIAN\_META\_CONSTEXPR.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CompositeDist::rllh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:



6.9.3.4 `template<class T> PRIOR_HESSIAN_META_CONSTEXPR T prior_hessian::meta::prod_in_order (std::initializer_list< T> L )`

Definition at line 63 of file Meta.h.

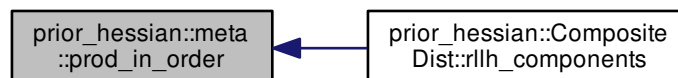
References `constexpr_accumulate()`.

Referenced by `prior_hessian::CompositeDist::rllh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:



6.9.3.5 `template<class T> PRIOR_HESSIAN_META_CONSTEXPR T prior_hessian::meta::sum_in_order (std::initializer_list< T> L )`

Definition at line 58 of file Meta.h.

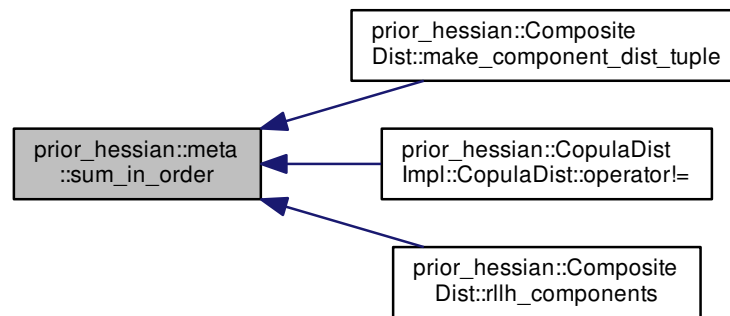
References `constexpr_accumulate()`, and `PRIOR_HESSIAN_META_CONSTEXPR`.

Referenced by `prior_hessian::CompositeDist::make_component_dist_tuple()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs>::operator!=()`, and `prior_hessian::CompositeDist::rllh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:



## 6.10 prior\_hessian::polylog Namespace Reference

### Functions

- `template<int n> double eulerian_polynomial (double z)`
- `template<> double eulerian_polynomial< 0> (double)`

- `template<>`  
`double eulerian_polynomial< 1 > (double z)`
- `template<>`  
`double eulerian_polynomial< 2 > (double z)`
- `template<>`  
`double eulerian_polynomial< 3 > (double z)`
- `template<>`  
`double eulerian_polynomial< 4 > (double z)`
- `template<>`  
`double eulerian_polynomial< 5 > (double z)`
- `template<>`  
`double eulerian_polynomial< 6 > (double z)`
- `template<>`  
`double eulerian_polynomial< 7 > (double z)`
- `template<>`  
`double eulerian_polynomial< 8 > (double z)`
- `template<>`  
`double eulerian_polynomial< 9 > (double z)`
- `template<int n>`  
`double polylog (double z)`
- `template<>`  
`double polylog< 1 > (double z)`

#### 6.10.1 Function Documentation

6.10.1.1 `template<int n> double prior_hessian::polylog::eulerian_polynomial ( double z )`

6.10.1.2 `template<> double prior_hessian::polylog::eulerian_polynomial< 0 > ( double )`

Definition at line 17 of file PolyLog.h.

6.10.1.3 `template<> double prior_hessian::polylog::eulerian_polynomial< 1 > ( double z )`

Definition at line 23 of file PolyLog.h.

6.10.1.4 `template<> double prior_hessian::polylog::eulerian_polynomial< 2 > ( double z )`

Definition at line 29 of file PolyLog.h.

6.10.1.5 `template<> double prior_hessian::polylog::eulerian_polynomial< 3 > ( double z )`

Definition at line 35 of file PolyLog.h.

6.10.1.6 `template<> double prior_hessian::polylog::eulerian_polynomial< 4 > ( double z )`

Definition at line 41 of file PolyLog.h.



6.10.1.7 `template<> double prior_hessian::polylog::eulerian_polynomial< 5 > ( double z )`

Definition at line 47 of file PolyLog.h.

6.10.1.8 `template<> double prior_hessian::polylog::eulerian_polynomial< 6 > ( double z )`

Definition at line 53 of file PolyLog.h.

6.10.1.9 `template<> double prior_hessian::polylog::eulerian_polynomial< 7 > ( double z )`

Definition at line 59 of file PolyLog.h.

6.10.1.10 `template<> double prior_hessian::polylog::eulerian_polynomial< 8 > ( double z )`

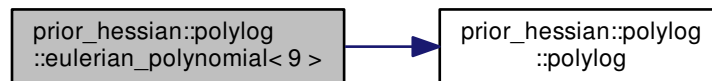
Definition at line 65 of file PolyLog.h.

6.10.1.11 `template<> double prior_hessian::polylog::eulerian_polynomial< 9 > ( double z )`

Definition at line 70 of file PolyLog.h.

References `polylog()`.

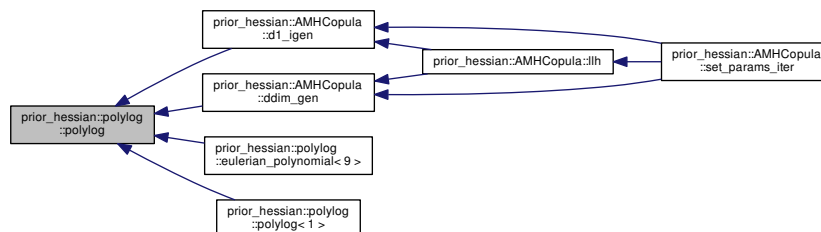
Here is the call graph for this function:



6.10.1.12 `template<int n> double prior_hessian::polylog::polylog ( double z )`

Referenced by `prior_hessian::AMHCopula< Ndim >::d1_igen()`, `prior_hessian::AMHCopula< Ndim >::ddim_gen()`, `eulerian_polynomial< 9 >()`, and `polylog< 1 >()`.

Here is the caller graph for this function:

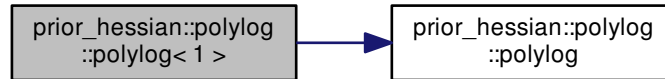


6.10.1.13 `template<> double prior_hessian::polylog::polylog< 1 > ( double z )`

Definition at line 120 of file PolyLog.h.

References `polylog()`.

Here is the call graph for this function:



## 7 Class Documentation

### 7.1 prior\_hessian::meta::all\_dists\_are\_bounded< DistTs > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/BoundsAdaptedDist.h>
```

#### Static Public Attributes

- static constexpr bool `value` = `meta::logical_and_in_order({detail::dist_adaptor_traits<std::decay_t<DistTs>>::value...})`

#### 7.1.1 Detailed Description

```
template<class... DistTs>
struct prior_hessian::meta::all_dists_are_bounded< DistTs >
```

Definition at line 81 of file BoundsAdaptedDist.h.

#### 7.1.2 Member Data Documentation

7.1.2.1 `template<class... DistTs> constexpr bool prior_hessian::meta::all_dists_are_bounded< DistTs >::value = meta::logical_and_in_order({detail::dist_adaptor_traits<std::decay_t<DistTs>>::value...})` `[static]`

Definition at line 83 of file BoundsAdaptedDist.h.

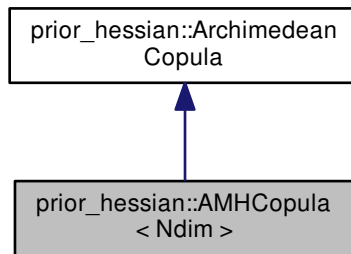
The documentation for this struct was generated from the following file:

- [BoundsAdaptedDist.h](#)

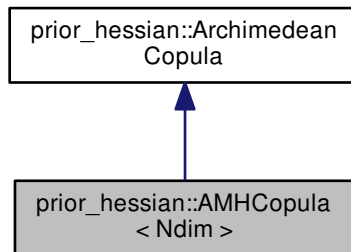
## 7.2 prior\_hessian::AMHCopula< Ndim > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/AMHCopula.h>
```

Inheritance diagram for prior\_hessian::AMHCopula< Ndim >:



Collaboration diagram for prior\_hessian::AMHCopula< Ndim >:



### Public Types

- using [NdimVecT](#) = arma::Col< double >::fixed< Ndim >
- using [NdimMatT](#) = arma::Mat< double >::fixed< Ndim, Ndim >

## Public Member Functions

- [AMHCopula](#) ()
- [AMHCopula](#) (double [theta](#))
- double [theta](#) () const
- void [set\\_theta](#) (double val)
- bool [operator==](#) (const [AMHCopula](#)< Ndim > &o) const
- bool [operator!=](#) (const [AMHCopula](#)< Ndim > &o) const
- template<class Vec >  
void [set\\_params](#) (const Vec &params)
- template<class IterT >  
void [append\\_params](#) (IterT &params)
- template<class IterT >  
void [set\\_params\\_iter](#) (IterT &params)
- template<class Vec >  
double [cdf](#) (const Vec &u) const
- template<class Vec >  
double [pdf](#) (const Vec &u) const
- template<class Vec >  
double [llh](#) (const Vec &u) const
- template<class Vec >  
double [rllh](#) (const Vec &u) const
- double [rllh\\_const](#) () const
- template<class Vec >  
[NdimVecT grad](#) (const Vec &u) const
- template<class Vec >  
[NdimVecT grad2](#) (const Vec &u) const
- template<class Vec >  
[NdimMatT hess](#) (const Vec &u) const
- template<class Vec , class Vec2 >  
void [rllh\\_grad\\_accumulate](#) (const Vec &u, double &[rllh](#), Vec2 &[grad](#)) const
- template<class Vec , class Vec2 >  
void [rllh\\_grad\\_grad2\\_accumulate](#) (const Vec &u, double &[rllh](#), Vec2 &[grad](#), Vec2 &[grad2](#)) const
- template<class Vec , class Vec2 , class Mat >  
void [rllh\\_grad\\_hess\\_accumulate](#) (const Vec &u, double &[rllh](#), Vec2 &[grad](#), Mat &[hess](#)) const
- template<class RngT >  
[NdimVecT sample](#) (RngT &rng) const
- double [gen](#) (double t) const
- double [ddim\\_gen](#) (double t) const
- double [igen](#) (double u) const
- double [d1\\_igen](#) (double u) const
- template<class Vec >  
double [igen\\_sum](#) (const Vec &u)

## Static Public Member Functions

- static const [StringVecT](#) & [param\\_names](#) ()
- static constexpr [IdxT](#) [num\\_params](#) ()
- static constexpr [IdxT](#) [num\\_dim](#) ()
- static double [param\\_lbound](#) ()
- static double [param\\_ubound](#) ()

- static bool `check_theta` (double val)
- template<class Vec >  
static bool `check_params` (const Vec &params)
- template<class IterT >  
static bool `check_params_iter` (IterT &params)
- template<class Vec >  
static void `rllh_dtheta_accumulate` (double `theta`, const Vec &u, double &rllh, double &dtheta)
- template<class Vec >  
static void `rllh_d2theta_accumulate` (double `theta`, const Vec &u, double &rllh, double &dtheta, double &d2theta)

### 7.2.1 Detailed Description

```
template<int Ndim>
class prior_hessian::AMHCopula< Ndim >
```

Definition at line 18 of file AMHCopula.h.

### 7.2.2 Member Typedef Documentation

7.2.2.1 template<int Ndim> using prior\_hessian::AMHCopula< Ndim >::NdimMatT =  
arma::Mat<double>::fixed<Ndim,Ndim>

Definition at line 27 of file AMHCopula.h.

7.2.2.2 template<int Ndim> using prior\_hessian::AMHCopula< Ndim >::NdimVecT = arma::Col<double>::fixed<Ndim>

Definition at line 26 of file AMHCopula.h.

### 7.2.3 Constructor & Destructor Documentation

7.2.3.1 template<int Ndim> prior\_hessian::AMHCopula< Ndim >::AMHCopula ( ) [inline]

Definition at line 35 of file AMHCopula.h.

References prior\_hessian::AMHCopula< Ndim >::theta().

Here is the call graph for this function:

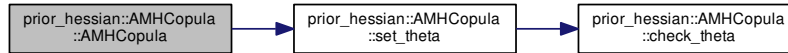


### 7.2.3.2 template<int Ndim> prior\_hessian::AMHCopula< Ndim >::AMHCopula ( double *theta* )

Definition at line 169 of file AMHCopula.h.

References prior\_hessian::AMHCopula< Ndim >::set\_theta().

Here is the call graph for this function:



## 7.2.4 Member Function Documentation

### 7.2.4.1 template<int Ndim> template<class IterT > void prior\_hessian::AMHCopula< Ndim >::append\_params ( IterT & *params* ) [inline]

Definition at line 51 of file AMHCopula.h.

References prior\_hessian::AMHCopula< Ndim >::theta().

Here is the call graph for this function:



### 7.2.4.2 template<int Ndim> template<class Vec > double prior\_hessian::AMHCopula< Ndim >::cdf ( const Vec & *u* ) const

Definition at line 194 of file AMHCopula.h.

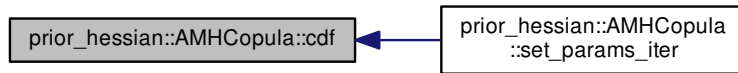
References prior\_hessian::AMHCopula< Ndim >::theta().

Referenced by prior\_hessian::AMHCopula< Ndim >::set\_params\_iter().

Here is the call graph for this function:



Here is the caller graph for this function:

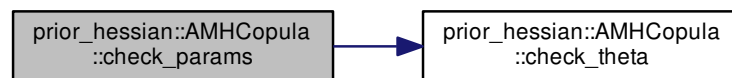


**7.2.4.3** `template<int Ndim> template<class Vec > static bool prior_hessian::AMHCopula< Ndim >::check_params ( const Vec & params ) [inline], [static]`

Definition at line 45 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::check_theta()`.

Here is the call graph for this function:



**7.2.4.4** `template<int Ndim> template<class IterT > static bool prior_hessian::AMHCopula< Ndim >::check_params_iter ( IterT & params ) [inline], [static]`

Definition at line 49 of file AMHCopula.h.

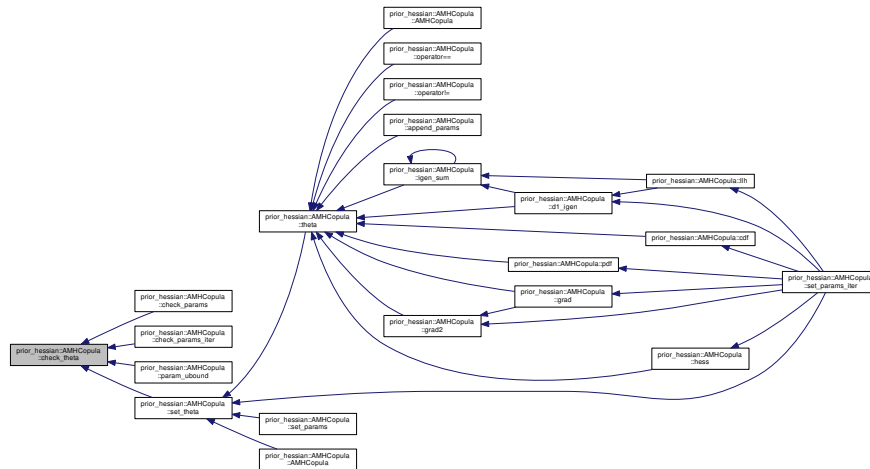
References `prior_hessian::AMHCopula< Ndim >::check_theta()`.

Here is the call graph for this function:



Definition at line 163 of file AMHCopula.h.

Here is the caller graph for this function:



Definition at line 284 of file AMHCopula.h.

Referenced by prior\_hessian::AMHCopula< Ndim >::llh(), and prior\_hessian::AMHCopula< Ndim >::set\_params\_← iter().

```

graph LR
    A[prior_hessian:AMHCopula:d1_igen] --> B[prior_hessian:AMHCopula:igen_sum]
    A --> C[prior_hessian:AMHCopula:num_dim]
    A --> D[prior_hessian:polylog:polylog]
    B --> B
    B --> E[prior_hessian:AMHCopula:theta]
    E --> F[prior_hessian:AMHCopula:set_theta]
    F --> G[prior_hessian:AMHCopula:check_theta]
  
```



Here is the caller graph for this function:



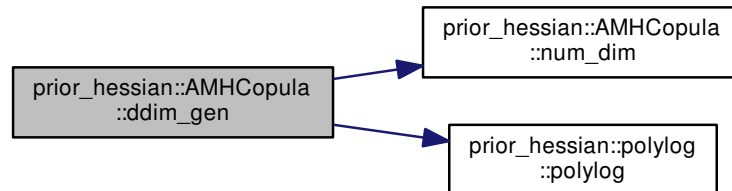
#### 7.2.4.7 `template<int Ndim> double prior_hessian::AMHCopula< Ndim >::ddim_gen ( double t ) const`

Definition at line 270 of file `AMHCopula.h`.

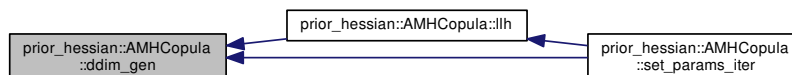
References `prior_hessian::AMHCopula< Ndim >::num_dim()`, and `prior_hessian::polylog::polylog()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::llh()`, and `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:

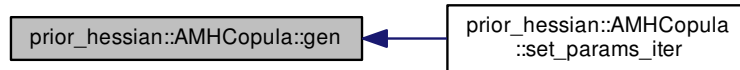


#### 7.2.4.8 template<int Ndim> double prior\_hessian::AMHCopula< Ndim >::gen ( double t ) const

Definition at line 265 of file AMHCopula.h.

Referenced by prior\_hessian::AMHCopula< Ndim >::set\_params\_iter().

Here is the caller graph for this function:



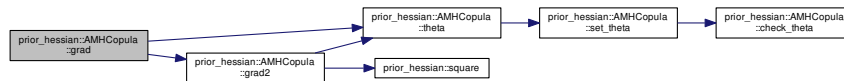
#### 7.2.4.9 template<int Ndim> template<class Vec > AMHCopula< Ndim >::NdimVecT prior\_hessian::AMHCopula< Ndim >::grad ( const Vec & u ) const

Definition at line 220 of file AMHCopula.h.

References prior\_hessian::AMHCopula< Ndim >::grad2(), and prior\_hessian::AMHCopula< Ndim >::theta().

Referenced by prior\_hessian::AMHCopula< Ndim >::set\_params\_iter().

Here is the call graph for this function:



Here is the caller graph for this function:



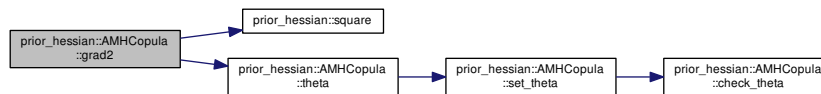
7.2.4.10 `template<int Ndim> template<class Vec > AMHCopula< Ndim >::NdimVecT prior_hessian::AMHCopula< Ndim >::grad2 ( const Vec & u ) const`

Definition at line 234 of file AMHCopula.h.

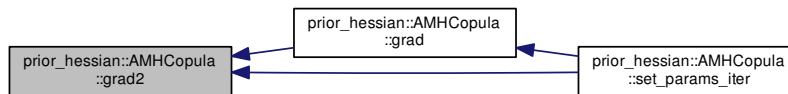
References `prior_hessian::square()`, and `prior_hessian::AMHCopula< Ndim >::theta()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::grad()`, and `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:



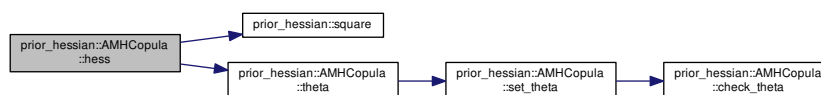
7.2.4.11 `template<int Ndim> template<class Vec > AMHCopula< Ndim >::NdimMatT prior_hessian::AMHCopula< Ndim >::hess ( const Vec & u ) const`

Definition at line 248 of file AMHCopula.h.

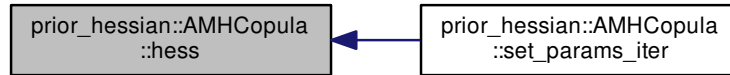
References `prior_hessian::square()`, and `prior_hessian::AMHCopula< Ndim >::theta()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:



#### 7.2.4.12 `template<int Ndim> double prior_hessian::AMHCopula< Ndim >::igen ( double u ) const`

Definition at line 279 of file AMHCopula.h.

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



#### 7.2.4.13 `template<int Ndim> template<class Vec > double prior_hessian::AMHCopula< Ndim >::igen_sum ( const Vec & u ) [inline]`

Definition at line 97 of file AMHCopula.h.

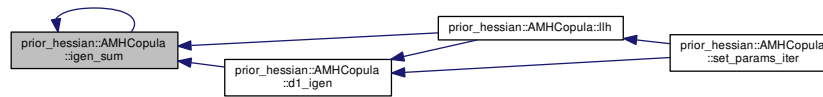
References `prior_hessian::AMHCopula< Ndim >::igen_sum()`, and `prior_hessian::AMHCopula< Ndim >::theta()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::d1_igen()`, `prior_hessian::AMHCopula< Ndim >::igen_sum()`, and `prior_hessian::AMHCopula< Ndim >::llh()`.

Here is the call graph for this function:



Here is the caller graph for this function:



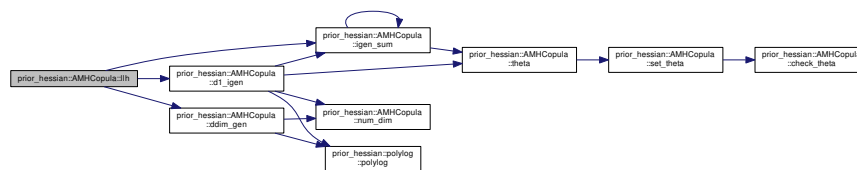
7.2.4.14 `template<int Ndim> template<class Vec > double prior_hessian::AMHCopula< Ndim >::lh ( const Vec & u ) const`

Definition at line 210 of file AMHCopula.h.

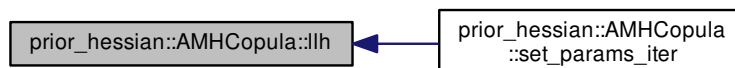
References `prior_hessian::AMHCopula< Ndim >::d1_igen()`, `prior_hessian::AMHCopula< Ndim >::ddim_gen()`, and `prior_hessian::AMHCopula< Ndim >::igen_sum()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:

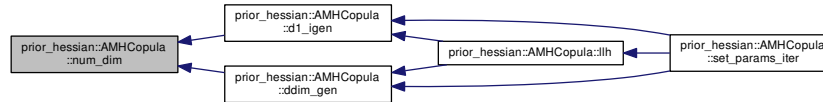


7.2.4.15 `template<int Ndim> static constexpr IdxT prior_hessian::AMHCopula< Ndim >::num_dim ( ) [inline], [static]`

Definition at line 30 of file AMHCopula.h.

Referenced by `prior_hessian::AMHCopula< Ndim >::d1_igen()`, and `prior_hessian::AMHCopula< Ndim >::ddim_igen()`.

Here is the caller graph for this function:



7.2.4.16 `template<int Ndim> static constexpr IdxT prior_hessian::AMHCopula< Ndim >::num_params ( ) [inline], [static]`

Definition at line 29 of file AMHCopula.h.

7.2.4.17 `template<int Ndim> bool prior_hessian::AMHCopula< Ndim >::operator!= ( const AMHCopula< Ndim > & o ) const [inline]`

Definition at line 42 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::theta()`.

Here is the call graph for this function:



7.2.4.18 `template<int Ndim> bool prior_hessian::AMHCopula< Ndim >::operator== ( const AMHCopula< Ndim > & o ) const [inline]`

Definition at line 41 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::theta()`.

Here is the call graph for this function:



**7.2.4.19** `template<int Ndim> static double prior_hessian::AMHCopula< Ndim >::param_lbound ( ) [inline], [static]`

Definition at line 31 of file AMHCopula.h.

**7.2.4.20** `template<int Ndim> static const StringVecT& prior_hessian::AMHCopula< Ndim >::param_names ( ) [inline], [static]`

Definition at line 28 of file AMHCopula.h.

**7.2.4.21** `template<int Ndim> static double prior_hessian::AMHCopula< Ndim >::param_ubound ( ) [inline], [static]`

Definition at line 32 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::check_theta()`.

Here is the call graph for this function:



**7.2.4.22** `template<int Ndim> template<class Vec > double prior_hessian::AMHCopula< Ndim >::pdf ( const Vec & u ) const`

Definition at line 202 of file AMHCopula.h.

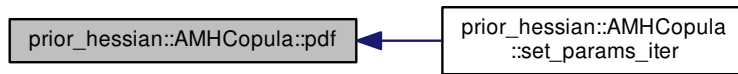
References `prior_hessian::AMHCopula< Ndim >::theta()`.

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:



**7.2.4.23** `template<int Ndim> template<class Vec > double prior_hessian::AMHCopula< Ndim >::rllh ( const Vec & u ) const`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



**7.2.4.24** `template<int Ndim> double prior_hessian::AMHCopula< Ndim >::rllh_const ( ) const`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:

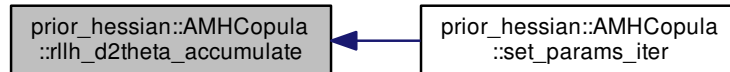




7.2.4.25 `template<int Ndim> template<class Vec > static void prior_hessian::AMHCopula< Ndim >::rllh_d2theta_accumulate ( double theta, const Vec & u, double & rllh, double & dtheta, double & d2theta ) [static]`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



7.2.4.26 `template<int Ndim> template<class Vec > static void prior_hessian::AMHCopula< Ndim >::rllh_dtheta_accumulate ( double theta, const Vec & u, double & rllh, double & dtheta ) [static]`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



7.2.4.27 `template<int Ndim> template<class Vec , class Vec2 > void prior_hessian::AMHCopula< Ndim >::rllh_grad_accumulate ( const Vec & u, double & rllh, Vec2 & grad ) const`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



7.2.4.28 `template<int Ndim> template<class Vec , class Vec2 > void prior_hessian::AMHCopula< Ndim >::rllh_grad_grad2_accumulate ( const Vec & u, double & rllh, Vec2 & grad, Vec2 & grad2 ) const`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



7.2.4.29 `template<int Ndim> template<class Vec , class Vec2 , class Mat > void prior_hessian::AMHCopula< Ndim >::rllh_grad_hess_accumulate ( const Vec & u, double & rllh, Vec2 & grad, Mat & hess ) const`

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:



7.2.4.30 `template<int Ndim> template<class RngT > AMHCopula< Ndim >::NdimVecT prior_hessian::AMHCopula< Ndim >::sample ( RngT & rng ) const`

Definition at line 596 of file `AMHCopula.h`.

Referenced by `prior_hessian::AMHCopula< Ndim >::set_params_iter()`.

Here is the caller graph for this function:

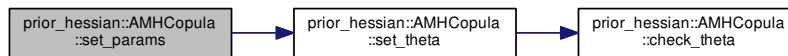


**7.2.4.31** `template<int Ndim> template<class Vec > void prior_hessian::AMHCopula< Ndim >::set_params ( const Vec & params ) [inline]`

Definition at line 47 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::set_theta()`.

Here is the call graph for this function:

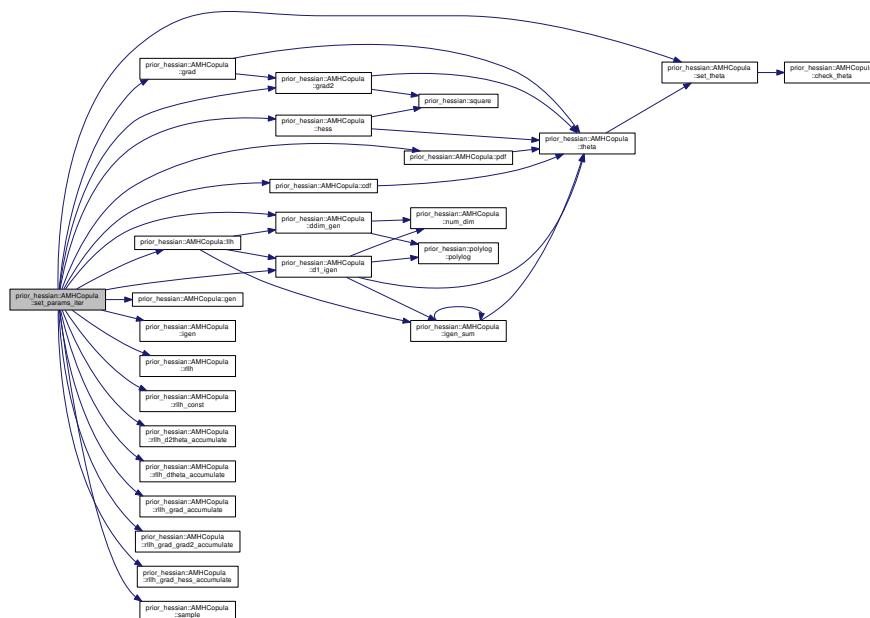


**7.2.4.32** `template<int Ndim> template<class IterT > void prior_hessian::AMHCopula< Ndim >::set_params_iter ( IterT & params ) [inline]`

Definition at line 53 of file AMHCopula.h.

References `prior_hessian::AMHCopula< Ndim >::cdf()`, `prior_hessian::AMHCopula< Ndim >::d1_igen()`, `prior_hessian::AMHCopula< Ndim >::ddim_gen()`, `prior_hessian::AMHCopula< Ndim >::gen()`, `prior_hessian::AMHCopula< Ndim >::grad()`, `prior_hessian::AMHCopula< Ndim >::grad2()`, `prior_hessian::AMHCopula< Ndim >::hess()`, `prior_hessian::AMHCopula< Ndim >::igen()`, `prior_hessian::AMHCopula< Ndim >::llh()`, `prior_hessian::AMHCopula< Ndim >::pdf()`, `prior_hessian::AMHCopula< Ndim >::rllh()`, `prior_hessian::AMHCopula< Ndim >::rllh_const()`, `prior_hessian::AMHCopula< Ndim >::rllh_d2theta_accumulate()`, `prior_hessian::AMHCopula< Ndim >::rllh_dtheta_accumulate()`, `prior_hessian::AMHCopula< Ndim >::rllh_grad_accumulate()`, `prior_hessian::AMHCopula< Ndim >::rllh_grad_grad2_accumulate()`, `prior_hessian::AMHCopula< Ndim >::rllh_grad_hess_accumulate()`, `prior_hessian::AMHCopula< Ndim >::sample()`, and `prior_hessian::AMHCopula< Ndim >::set_theta()`.

Here is the call graph for this function:



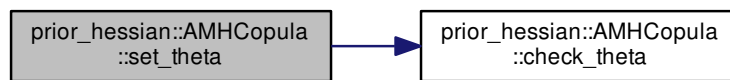
## 7.2.4.33 template&lt;int Ndim&gt; void prior\_hessian::AMHCopula&lt; Ndim &gt;::set\_theta ( double val )

Definition at line 175 of file AMHCopula.h.

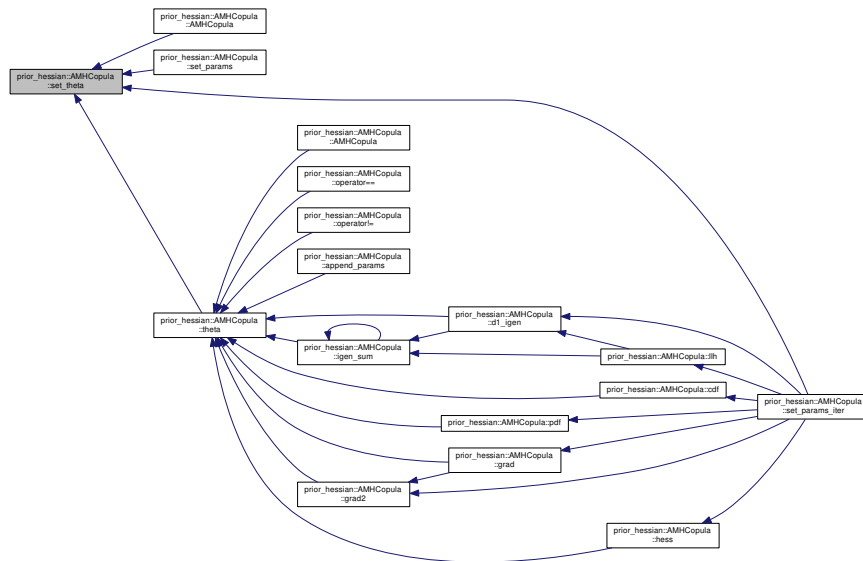
References prior\_hessian::AMHCopula< Ndim >::check\_theta().

Referenced by prior\_hessian::AMHCopula< Ndim >::AMHCopula(), prior\_hessian::AMHCopula< Ndim >::set\_params(), prior\_hessian::AMHCopula< Ndim >::set\_params\_iter(), and prior\_hessian::AMHCopula< Ndim >::theta().

Here is the call graph for this function:



Here is the caller graph for this function:



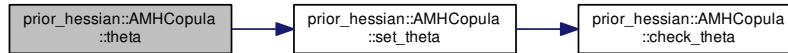
## 7.2.4.34 template&lt;int Ndim&gt; double prior\_hessian::AMHCopula&lt; Ndim &gt;::theta ( ) const [inline]

Definition at line 38 of file AMHCopula.h.

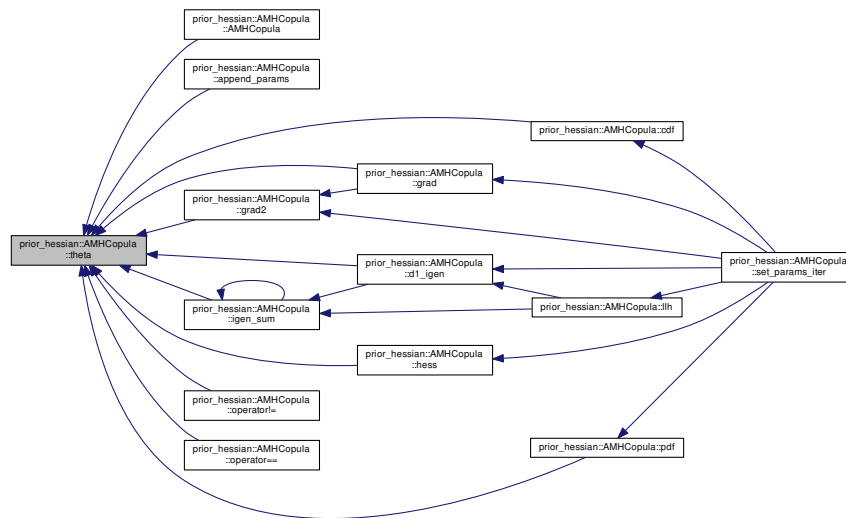
References prior\_hessian::AMHCopula< Ndim >::set\_theta().

Referenced by prior\_hessian::AMHCopula< Ndim >::AMHCopula(), prior\_hessian::AMHCopula< Ndim >::append\_params(), prior\_hessian::AMHCopula< Ndim >::cdf(), prior\_hessian::AMHCopula< Ndim >::d1\_igen(), prior\_hessian::AMHCopula< Ndim >::grad(), prior\_hessian::AMHCopula< Ndim >::grad2(), prior\_hessian::AMHCopula< Ndim >::hess(), prior\_hessian::AMHCopula< Ndim >::igen\_sum(), prior\_hessian::AMHCopula< Ndim >::operator!(), prior\_hessian::AMHCopula< Ndim >::operator==( ), and prior\_hessian::AMHCopula< Ndim >::pdf().

Here is the call graph for this function:



Here is the caller graph for this function:



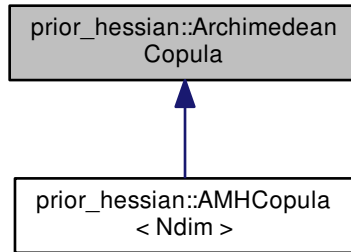
The documentation for this class was generated from the following file:

- [AMHCopula.h](#)

### 7.3 prior\_hessian::ArchimedeanCopula Class Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula:



#### Classes

- struct [D2\\_GenTerms](#)
- struct [D2\\_IGenTerms](#)
- struct [D2Theta\\_GenTerms](#)
- struct [D2Theta\\_IGenTerms](#)
- struct [D\\_GenTerms](#)
- struct [D\\_IGenTerms](#)
- struct [DTheta\\_GenTerms](#)
- struct [DTheta\\_IGenTerms](#)

#### 7.3.1 Detailed Description

Definition at line 11 of file `ArchimedeanCopula.h`.

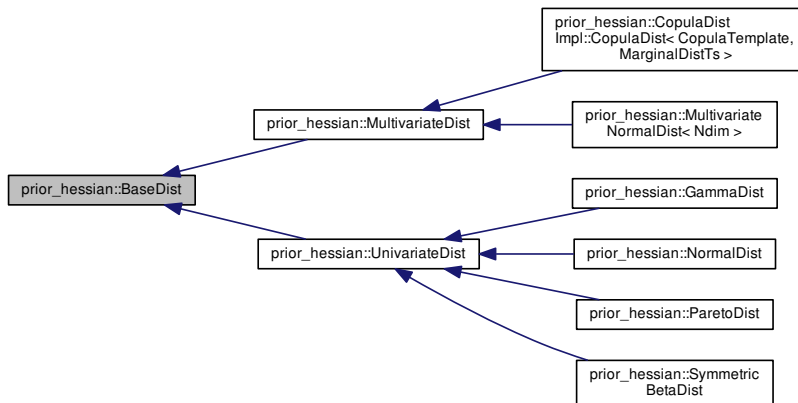
The documentation for this class was generated from the following file:

- [ArchimedeanCopula.h](#)

## 7.4 prior\_hessian::BaseDist Class Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
BaseDist.h>
```

Inheritance diagram for `prior_hessian::BaseDist`:



#### 7.4.1 Detailed Description

Definition at line 11 of file `BaseDist.h`.

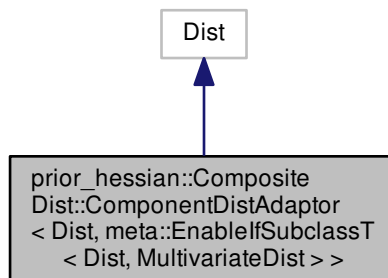
The documentation for this class was generated from the following file:

- [BaseDist.h](#)

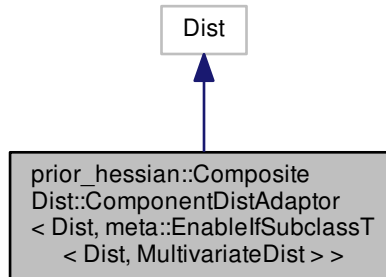
#### 7.5 `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >` Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/CompositeDist.h>
```

Inheritance diagram for `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >`:



Collaboration diagram for prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >:



## Public Types

- using [ComponentDistT](#) = Dist

## Public Member Functions

- [ComponentDistAdaptor](#) ()
- [ComponentDistAdaptor](#) (Dist &&dist)
- [ComponentDistAdaptor](#) (const Dist &dist)
- template<class IterT >  
void [append\\_lbound](#) (IterT &v) const
- template<class IterT >  
void [append\\_ubound](#) (IterT &v) const
- template<class IterT >  
void [append\\_global\\_lbound](#) (IterT &v) const
- template<class IterT >  
void [append\\_global\\_ubound](#) (IterT &v) const
- template<class IterT >  
void [set\\_lbound\\_from\\_iter](#) (IterT &v)
- template<class IterT >  
void [set\\_ubound\\_from\\_iter](#) (IterT &v)
- template<class IterT >  
void [set\\_bounds\\_from\\_iter](#) (IterT &lb\_iter, IterT &ub\_iter)
- template<class IterT >  
void [append\\_params](#) (IterT &v) const
- template<class IterT >  
void [append\\_params\\_lbound](#) (IterT &v) const
- template<class IterT >  
void [append\\_params\\_ubound](#) (IterT &v) const
- template<class IterT >  
void [append\\_param\\_names](#) (IterT &v) const



- `template<class IterT >`  
`double cdf_from_iter (IterT &u) const`
- `template<class IterT >`  
`double pdf_from_iter (IterT &u) const`
- `template<class IterT >`  
`double llh_from_iter (IterT &u) const`
- `template<class IterT >`  
`double rllh_from_iter (IterT &u) const`
- `void grad_accumulate_idx (const VecT &u, VecT &g, IdxT &k) const`
- `void grad2_accumulate_idx (const VecT &u, VecT &g2, IdxT &k) const`
- `void hess_accumulate_idx (const VecT &u, MatT &h, IdxT &k) const`
- `void grad_grad2_accumulate_idx (const VecT &u, VecT &g, VecT &g2, IdxT &k) const`
- `void grad_hess_accumulate_idx (const VecT &u, VecT &g, MatT &h, IdxT &k) const`
- `template<class RngT, class IterT >`  
`void append_sample (RngT &rng, IterT &v)`

### 7.5.1 Detailed Description

```
template<class Dist>
class prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >
```

Definition at line 692 of file CompositeDist.h.

### 7.5.2 Member Typedef Documentation

**7.5.2.1** `template<class Dist > using prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::ComponentDistT = Dist`

Definition at line 694 of file CompositeDist.h.

### 7.5.3 Constructor & Destructor Documentation

**7.5.3.1** `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::ComponentDistAdaptor ( ) [inline]`

Definition at line 695 of file CompositeDist.h.

**7.5.3.2** `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::ComponentDistAdaptor ( Dist && dist ) [inline], [explicit]`

Definition at line 696 of file CompositeDist.h.

7.5.3.3 `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::ComponentDistAdaptor ( const Dist & dist ) [inline], [explicit]`

Definition at line 697 of file CompositeDist.h.

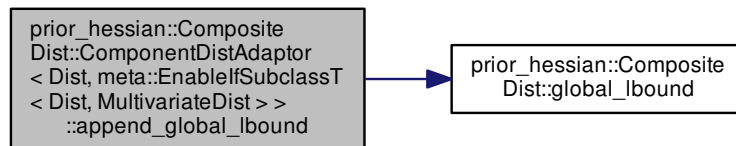
#### 7.5.4 Member Function Documentation

7.5.4.1 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_global_lbound ( IterT & v ) const [inline]`

Definition at line 705 of file CompositeDist.h.

References prior\_hessian::CompositeDist::global\_lbound().

Here is the call graph for this function:

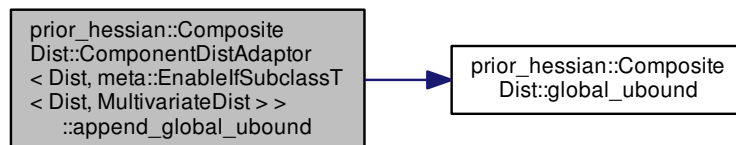


7.5.4.2 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_global_ubound ( IterT & v ) const [inline]`

Definition at line 708 of file CompositeDist.h.

References prior\_hessian::CompositeDist::global\_ubound().

Here is the call graph for this function:

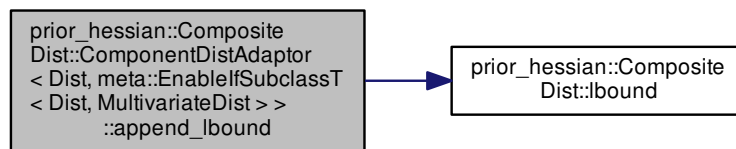


7.5.4.3 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_lbound ( IterT & v ) const [inline]`

Definition at line 699 of file CompositeDist.h.

References `prior_hessian::CompositeDist::lbound()`.

Here is the call graph for this function:

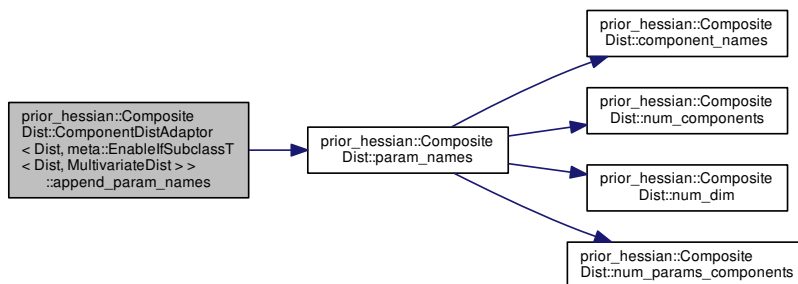


7.5.4.4 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_param_names ( IterT & v ) const [inline]`

Definition at line 746 of file CompositeDist.h.

References `prior_hessian::CompositeDist::param_names()`.

Here is the call graph for this function:

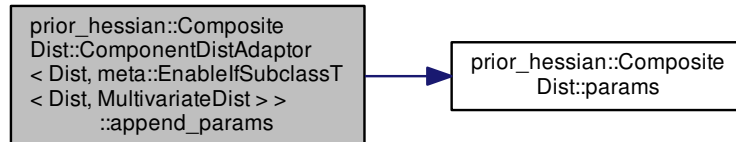


7.5.4.5 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_params ( IterT & v ) const [inline]`

Definition at line 737 of file CompositeDist.h.

References `prior_hessian::CompositeDist::params()`.

Here is the call graph for this function:



7.5.4.6 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_params_lbound ( IterT & v ) const [inline]`

Definition at line 740 of file CompositeDist.h.

7.5.4.7 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_params_ubound ( IterT & v ) const [inline]`

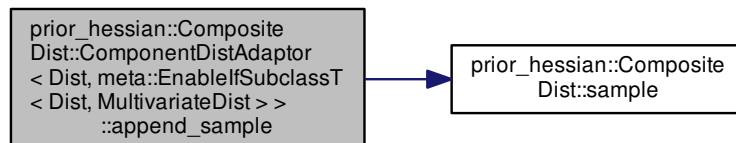
Definition at line 743 of file CompositeDist.h.

7.5.4.8 `template<class Dist > template<class RngT, class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_sample ( RngT & rng, IterT & v ) [inline]`

Definition at line 823 of file CompositeDist.h.

References `prior_hessian::CompositeDist::sample()`.

Here is the call graph for this function:

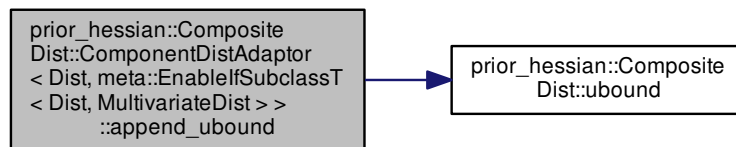


7.5.4.9 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_ubound ( IterT & v ) const [inline]`

Definition at line 702 of file CompositeDist.h.

References `prior_hessian::CompositeDist::ubound()`.

Here is the call graph for this function:

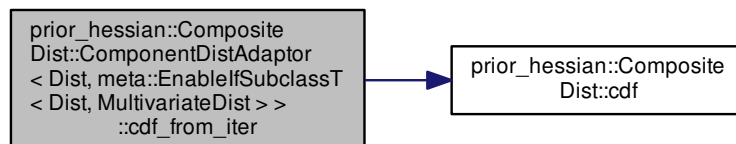


7.5.4.10 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::cdf_from_iter ( IterT & u ) const [inline]`

Definition at line 749 of file CompositeDist.h.

References `prior_hessian::CompositeDist::cdf()`.

Here is the call graph for this function:

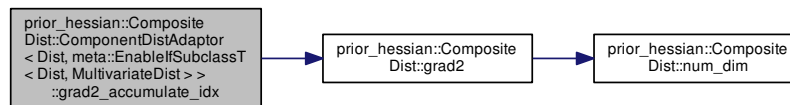


7.5.4.11 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad2_accumulate_idx ( const VecT & u, VecT & g2, IdxT & k ) const [inline]`

Definition at line 788 of file CompositeDist.h.

References prior\_hessian::CompositeDist::grad2().

Here is the call graph for this function:

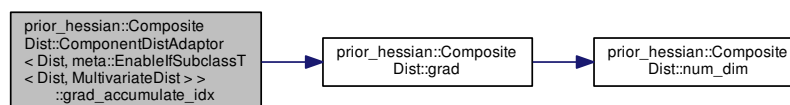


7.5.4.12 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_accumulate_idx ( const VecT & u, VecT & g, IdxT & k ) const [inline]`

Definition at line 781 of file CompositeDist.h.

References prior\_hessian::CompositeDist::grad().

Here is the call graph for this function:

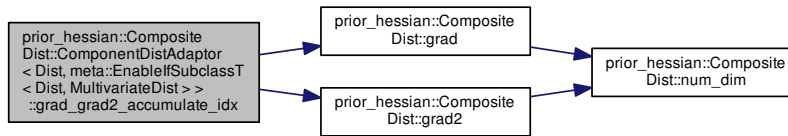


7.5.4.13 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_grad2_accumulate_idx ( const VecT & u, VecT & g, VecT & g2, IdxT & k ) const [inline]`

Definition at line 803 of file CompositeDist.h.

References prior\_hessian::CompositeDist::grad(), and prior\_hessian::CompositeDist::grad2().

Here is the call graph for this function:

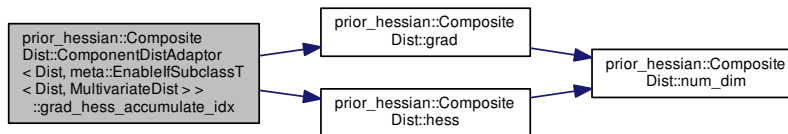


7.5.4.14 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_hess_accumulate_idx ( const VecT & u, VecT & g, MatT & h, IdxT & k ) const [inline]`

Definition at line 812 of file CompositeDist.h.

References `prior_hessian::CompositeDist::grad()`, and `prior_hessian::CompositeDist::hess()`.

Here is the call graph for this function:

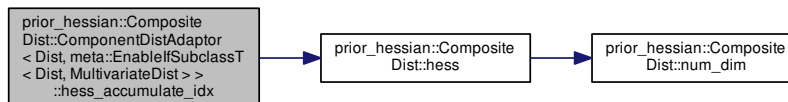


7.5.4.15 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::hess_accumulate_idx ( const VecT & u, MatT & h, IdxT & k ) const [inline]`

Definition at line 795 of file CompositeDist.h.

References `prior_hessian::CompositeDist::hess()`.

Here is the call graph for this function:

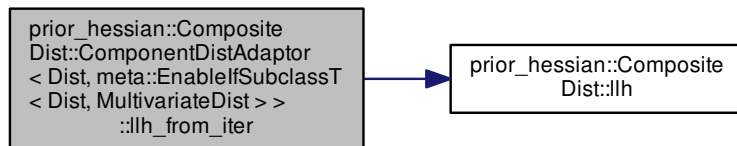


7.5.4.16 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::llh_from_iter ( IterT & u ) const [inline]`

Definition at line 765 of file CompositeDist.h.

References `prior_hessian::CompositeDist::llh()`.

Here is the call graph for this function:

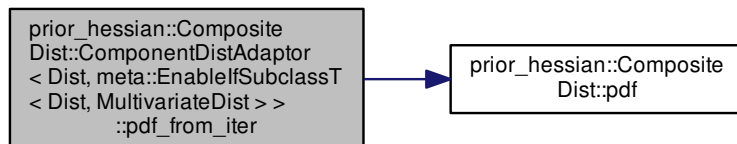


7.5.4.17 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::pdf_from_iter ( IterT & u ) const [inline]`

Definition at line 757 of file CompositeDist.h.

References `prior_hessian::CompositeDist::pdf()`.

Here is the call graph for this function:



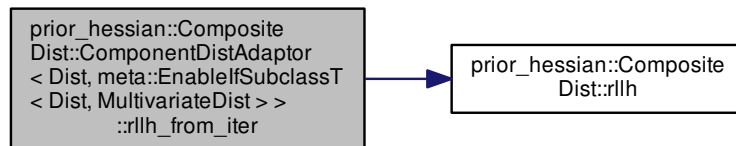


7.5.4.18 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::rllh_from_iter ( IterT & u ) const`  
`[inline]`

Definition at line 773 of file CompositeDist.h.

References `prior_hessian::CompositeDist::rllh()`.

Here is the call graph for this function:

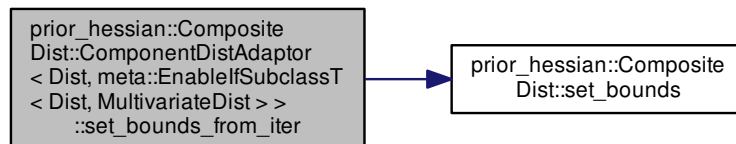


7.5.4.19 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_bounds_from_iter ( IterT & lb_iter, IterT & ub_iter )`  
`[inline]`

Definition at line 727 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_bounds()`.

Here is the call graph for this function:

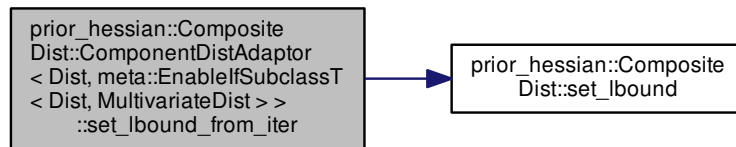


7.5.4.20 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_lbound_from_iter ( IterT & v ) [inline]`

Definition at line 711 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_lbound()`.

Here is the call graph for this function:

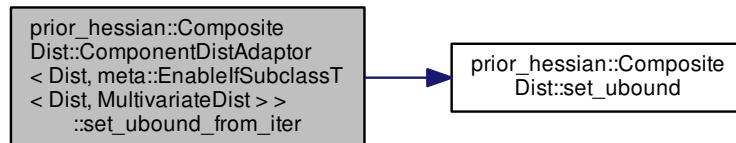


7.5.4.21 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_ubound_from_iter ( IterT & v ) [inline]`

Definition at line 719 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_ubound()`.

Here is the call graph for this function:



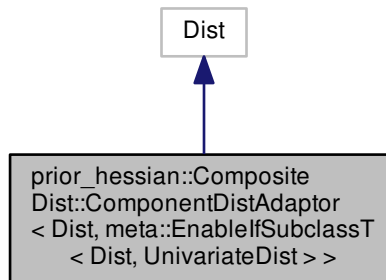
The documentation for this class was generated from the following file:

- [CompositeDist.h](#)

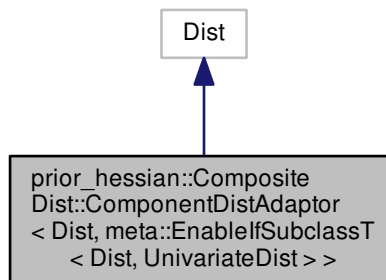
## 7.6 prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/CompositeDist.h>
```

Inheritance diagram for prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >:



Collaboration diagram for prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >:



### Public Types

- using [ComponentDistT](#) = Dist

## Public Member Functions

- [ComponentDistAdaptor](#) ()
- [ComponentDistAdaptor](#) (Dist &&dist)
- [ComponentDistAdaptor](#) (const Dist &dist)
- [template<class IterT >](#)  
void [append\\_lbound](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_ubound](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_global\\_lbound](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_global\\_ubound](#) (IterT &v) const
- [template<class IterT >](#)  
void [set\\_lbound\\_from\\_iter](#) (IterT &lbounds)
- [template<class IterT >](#)  
void [set\\_ubound\\_from\\_iter](#) (IterT &ubounds)
- [template<class IterT >](#)  
void [set\\_bounds\\_from\\_iter](#) (IterT &lbounds, IterT &ubounds)
- [template<class IterT >](#)  
void [append\\_params](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_params\\_lbound](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_params\\_ubound](#) (IterT &v) const
- [template<class IterT >](#)  
void [append\\_param\\_names](#) (IterT &v) const
- [template<class IterT >](#)  
double [cdf\\_from\\_iter](#) (IterT &u) const
- [template<class IterT >](#)  
double [pdf\\_from\\_iter](#) (IterT &u) const
- [template<class IterT >](#)  
double [llh\\_from\\_iter](#) (IterT &u) const
- [template<class IterT >](#)  
double [rllh\\_from\\_iter](#) (IterT &u) const
- void [grad\\_accumulate\\_idx](#) (const [VecT](#) &u, [VecT](#) &g, [IdxT](#) &k) const
- void [grad2\\_accumulate\\_idx](#) (const [VecT](#) &u, [VecT](#) &g2, [IdxT](#) &k) const
- void [hess\\_accumulate\\_idx](#) (const [VecT](#) &u, [MatT](#) &h, [IdxT](#) &k) const
- void [grad\\_grad2\\_accumulate\\_idx](#) (const [VecT](#) &u, [VecT](#) &g, [VecT](#) &g2, [IdxT](#) &k) const
- void [grad\\_hess\\_accumulate\\_idx](#) (const [VecT](#) &u, [VecT](#) &g, [MatT](#) &h, [IdxT](#) &k) const
- [template<class RngT, class IterT >](#)  
void [append\\_sample](#) (RngT &rng, IterT &iter)

## 7.6.1 Detailed Description

```
template<class Dist>
class prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >
```

Definition at line 622 of file CompositeDist.h.

## 7.6.2 Member Typedef Documentation

7.6.2.1 `template<class Dist > using prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::ComponentDistT = Dist`

Definition at line 624 of file CompositeDist.h.

## 7.6.3 Constructor & Destructor Documentation

7.6.3.1 `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::ComponentDistAdaptor ( ) [inline]`

Definition at line 625 of file CompositeDist.h.

7.6.3.2 `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::ComponentDistAdaptor ( Dist && dist ) [inline], [explicit]`

Definition at line 626 of file CompositeDist.h.

7.6.3.3 `template<class Dist > prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::ComponentDistAdaptor ( const Dist & dist ) [inline], [explicit]`

Definition at line 627 of file CompositeDist.h.

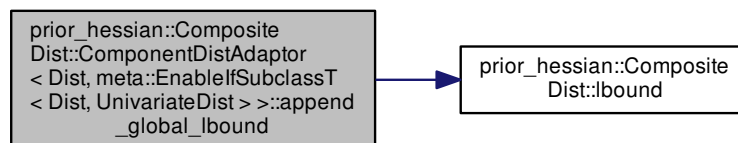
## 7.6.4 Member Function Documentation

7.6.4.1 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_global_lbound ( IterT & v ) const [inline]`

Definition at line 631 of file CompositeDist.h.

References `prior_hessian::CompositeDist::lbound()`.

Here is the call graph for this function:

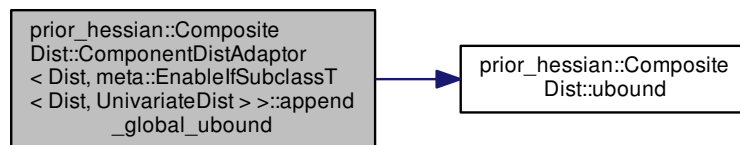


7.6.4.2 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_global_ubound ( IterT & v ) const [inline]`

Definition at line 632 of file CompositeDist.h.

References prior\_hessian::CompositeDist::ubound().

Here is the call graph for this function:

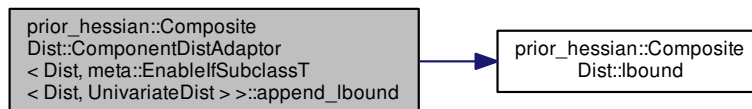


7.6.4.3 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_lbound ( IterT & v ) const [inline]`

Definition at line 629 of file CompositeDist.h.

References prior\_hessian::CompositeDist::lbound().

Here is the call graph for this function:

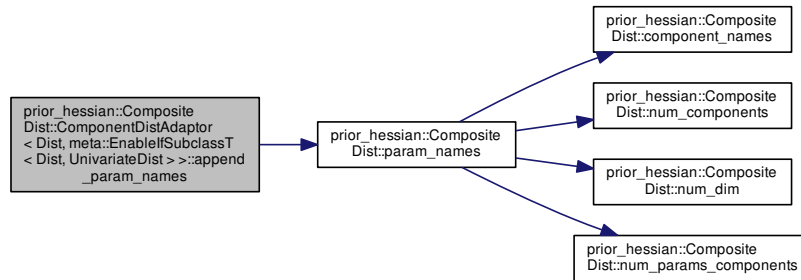


7.6.4.4 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_param_names ( IterT & v ) const [inline]`

Definition at line 648 of file CompositeDist.h.

References prior\_hessian::CompositeDist::param\_names().

Here is the call graph for this function:

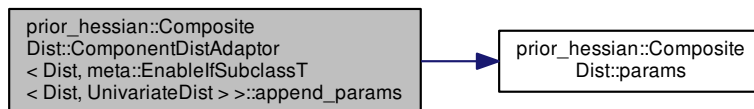


7.6.4.5 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_params ( IterT & v ) const [inline]`

Definition at line 639 of file CompositeDist.h.

References `prior_hessian::CompositeDist::params()`.

Here is the call graph for this function:



7.6.4.6 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_params_lbound ( IterT & v ) const [inline]`

Definition at line 642 of file CompositeDist.h.

7.6.4.7 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_params_ubound ( IterT & v ) const [inline]`

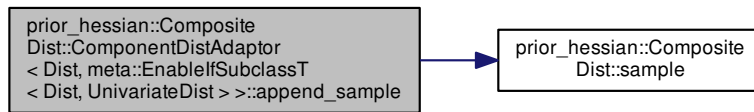
Definition at line 645 of file CompositeDist.h.

7.6.4.8 `template<class Dist > template<class RngT , class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_sample ( RngT & rng, IterT & iter ) [inline]`

Definition at line 687 of file CompositeDist.h.

References prior\_hessian::CompositeDist::sample().

Here is the call graph for this function:

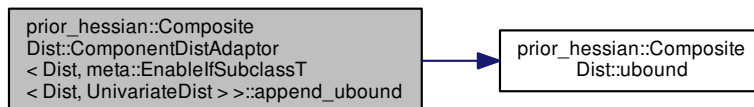


7.6.4.9 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_ubound ( IterT & v ) const [inline]`

Definition at line 630 of file CompositeDist.h.

References prior\_hessian::CompositeDist::ubound().

Here is the call graph for this function:



7.6.4.10 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::cdf_from_iter ( IterT & u ) const [inline]`

Definition at line 651 of file CompositeDist.h.

References prior\_hessian::CompositeDist::cdf().



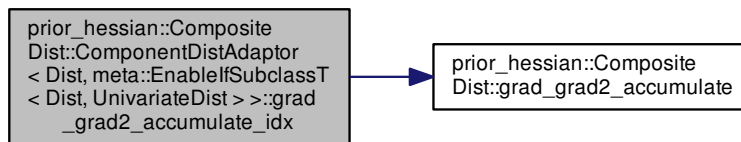


7.6.4.13 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad_grad2_accumulate_idx ( const VecT & u, VecT & g, VecT & g2, IdxT & k ) const [inline]`

Definition at line 674 of file CompositeDist.h.

References `prior_hessian::CompositeDist::grad_grad2_accumulate()`.

Here is the call graph for this function:

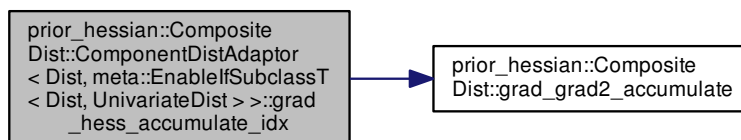


7.6.4.14 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad_hess_accumulate_idx ( const VecT & u, VecT & g, MatT & h, IdxT & k ) const [inline]`

Definition at line 680 of file CompositeDist.h.

References `prior_hessian::CompositeDist::grad_grad2_accumulate()`.

Here is the call graph for this function:

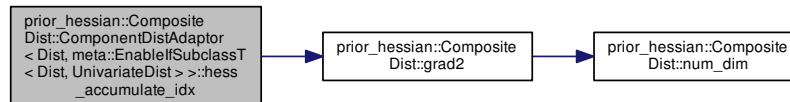


7.6.4.15 `template<class Dist > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::hess_accumulate_idx ( const VecT & u, MatT & h, IdxT & k ) const [inline]`

Definition at line 668 of file CompositeDist.h.

References `prior_hessian::CompositeDist::grad2()`.

Here is the call graph for this function:

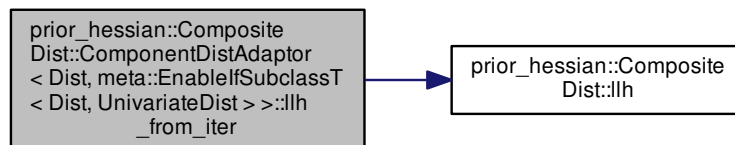


7.6.4.16 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::llh_from_iter ( IterT & u ) const [inline]`

Definition at line 653 of file CompositeDist.h.

References `prior_hessian::CompositeDist::llh()`.

Here is the call graph for this function:

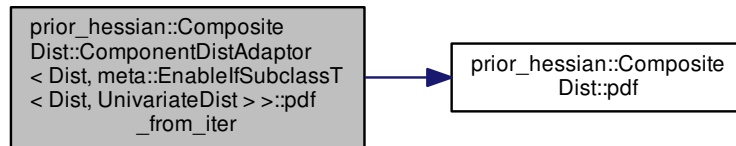


7.6.4.17 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::pdf_from_iter ( IterT & u ) const [inline]`

Definition at line 652 of file CompositeDist.h.

References `prior_hessian::CompositeDist::pdf()`.

Here is the call graph for this function:

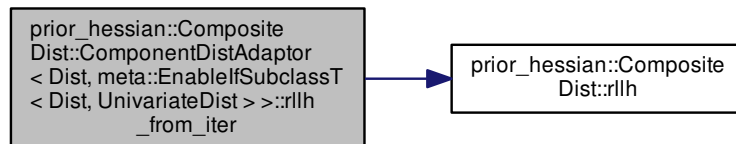


7.6.4.18 `template<class Dist > template<class IterT > double prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::rllh_from_iter ( IterT & u ) const [inline]`

Definition at line 654 of file CompositeDist.h.

References `prior_hessian::CompositeDist::rllh()`.

Here is the call graph for this function:

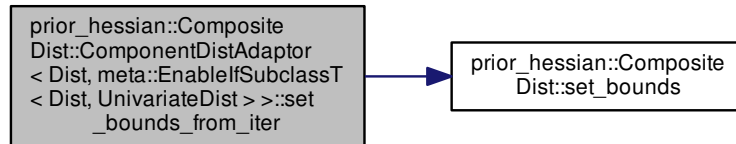


7.6.4.19 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_bounds_from_iter ( IterT & lbounds, IterT & ubounds ) [inline]`

Definition at line 636 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_bounds()`.

Here is the call graph for this function:

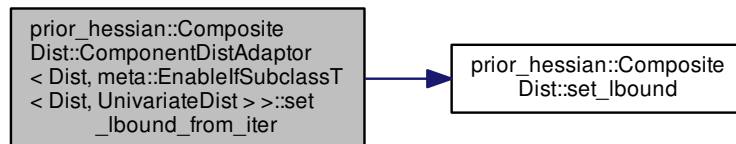


7.6.4.20 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_lbound_from_iter ( IterT & lbounds ) [inline]`

Definition at line 633 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_lbound()`.

Here is the call graph for this function:

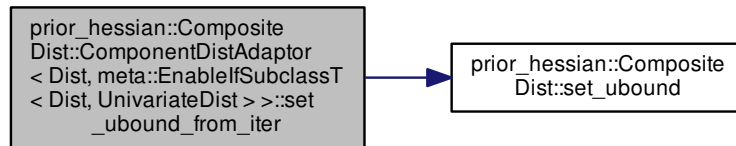


7.6.4.21 `template<class Dist > template<class IterT > void prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_ubound_from_iter ( IterT & ubounds ) [inline]`

Definition at line 634 of file CompositeDist.h.

References `prior_hessian::CompositeDist::set_ubound()`.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- [CompositeDist.h](#)

## 7.7 prior\_hessian::CompositeDist Class Reference

A probability distribution made of independent component distributions composing groups of 1 or more variables.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
CompositeDist.h>
```

### Classes

- class [ComponentDistAdaptor](#)
- class [ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >](#)
- class [ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >](#)

### Public Types

- using [AnyRngT](#) = any\_rng::AnyRng< std::size\_t >
- template<class DistT >  
using [ComponentDistT](#) = [ComponentDistAdaptor](#)< [BoundsAdaptedDistT](#)< std::remove\_reference\_t< DistT >>>

## Public Member Functions

- [CompositeDist](#) ()
- `template<class... Ts, meta::ConstructableIfAllAreNotTupleAndAreNotT< CompositeDist, Ts... > = true>`  
[CompositeDist](#) (Ts &&...dists)  
*Construct from a variadic list of subclasses of [UnivariateDist](#)'s or [MultivariateDist](#)'s.*
- `template<class... Ts>`  
[CompositeDist](#) (std::tuple< Ts... > &&dist\_tuple)  
*Construct from a rvalue tuple of subclasses of [UnivariateDist](#)'s or [MultivariateDist](#)'s.*
- `template<class... Ts>`  
[CompositeDist](#) (const std::tuple< Ts... > &dist\_tuple)  
*Construct from a lvalue tuple of subclasses of [UnivariateDist](#)'s or [MultivariateDist](#)'s.*
- `void initialize ()`
- `void initialize (const std::tuple<> &)`  
*Initialize to the empty state.*
- `void initialize (std::tuple<> &&)`  
*Initialize of an empty lvalue tuple produces the empty state.*
- `template<class... Ts, typename = meta::EnableIfAllAreNotTupleT<Ts...>>`  
`void initialize (Ts &&...dists)`  
*Initialize of an empty rvalue tuple produces the empty state.*
- `template<class... Ts, typename = meta::EnableIfAllAreNotTupleT<Ts...>>`  
`void initialize (std::tuple< Ts... > &&dist_tuple)`
- `template<class... Ts, typename = meta::EnableIfNonEmpty<Ts...>>`  
`void initialize (const std::tuple< Ts... > &dist_tuple)`
- `CompositeDist (const CompositeDist &)`
- `CompositeDist & operator= (const CompositeDist &)`
- `CompositeDist (CompositeDist &&)`
- `CompositeDist & operator= (CompositeDist &&)`
- `void clear ()`
- `template<class... Ts>`  
`const std::tuple< Ts... > & get\_dist\_tuple () const`
- `bool is\_empty () const`
- `operator bool () const`
- `IdxT num\_components () const`
- `TypeInfoVecT component\_types () const`
- `const StringVecT & component\_names () const`
- `template<class StringVec >`  
`void set\_component\_names (StringVec &&names)`
- `bool operator== (const CompositeDist &o) const`
- `bool operator!= (const CompositeDist &o) const`
- `IdxT num\_dim () const`
- `UVecT num\_dim\_components () const`
- `const StringVecT & dim\_variables () const`
- `template<class StringVec >`  
`void set\_dim\_variables (StringVec &&vars)`
- `VecT lbound () const`
- `VecT ubound () const`
- `VecT global\_lbound () const`
- `VecT global\_ubound () const`
- `bool in\_bounds (const VecT &u) const`

- bool `in_bounds_all` (const `MatT` &u) const
- void `set_lbound` (const `VecT` &new\_bound)
- void `set_ubound` (const `VecT` &new\_bound)
- void `set_bounds` (const `VecT` &new\_lbound, const `VecT` &new\_ubound)
- `IdxT` `num_params` () const
- `UVecT` `num_params_components` () const
- `VecT` `params` () const
- void `set_params` (const `VecT` &new\_params)
- bool `check_params` (const `VecT` &new\_params) const
- `VecT` `params_lbound` () const
- `VecT` `params_ubound` () const
- std::vector< `VecT` > `params_components` () const
- const `StringVecT` & `param_names` () const
- template<class `StringVec` >  
void `set_param_names` (`StringVec` &&vars)
- bool `has_param` (const std::string &name) const
- double `get_param_value` (const std::string &name) const
- int `get_param_index` (const std::string &name) const
- void `set_param_value` (const std::string &name, double value)
- void `rename_param` (const std::string &old\_name, std::string new\_name)
- double `cdf` (const `VecT` &u) const
- double `pdf` (const `VecT` &u) const
- double `llh` (const `VecT` &u) const
- double `rlh` (const `VecT` &u) const
- `VecT` `grad` (const `VecT` &u) const
- `VecT` `grad2` (const `VecT` &u) const
- `MatT` `hess` (const `VecT` &u) const
- void `grad_accumulate` (const `VecT` &theta, `VecT` &grad) const
- void `grad2_accumulate` (const `VecT` &theta, `VecT` &grad2) const
- void `hess_accumulate` (const `VecT` &theta, `MatT` &hess) const
- void `grad_grad2_accumulate` (const `VecT` &theta, `VecT` &grad, `VecT` &grad2) const
- void `grad_hess_accumulate` (const `VecT` &theta, `VecT` &grad, `MatT` &hess) const
- `VecT` `make_zero_grad` () const
- `MatT` `make_zero_hess` () const
- `VecT` `sample` (`AnyRngT` &rng)
- `MatT` `sample` (`AnyRngT` &rng, `IdxT` num\_samples)
- template<class `RngT` >  
`VecT` `sample` (`RngT` &&rng)
- template<class `RngT` >  
`MatT` `sample` (`RngT` &&rng, `IdxT` num\_samples)
- `VecT` `llh_components` (const `VecT` &u) const
- `VecT` `rlh_components` (const `VecT` &u) const

#### Static Public Member Functions

- template<class `DistT` >  
static `meta::ReturnIfInstantiatedFromT`< `DistT`, `DistT`, `ComponentDistAdaptor` > `make_component_dist` (`DistT` &&dist)
- template<class `DistT` >  
static `meta::ReturnIfNotInstantiatedFromT`< `ComponentDistT`< `DistT` >, `DistT`, `ComponentDistAdaptor` > `make_component_dist` (`DistT` &&dist)



- `template<class... Ts>`  
`static std::tuple< ComponentDistT< Ts >... > make\_component\_dist\_tuple (const std::tuple< Ts... > &dists)`
- `template<class... Ts, std::size_t... I>`  
`static std::tuple< ComponentDistT< Ts >... > make\_component\_dist\_tuple (const std::tuple< Ts... > &dists, std::index_sequence< I... >)`
- `template<class... Ts>`  
`static std::tuple< ComponentDistT< Ts >... > make\_component\_dist\_tuple (std::tuple< Ts... > &&dists)`
- `template<class... Ts, std::size_t... I>`  
`static std::tuple< ComponentDistT< Ts >... > make\_component\_dist\_tuple (std::tuple< Ts... > &&dists, std::index_sequence< I... >)`

### 7.7.1 Detailed Description

A probability distribution made of independent component distributions composing groups of 1 or more variables.

[CompositeDist](#) is a world unto itself.

```
class UnivariateDistInterface { static constexpr IdxT num_dim(); static constexpr IdxT num_params(); static
const StringVecT param_names; double lbound() const; double ubound() const; void set_bounds(double lbound, double
ubound); void set_lbound(double lbound); void set_ubound(double ubound); double get_param(int idx) const; void set_
_param(int idx, double val); double cdf(double x) const; double icdf(double u) const; double pdf(double x) const; double
llh(double x) const; double rllh(double x) const; double grad(double x) const; double grad2(double x) const; void grad_
grad2_accumulate(double x, double &g, double &g2) const; template< class RngT > double sample(RngT &rng) const;
}
```

`dim_variables` and `param_names` are lazily computed. If they are not accessed, they are not created.

Definition at line 60 of file `CompositeDist.h`.

### 7.7.2 Class Documentation

#### 7.7.2.1 class prior\_hessian::CompositeDist::ComponentDistAdaptor

```
template<class DistT, typename Enable = void>
class prior_hessian::CompositeDist::ComponentDistAdaptor< DistT, Enable >
```

Definition at line 64 of file `CompositeDist.h`.

### 7.7.3 Member Typedef Documentation

#### 7.7.3.1 using prior\_hessian::CompositeDist::AnyRngT = any\_rng::AnyRng<std::size\_t>

Definition at line 67 of file `CompositeDist.h`.

#### 7.7.3.2 template<class DistT > using prior\_hessian::CompositeDist::ComponentDistT = ComponentDistAdaptor<BoundsAdaptedDistT<std::remove\_reference\_t<DistT>>>>

Definition at line 840 of file `CompositeDist.h`.

#### 7.7.4 Constructor & Destructor Documentation

##### 7.7.4.1 prior\_hessian::CompositeDist::CompositeDist ( )

Definition at line 13 of file CompositeDist.cpp.

Referenced by initialize().

Here is the caller graph for this function:



##### 7.7.4.2 `template<class... Ts, meta::ConstructableIfAllAreNotTupleAndAreNotT< CompositeDist, Ts... > = true>` `prior_hessian::CompositeDist::CompositeDist ( Ts &&... dists ) [inline],[explicit]`

Construct from a variadic list of subclasses of [UnivariateDist](#)'s or `MultivariateDist`'s.

Definition at line 73 of file CompositeDist.h.

References `make_component_dist()`.

Here is the call graph for this function:



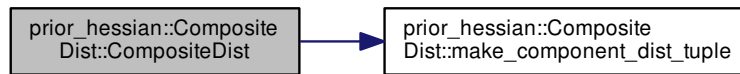
**7.7.4.3** `template<class... Ts> prior_hessian::CompositeDist::CompositeDist ( std::tuple< Ts... > && dist_tuple ) [inline], [explicit]`

Construct from a rvalue tuple of subclasses of [UnivariateDist](#)'s or [MultivariateDist](#)'s.

Definition at line 79 of file `CompositeDist.h`.

References `make_component_dist_tuple()`.

Here is the call graph for this function:



**7.7.4.4** `template<class... Ts> prior_hessian::CompositeDist::CompositeDist ( const std::tuple< Ts... > & dist_tuple ) [inline], [explicit]`

Construct from a lvalue tuple of subclasses of [UnivariateDist](#)'s or [MultivariateDist](#)'s.

Definition at line 85 of file `CompositeDist.h`.

References `make_component_dist_tuple()`.

Here is the call graph for this function:



**7.7.4.5** `prior_hessian::CompositeDist::CompositeDist ( const CompositeDist & o )`

Definition at line 17 of file `CompositeDist.cpp`.

**7.7.4.6** `prior_hessian::CompositeDist::CompositeDist ( CompositeDist && o )`

Definition at line 28 of file `CompositeDist.cpp`.

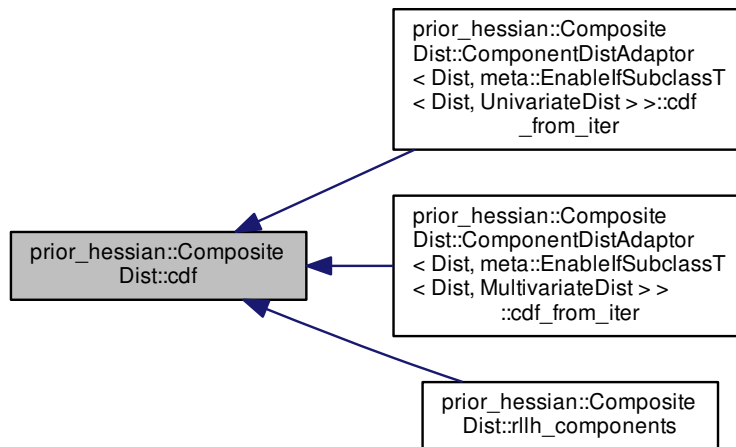
## 7.7.5 Member Function Documentation

## 7.7.5.1 double prior\_hessian::CompositeDist::cdf ( const VecT &amp; u ) const [inline]

Definition at line 184 of file CompositeDist.h.

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::cdf\_from\_iter(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::cdf\_from\_iter(), and rllh\_components().

Here is the caller graph for this function:



## 7.7.5.2 bool prior\_hessian::CompositeDist::check\_params ( const VecT &amp; new\_params ) const [inline]

Definition at line 166 of file CompositeDist.h.

Referenced by rllh\_components().

Here is the caller graph for this function:



### 7.7.5.3 void prior\_hessian::CompositeDist::clear ( )

Definition at line 38 of file CompositeDist.cpp.

Referenced by initialize().

Here is the caller graph for this function:

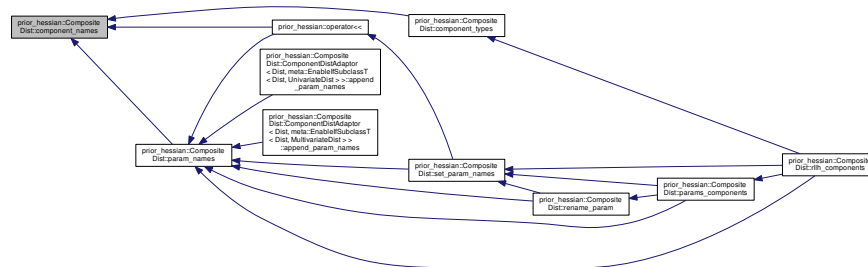


### 7.7.5.4 const StringVecT & prior\_hessian::CompositeDist::component\_names ( ) const

Definition at line 108 of file CompositeDist.cpp.

Referenced by `component_types()`, `prior_hessian::operator<<()`, and `param_names()`.

Here is the caller graph for this function:



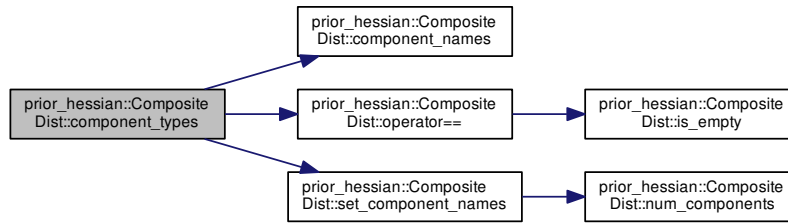
### 7.7.5.5 TypeInfoVecT prior\_hessian::CompositeDist::component\_types ( ) const [inline]

Definition at line 130 of file CompositeDist.h.

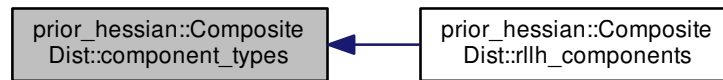
References `component_names()`, `operator==()`, and `set_component_names()`.

Referenced by `rlh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:

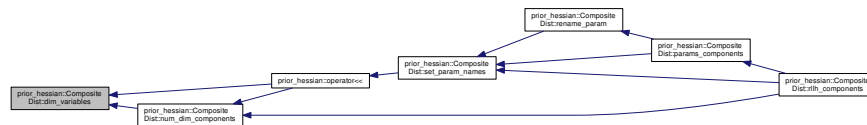


#### 7.7.5.6 const StringVecT & prior\_hessian::CompositeDist::dim\_variables ( ) const

Definition at line 114 of file CompositeDist.cpp.

Referenced by num\_dim\_components(), and prior\_hessian::operator<<().

Here is the caller graph for this function:

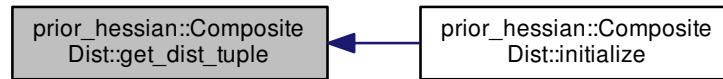


#### 7.7.5.7 template<class... Ts> const std::tuple< Ts... > & prior\_hessian::CompositeDist::get\_dist\_tuple ( ) const

Definition at line 925 of file CompositeDist.h.

Referenced by initialize().

Here is the caller graph for this function:

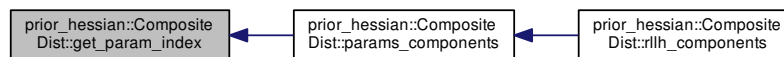


#### 7.7.5.8 `int prior_hessian::CompositeDist::get_param_index ( const std::string & name ) const`

Definition at line 184 of file `CompositeDist.cpp`.

Referenced by `params_components()`.

Here is the caller graph for this function:



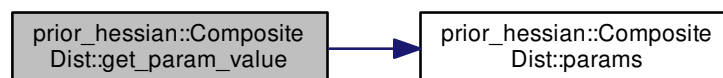
#### 7.7.5.9 `double prior_hessian::CompositeDist::get_param_value ( const std::string & name ) const`

Definition at line 172 of file `CompositeDist.cpp`.

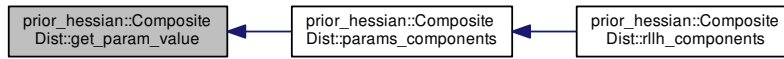
References `params()`.

Referenced by `params_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:

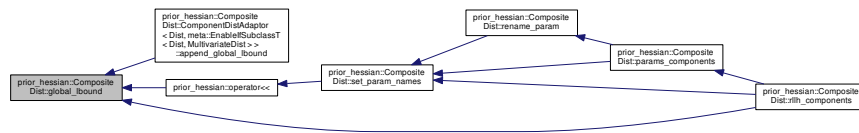


#### 7.7.5.10 VecT prior\_hessian::CompositeDist::global\_lbound ( ) const [inline]

Definition at line 148 of file CompositeDist.h.

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append\_global\_lbound(), prior\_hessian::operator<<(), and rllh\_components().

Here is the caller graph for this function:

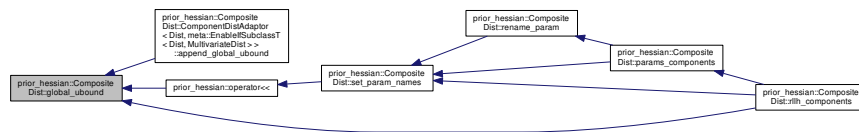


#### 7.7.5.11 VecT prior\_hessian::CompositeDist::global\_ubound ( ) const [inline]

Definition at line 149 of file CompositeDist.h.

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append\_global\_ubound(), prior\_hessian::operator<<(), and rllh\_components().

Here is the caller graph for this function:





### 7.7.5.12 `VecT prior_hessian::CompositeDist::grad ( const VecT & u ) const` `[inline]`

Definition at line 188 of file `CompositeDist.h`.

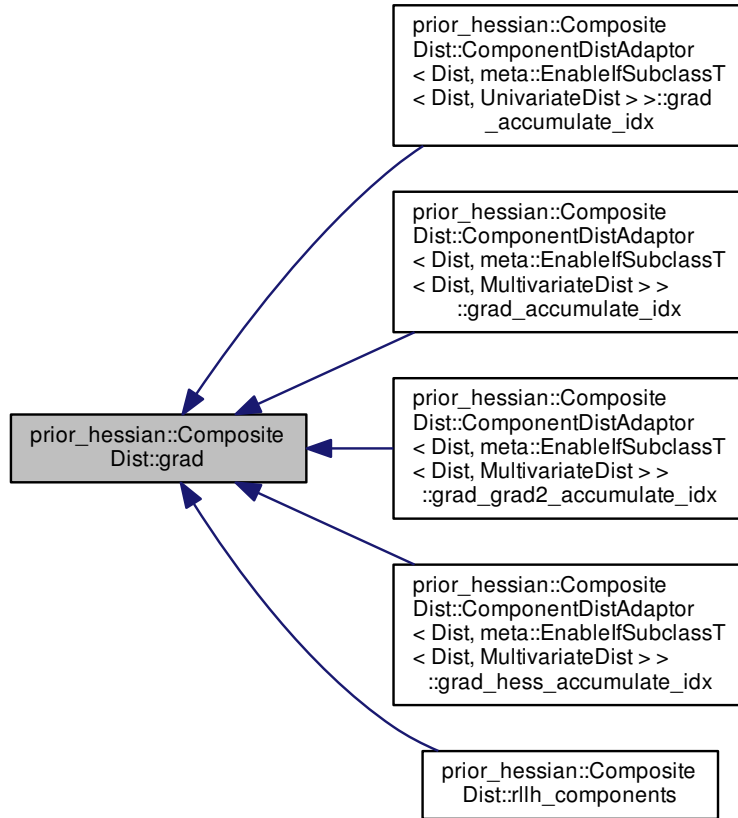
References `num_dim()`.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad_accumulate_idx()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_accumulate_idx()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_grad2_accumulate_idx()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad_hess_accumulate_idx()`, and `rllh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:



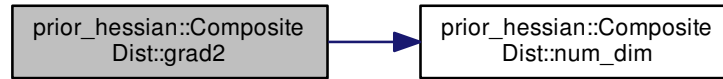
#### 7.7.5.13 VecT prior\_hessian::CompositeDist::grad2 ( const VecT & u ) const [inline]

Definition at line 195 of file CompositeDist.h.

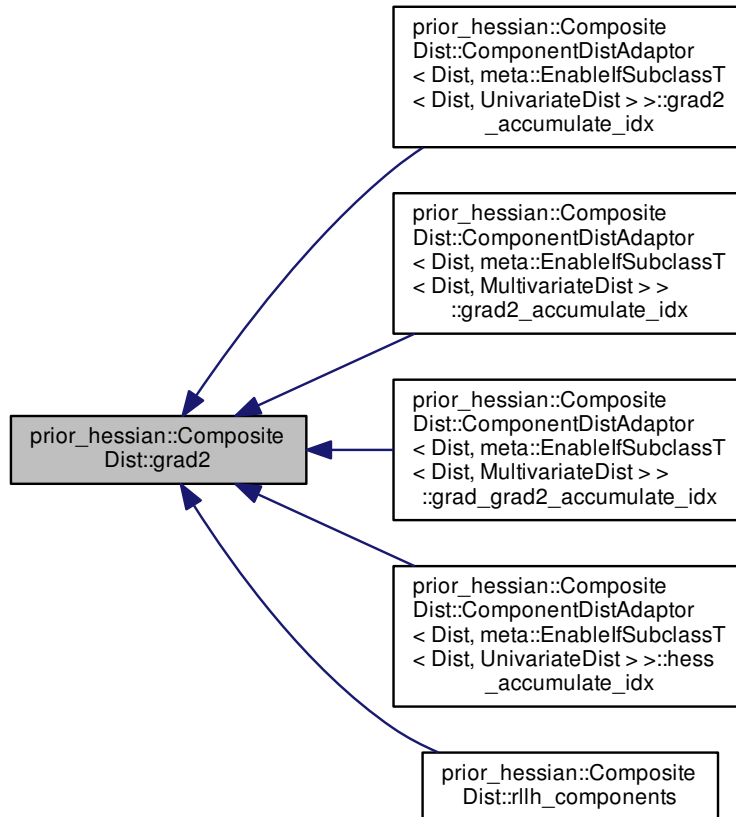
References num\_dim().

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad2\_accumulate\_idx(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad2\_accumulate\_idx(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad\_grad2\_accumulate\_idx(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::hess\_accumulate\_idx(), and rllh\_components().

Here is the call graph for this function:



Here is the caller graph for this function:

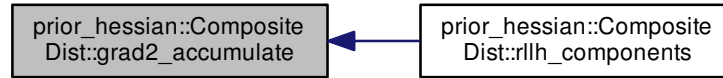


7.7.5.14 `void prior_hessian::CompositeDist::grad2_accumulate ( const VecT & theta, VecT & grad2 ) const [inline]`

Definition at line 217 of file `CompositeDist.h`.

Referenced by rllh\_components().

Here is the caller graph for this function:



7.7.5.15 `void prior_hessian::CompositeDist::grad_accumulate ( const VecT & theta, VecT & grad ) const` `[inline]`

Definition at line 216 of file CompositeDist.h.

Referenced by rllh\_components().

Here is the caller graph for this function:

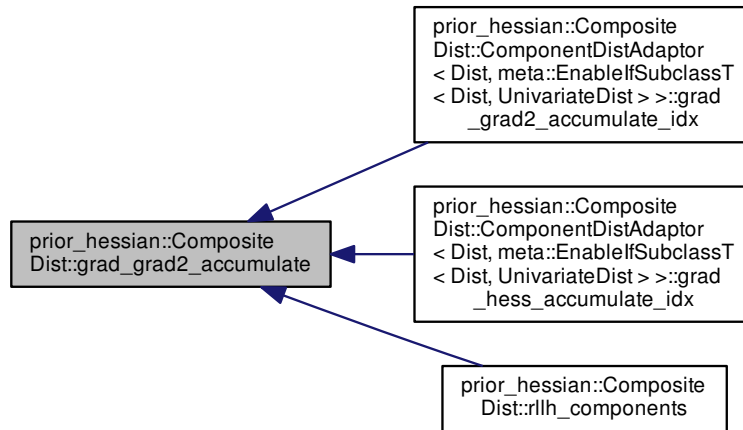


7.7.5.16 `void prior_hessian::CompositeDist::grad_grad2_accumulate ( const VecT & theta, VecT & grad, VecT & grad2 ) const` `[inline]`

Definition at line 219 of file CompositeDist.h.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad_grad2_accumulate_idx()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::grad_hess_accumulate_idx()`, and `rllh_components()`.

Here is the caller graph for this function:

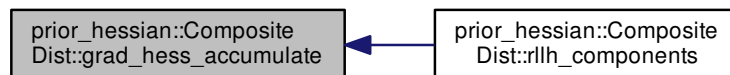


**7.7.5.17** `void prior_hessian::CompositeDist::grad_hess_accumulate ( const VecT & theta, VecT & grad, MatT & hess ) const [inline]`

Definition at line 222 of file `CompositeDist.h`.

Referenced by `rllh_components()`.

Here is the caller graph for this function:

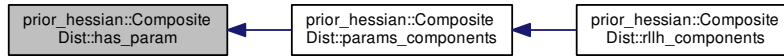


**7.7.5.18** `bool prior_hessian::CompositeDist::has_param ( const std::string & name ) const`

Definition at line 166 of file `CompositeDist.cpp`.

Referenced by `params_components()`.

Here is the caller graph for this function:



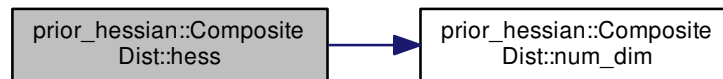
#### 7.7.5.19 MatT prior\_hessian::CompositeDist::hess ( const VecT & u ) const [inline]

Definition at line 203 of file CompositeDist.h.

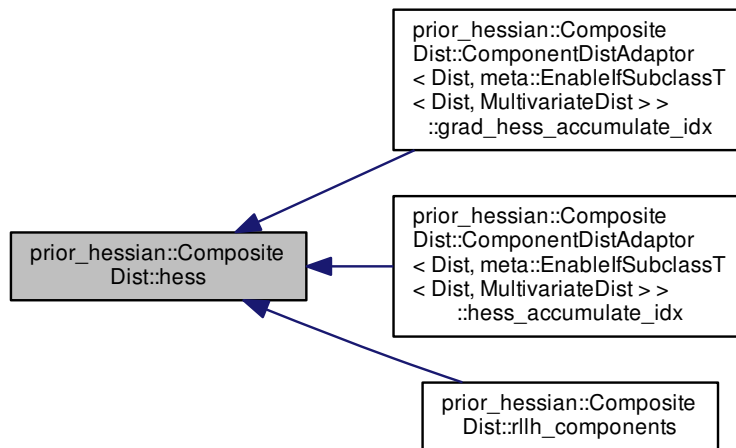
References num\_dim().

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::grad\_hess\_accumulate\_idx(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::hess\_accumulate\_idx(), and rllh\_components().

Here is the call graph for this function:



Here is the caller graph for this function:



7.7.5.20 `void prior_hessian::CompositeDist::hess_accumulate ( const VecT & theta, MatT & hess ) const` `[inline]`

Definition at line 218 of file CompositeDist.h.

Referenced by `rllh_components()`.

Here is the caller graph for this function:

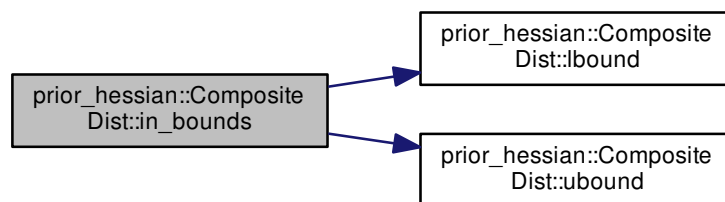


7.7.5.21 `bool prior_hessian::CompositeDist::in_bounds ( const VecT & u ) const` `[inline]`

Definition at line 150 of file CompositeDist.h.

References `lbound()`, and `ubound()`.

Here is the call graph for this function:

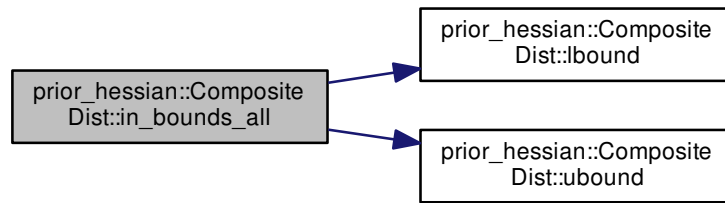


7.7.5.22 `bool prior_hessian::CompositeDist::in_bounds_all ( const MatT & u ) const` `[inline]`

Definition at line 152 of file CompositeDist.h.

References `lbound()`, and `ubound()`.

Here is the call graph for this function:



#### 7.7.5.23 void prior\_hessian::CompositeDist::initialize ( ) [inline]

Definition at line 89 of file `CompositeDist.h`.

References `clear()`.

Here is the call graph for this function:



#### 7.7.5.24 void prior\_hessian::CompositeDist::initialize ( const std::tuple<> & ) [inline]

Initialize to the empty state.

Definition at line 90 of file `CompositeDist.h`.

References `clear()`.

Here is the call graph for this function:





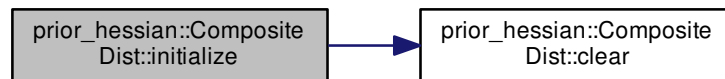
**7.7.5.25** `void prior_hessian::CompositeDist::initialize ( std::tuple<> && ) [inline]`

Initialize of an empty lvalue tuple produces the empty state.

Definition at line 91 of file CompositeDist.h.

References `clear()`.

Here is the call graph for this function:



**7.7.5.26** `template<class... Ts, typename = meta::EnableIfAllAreNotTupleT<Ts...>> void prior_hessian::CompositeDist::initialize ( Ts &&... dists ) [inline]`

Initialize of an empty rvalue tuple produces the empty state.

Definition at line 93 of file CompositeDist.h.

References `make_component_dist()`.

Here is the call graph for this function:



7.7.5.27 `template<class... Ts, typename = meta::EnableIfAllAreNotTupleT<Ts...>> void prior_hessian::CompositeDist::initialize ( std::tuple< Ts... > && dist_tuple ) [inline]`

Definition at line 101 of file CompositeDist.h.

References `make_component_dist_tuple()`.

Here is the call graph for this function:

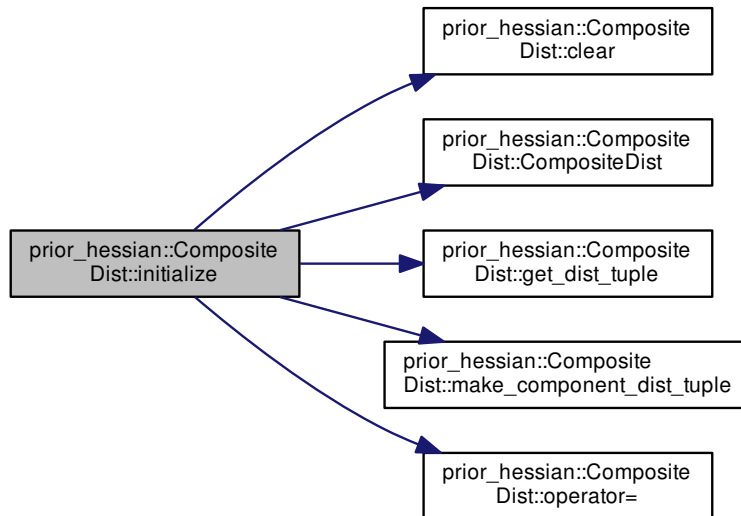


7.7.5.28 `template<class... Ts, typename = meta::EnableIfNonEmpty<Ts...>> void prior_hessian::CompositeDist::initialize ( const std::tuple< Ts... > & dist_tuple ) [inline]`

Definition at line 109 of file CompositeDist.h.

References `clear()`, `CompositeDist()`, `get_dist_tuple()`, `make_component_dist_tuple()`, and `operator=()`.

Here is the call graph for this function:

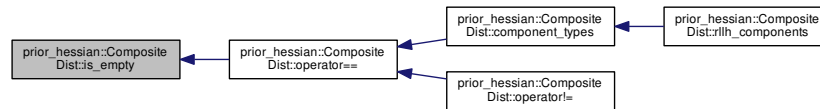


### 7.7.5.29 `bool prior_hessian::CompositeDist::is_empty ( ) const [inline]`

Definition at line 127 of file CompositeDist.h.

Referenced by `operator==( )`.

Here is the caller graph for this function:

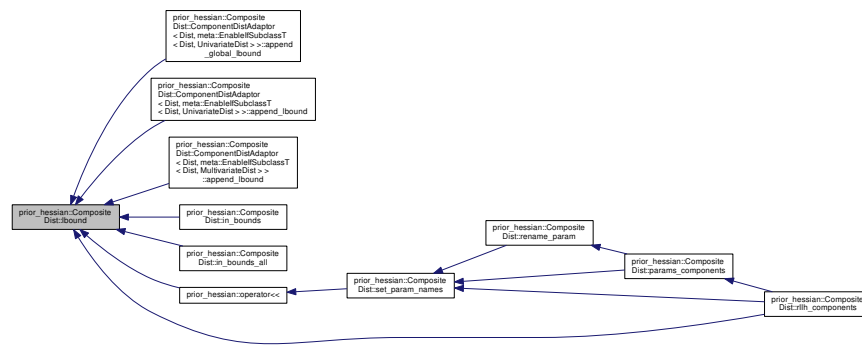


### 7.7.5.30 `VecT prior_hessian::CompositeDist::lbound ( ) const [inline]`

Definition at line 146 of file CompositeDist.h.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_global_lbound()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_lbound()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_lbound()`, `in_bounds()`, `in_bounds_all()`, `prior_hessian::operator<<()`, and `rllh_components()`.

Here is the caller graph for this function:

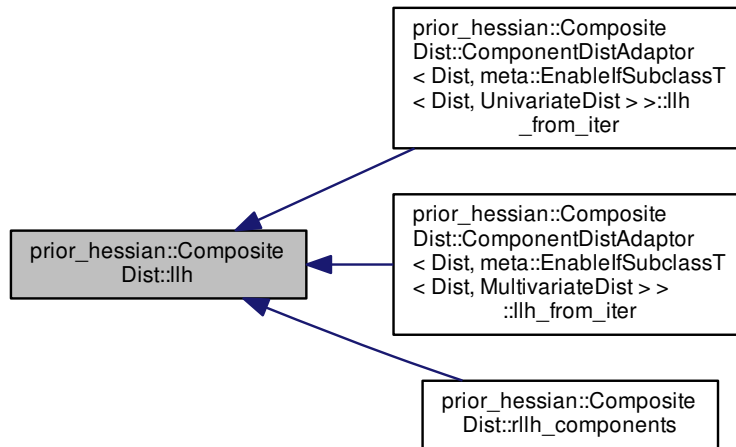


### 7.7.5.31 `double prior_hessian::CompositeDist::llh ( const VecT & u ) const [inline]`

Definition at line 186 of file CompositeDist.h.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::llh_from_iter()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::llh_from_iter()`, and `rllh_components()`.

Here is the caller graph for this function:



**7.7.5.32** `VecT prior_hessian::CompositeDist::llh_components ( const VecT & u ) const` `[inline]`

Definition at line 245 of file `CompositeDist.h`.

Referenced by `rllh_components()`.

Here is the caller graph for this function:

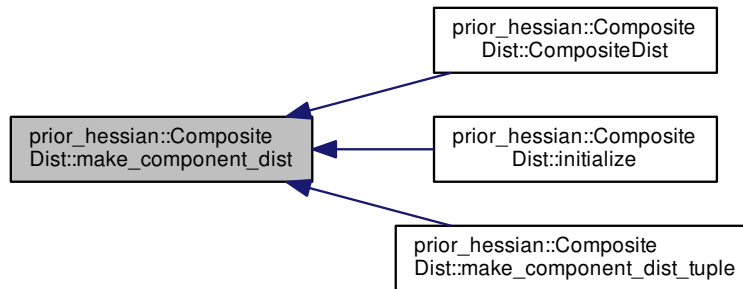


**7.7.5.33** `template<class DistT > static meta::ReturnIfInstantiatedFromT<DistT,DistT,ComponentDistAdaptor> prior_hessian::CompositeDist::make_component_dist ( DistT && dist )` `[inline]`, `[static]`

Definition at line 847 of file `CompositeDist.h`.

Referenced by `CompositeDist()`, `initialize()`, and `make_component_dist_tuple()`.

Here is the caller graph for this function:



```

7.7.5.34 template<class DistT > static meta::ReturnIfNotInstantiatedFromT<Component↵
DistT<DistT>,DistT,ComponentDistAdaptor> prior_hessian::CompositeDist::make_component_dist ( DistT && dist
) [inline],[static]
  
```

Definition at line 853 of file CompositeDist.h.

References `prior_hessian::make_adapted_bounded_dist()`.

Here is the call graph for this function:



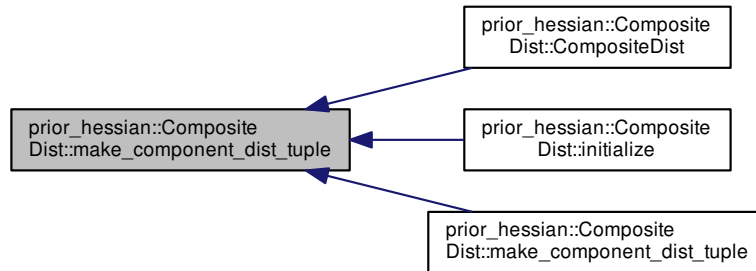
```

7.7.5.35 template<class... Ts> static std::tuple<ComponentDistT<Ts>...> prior_hessian::↵
CompositeDist::make_component_dist_tuple ( const std::tuple< Ts... > & dists ) [inline],
[static]
  
```

Definition at line 863 of file CompositeDist.h.

Referenced by `CompositeDist()`, `initialize()`, and `make_component_dist_tuple()`.

Here is the caller graph for this function:



```

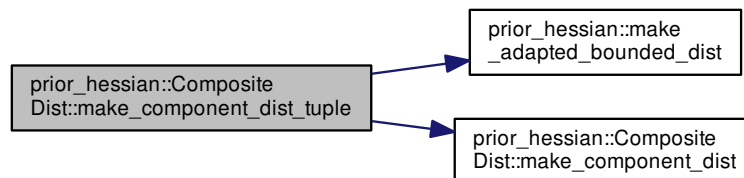
7.7.5.36 template<class... Ts, std::size_t... I> static std::tuple<ComponentDistT<Ts>...> prior_hessian::CompositeDist::make_component_dist_tuple ( const std::tuple< Ts... > & dists, std::index_sequence< I... > ) [inline], [static]

```

Definition at line 870 of file `CompositeDist.h`.

References `prior_hessian::make_adapted_bounded_dist()`, and `make_component_dist()`.

Here is the call graph for this function:



```

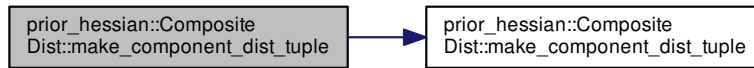
7.7.5.37 template<class... Ts> static std::tuple<ComponentDistT<Ts>...> prior_hessian::CompositeDist::make_component_dist_tuple ( std::tuple< Ts... > && dists ) [inline], [static]

```

Definition at line 876 of file `CompositeDist.h`.

References `make_component_dist_tuple()`.

Here is the call graph for this function:

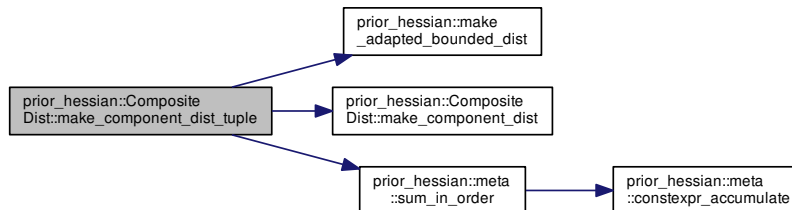


**7.7.5.38** `template<class... Ts, std::size_t... I> static std::tuple<ComponentDistT<Ts>...> prior_hessian::CompositeDist::make_component_dist_tuple ( std::tuple< Ts... > && dists, std::index_sequence< I... > ) [inline], [static]`

Definition at line 883 of file CompositeDist.h.

References `prior_hessian::make_adapted_bounded_dist()`, `make_component_dist()`, and `prior_hessian::meta::sum_in_order()`.

Here is the call graph for this function:



**7.7.5.39** `VecT prior_hessian::CompositeDist::make_zero_grad ( ) const [inline]`

Definition at line 224 of file CompositeDist.h.

References `num_dim()`.

Here is the call graph for this function:

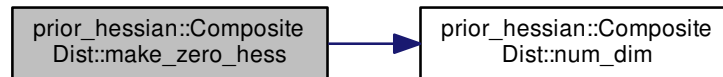


#### 7.7.5.40 MatT prior\_hessian::CompositeDist::make\_zero\_hess ( ) const [inline]

Definition at line 225 of file CompositeDist.h.

References num\_dim().

Here is the call graph for this function:

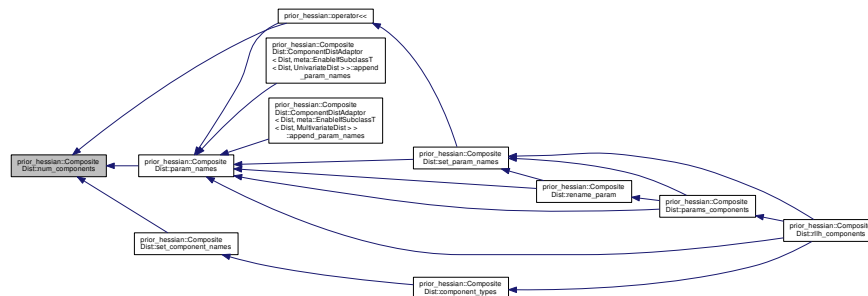


#### 7.7.5.41 IdxT prior\_hessian::CompositeDist::num\_components ( ) const [inline]

Definition at line 129 of file CompositeDist.h.

Referenced by `prior_hessian::operator<<()`, `param_names()`, and `set_component_names()`.

Here is the caller graph for this function:



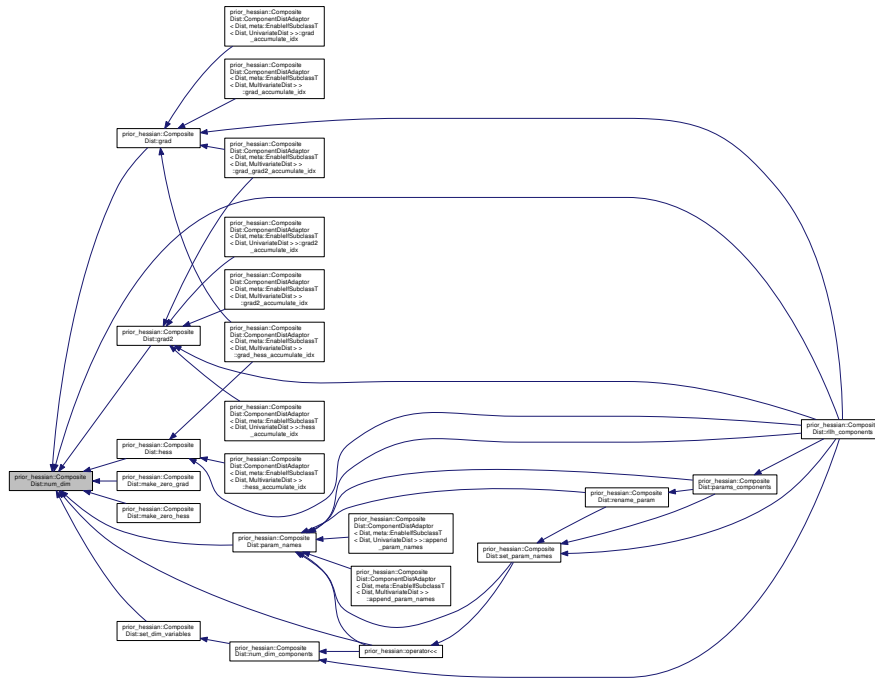
#### 7.7.5.42 IdxT prior\_hessian::CompositeDist::num\_dim ( ) const [inline]

Definition at line 139 of file CompositeDist.h.

Referenced by `grad()`, `grad2()`, `hess()`, `make_zero_grad()`, `make_zero_hess()`, `prior_hessian::operator<<()`, `param_names()`, `rllh_components()`, and `set_dim_variables()`.



Here is the caller graph for this function:



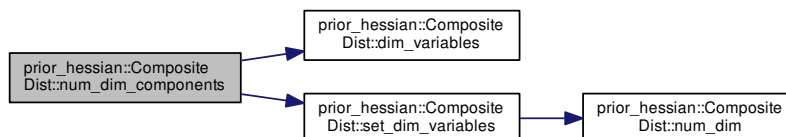
#### 7.7.5.43 UVecT prior\_hessian::CompositeDist::num\_dim\_components ( ) const [inline]

Definition at line 140 of file CompositeDist.h.

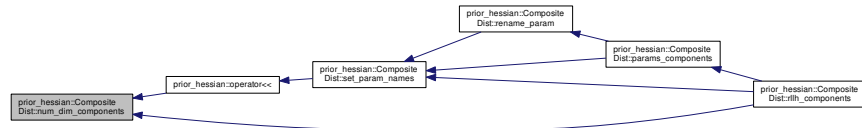
References `dim_variables()`, and `set_dim_variables()`.

Referenced by `prior_hessian::operator<<()`, and `rlh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:

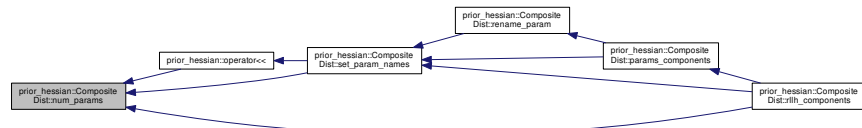


#### 7.7.5.44 IdxT prior\_hessian::CompositeDist::num\_params ( ) const [inline]

Definition at line 162 of file CompositeDist.h.

Referenced by prior\_hessian::operator<<(), rllh\_components(), and set\_param\_names().

Here is the caller graph for this function:

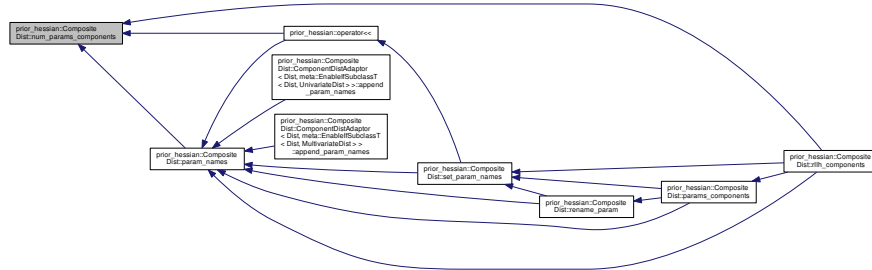


#### 7.7.5.45 UVecT prior\_hessian::CompositeDist::num\_params\_components ( ) const [inline]

Definition at line 163 of file CompositeDist.h.

Referenced by prior\_hessian::operator<<(), param\_names(), and rllh\_components().

Here is the caller graph for this function:



#### 7.7.5.46 prior\_hessian::CompositeDist::operator bool ( ) const [inline]

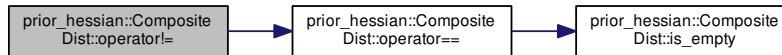
Definition at line 128 of file CompositeDist.h.

**7.7.5.47** `bool prior_hessian::CompositeDist::operator!=( const CompositeDist & o ) const` `[inline]`

Definition at line 136 of file CompositeDist.h.

References `operator==( )`.

Here is the call graph for this function:



**7.7.5.48** `CompositeDist & prior_hessian::CompositeDist::operator= ( const CompositeDist & o )`

Definition at line 44 of file CompositeDist.cpp.

Referenced by `initialize( )`.

Here is the caller graph for this function:



**7.7.5.49** `CompositeDist & prior_hessian::CompositeDist::operator= ( CompositeDist && o )`

Definition at line 57 of file CompositeDist.cpp.

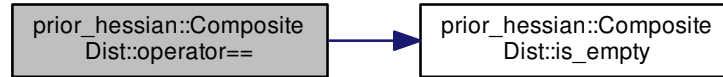
**7.7.5.50** `bool prior_hessian::CompositeDist::operator==( const CompositeDist & o ) const`

Definition at line 70 of file CompositeDist.cpp.

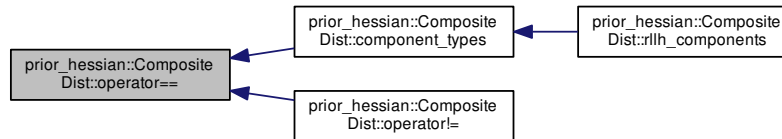
References `is_empty( )`.

Referenced by `component_types( )`, and `operator!=( )`.

Here is the call graph for this function:



Here is the caller graph for this function:



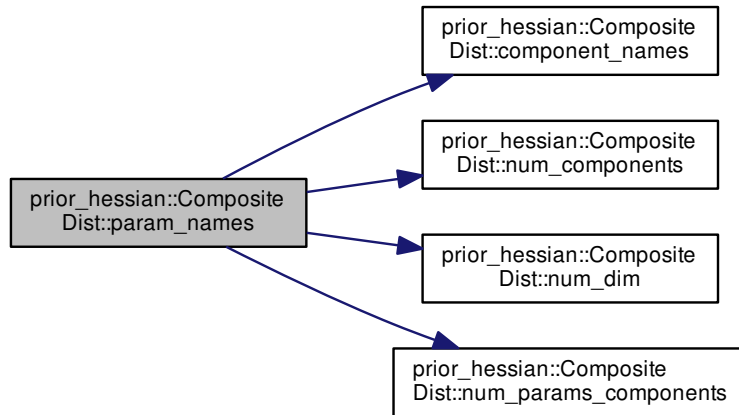
#### 7.7.5.51 `const StringVecT & prior_hessian::CompositeDist::param_names ( ) const`

Definition at line 120 of file `CompositeDist.cpp`.

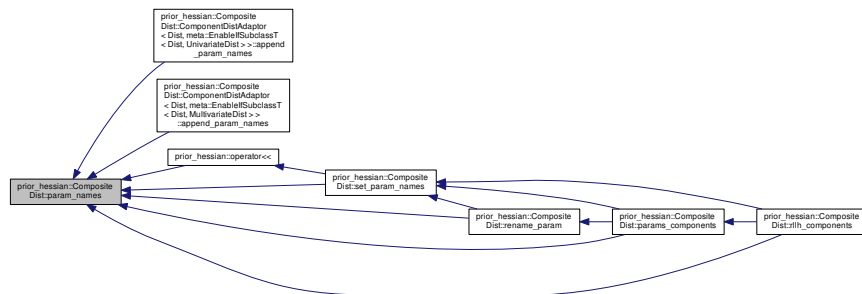
References `component_names()`, `num_components()`, `num_dim()`, and `num_params_components()`.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_param_names()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_param_names()`, `prior_hessian::operator<<()`, `params_< components()`, `rename_param()`, `rllh_components()`, and `set_param_names()`.

Here is the call graph for this function:



Here is the caller graph for this function:



#### 7.7.5.52 VecT prior\_hessian::CompositeDist::params ( ) const [inline]

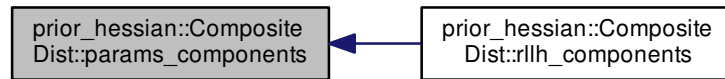
Definition at line 164 of file `CompositeDist.h`.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_params()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_params()`, `get_param_value()`, `prior_hessian::operator<<()`, `rllh_components()`, and `set_param_value()`.

Definition at line 169 of file CompositeDist.h.

Referenced by `rllh_components()`.

Here is the caller graph for this function:

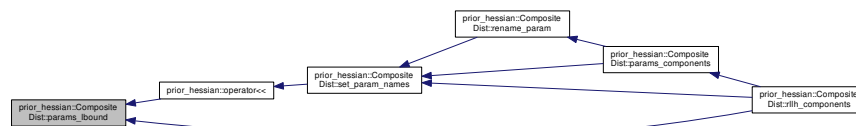


#### 7.7.5.54 VecT prior\_hessian::CompositeDist::params\_lbound ( ) const [inline]

Definition at line 167 of file CompositeDist.h.

Referenced by `prior_hessian::operator<<()`, and `rllh_components()`.

Here is the caller graph for this function:

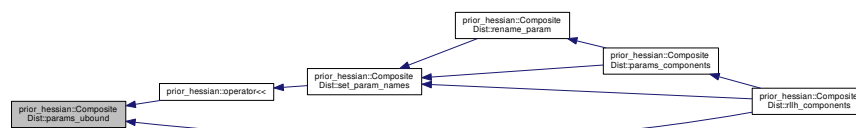


#### 7.7.5.55 VecT prior\_hessian::CompositeDist::params\_ubound ( ) const [inline]

Definition at line 168 of file CompositeDist.h.

Referenced by `prior_hessian::operator<<()`, and `rllh_components()`.

Here is the caller graph for this function:

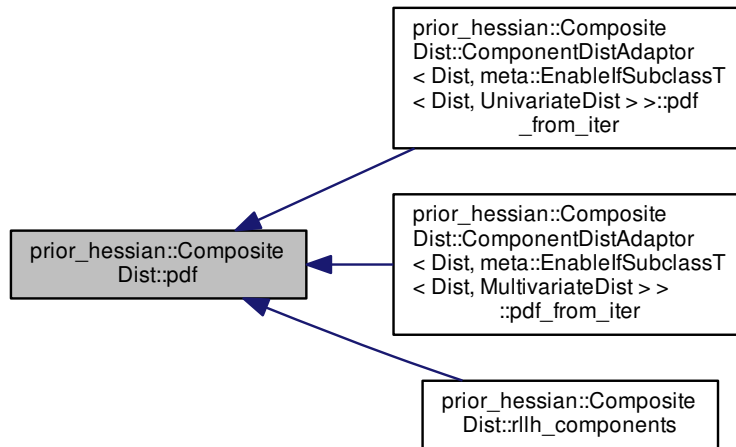


7.7.5.56 `double prior_hessian::CompositeDist::pdf ( const VecT & u ) const` `[inline]`

Definition at line 185 of file CompositeDist.h.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::pdf_from_iter()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::pdf_from_iter()`, and `rlh_components()`.

Here is the caller graph for this function:



7.7.5.57 `void prior_hessian::CompositeDist::rename_param ( const std::string & old_name, std::string new_name )`

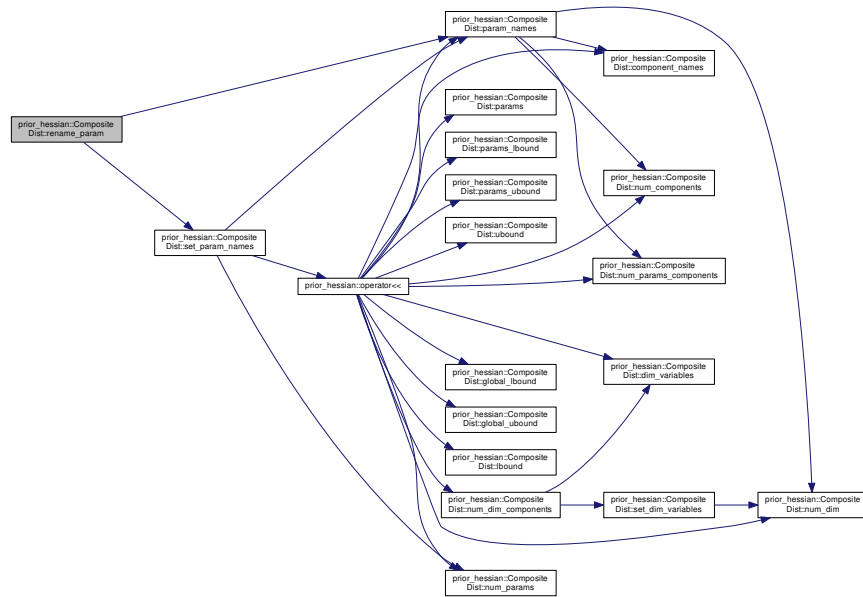
Definition at line 210 of file CompositeDist.cpp.

References `param_names()`, and `set_param_names()`.

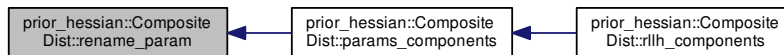
Referenced by `params_components()`.



Here is the call graph for this function:



Here is the caller graph for this function:

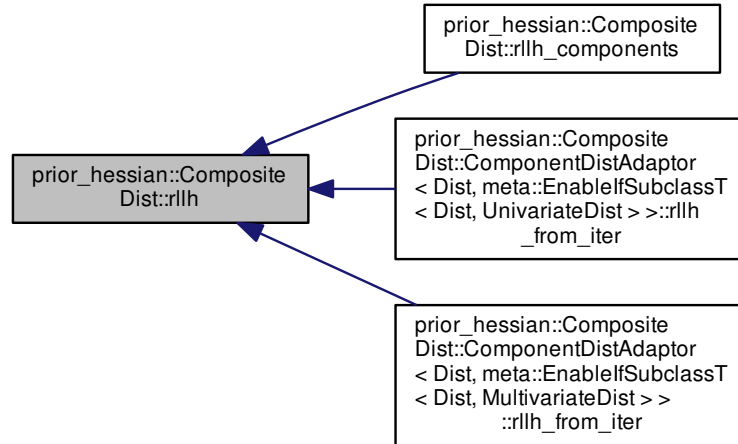


**7.7.5.58** `double prior_hessian::CompositeDist::rllh ( const VecT & u ) const [inline]`

Definition at line 187 of file CompositeDist.h.

Referenced by `rllh_components()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIf<SubclassT< Dist, UnivariateDist > >::rllh_from_iter()`, and `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::rllh_from_iter()`.

Here is the caller graph for this function:

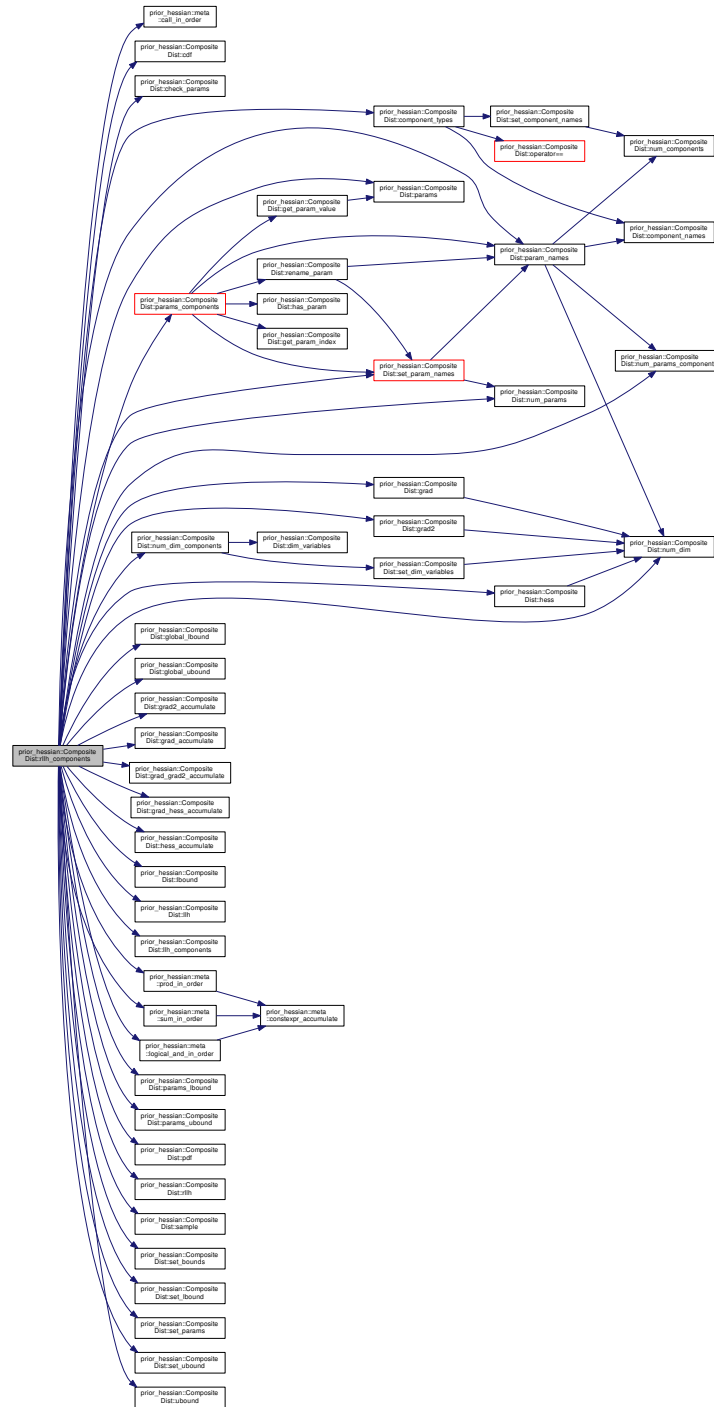


7.7.5.59 **VecT** prior\_hessian::CompositeDist::rllh\_components ( const VecT & u ) const [inline]

Definition at line 246 of file CompositeDist.h.

References prior\_hessian::meta::call\_in\_order(), cdf(), check\_params(), component\_types(), global\_lbound(), global\_ubound(), grad(), grad2(), grad2\_accumulate(), grad\_accumulate(), grad\_grad2\_accumulate(), grad\_hess\_accumulate(), hess(), hess\_accumulate(), lbound(), llh(), llh\_components(), prior\_hessian::meta::logical\_and\_in\_order(), num\_dim(), num\_dim\_components(), num\_params(), num\_params\_components(), param\_names(), params(), params\_components(), params\_lbound(), params\_ubound(), pdf(), prior\_hessian::meta::prod\_in\_order(), rllh(), sample(), set\_bounds(), set\_lbound(), set\_param\_names(), set\_params(), set\_ubound(), prior\_hessian::meta::sum\_in\_order(), and ubound().

Here is the call graph for this function:

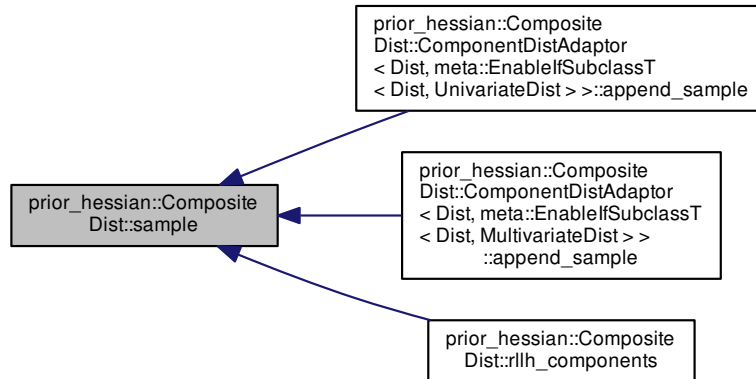


7.7.5.60 `VecT prior_hessian::CompositeDist::sample ( AnyRngT & rng ) [inline]`

Definition at line 227 of file CompositeDist.h.

Referenced by prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append\_sample(), prior\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append\_sample(), and rllh\_components().

Here is the caller graph for this function:



**7.7.5.61** `MatT prior_hessian::CompositeDist::sample ( AnyRngT & rng, IdxT num_samples ) [inline]`

Definition at line 228 of file `CompositeDist.h`.

**7.7.5.62** `template<class RngT > VecT prior_hessian::CompositeDist::sample ( RngT && rng ) [inline]`

Definition at line 231 of file `CompositeDist.h`.

**7.7.5.63** `template<class RngT > MatT prior_hessian::CompositeDist::sample ( RngT && rng, IdxT num_samples ) [inline]`

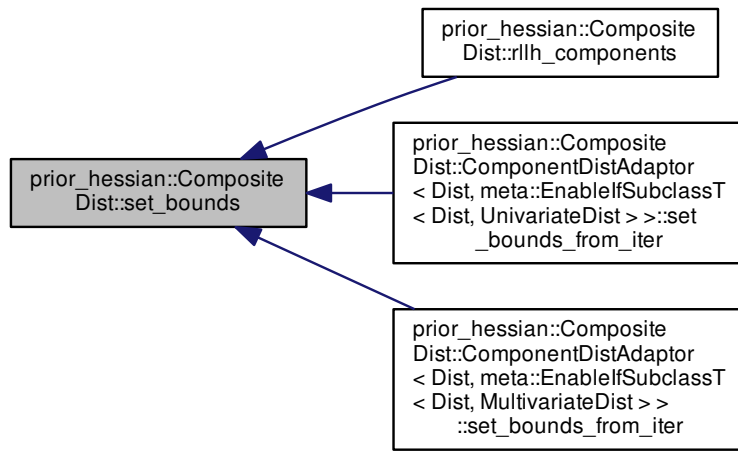
Definition at line 238 of file `CompositeDist.h`.

**7.7.5.64** `void prior_hessian::CompositeDist::set_bounds ( const VecT & new_lbound, const VecT & new_ubound ) [inline]`

Definition at line 159 of file `CompositeDist.h`.

Referenced by `rllh_components()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_bounds_from_iter()`, and `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_bounds_from_iter()`.

Here is the caller graph for this function:



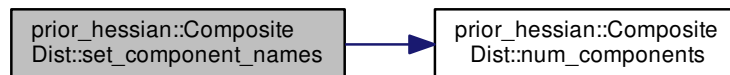
7.7.5.65 `template<class StringVec > void prior_hessian::CompositeDist::set_component_names ( StringVec && names )`

Definition at line 938 of file `CompositeDist.h`.

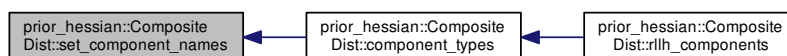
References `num_components()`.

Referenced by `component_types()`.

Here is the call graph for this function:



Here is the caller graph for this function:



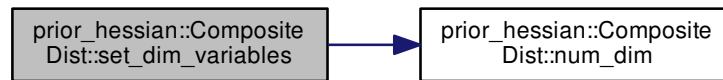
7.7.5.66 `template<class StringVec > void prior_hessian::CompositeDist::set_dim_variables ( StringVec && vars )`

Definition at line 950 of file CompositeDist.h.

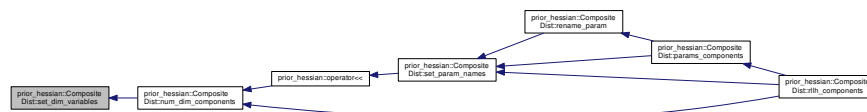
References `num_dim()`.

Referenced by `num_dim_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:

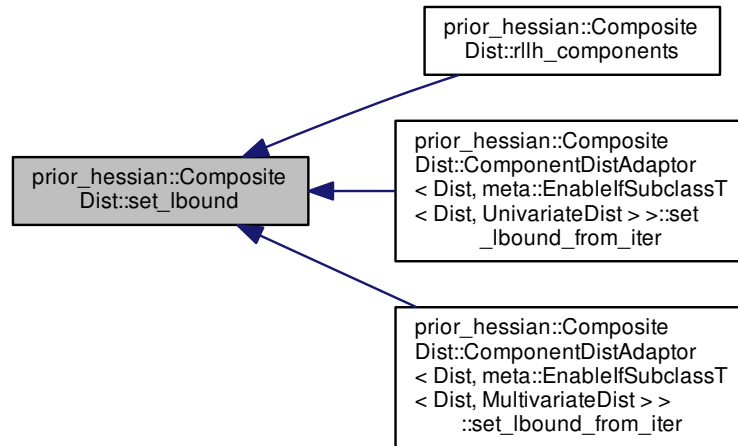


7.7.5.67 `void prior_hessian::CompositeDist::set_lbound ( const VecT & new_bound ) [inline]`

Definition at line 157 of file CompositeDist.h.

Referenced by `rllh_components()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_lbound_from_iter()`, and `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_lbound_from_iter()`.

Here is the caller graph for this function:



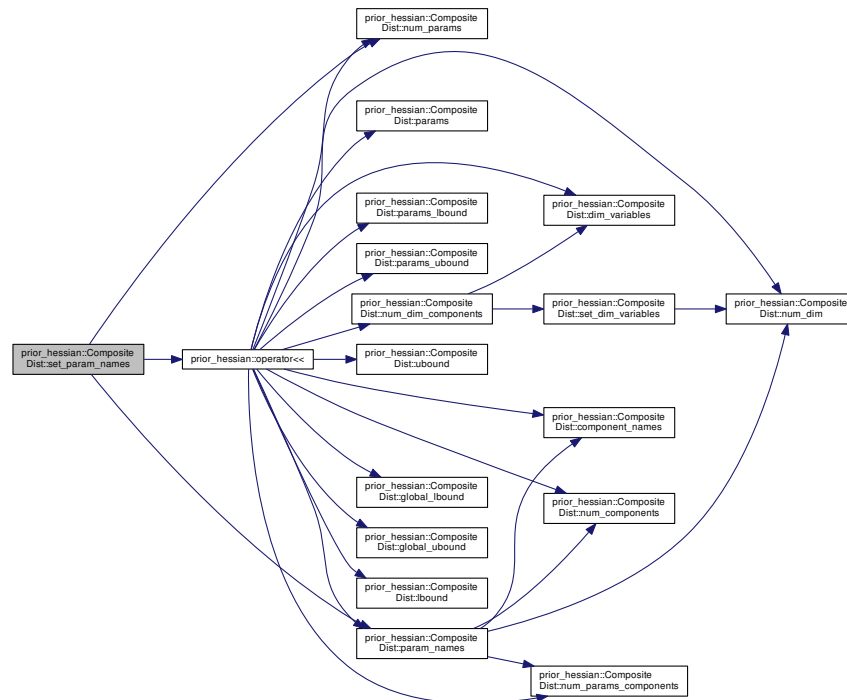
7.7.5.68 `template<class StringVec > void prior_hessian::CompositeDist::set_param_names ( StringVec && vars )`

Definition at line 962 of file `CompositeDist.h`.

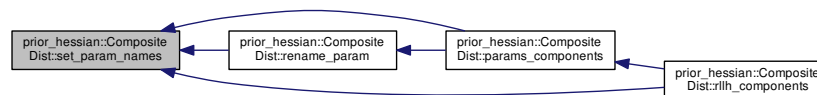
References `num_params()`, `prior_hessian::operator<<()`, and `param_names()`.

Referenced by `params_components()`, `rename_param()`, and `rllh_components()`.

Here is the call graph for this function:



Here is the caller graph for this function:



**7.7.5.69** void prior\_hessian::CompositeDist::set\_param\_value ( const std::string & name, double value )

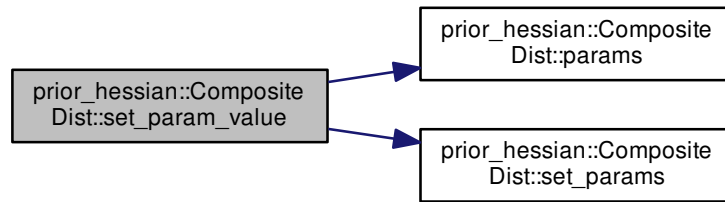
Definition at line 196 of file CompositeDist.cpp.

References params(), and set\_params().

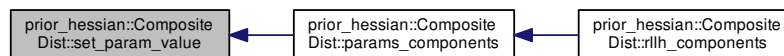
Referenced by params\_components().



Here is the call graph for this function:



Here is the caller graph for this function:



**7.7.5.70** `void prior_hessian::CompositeDist::set_params ( const VecT & new_params ) [inline]`

Definition at line 165 of file `CompositeDist.h`.

Referenced by `rllh_components()`, and `set_param_value()`.

Here is the caller graph for this function:

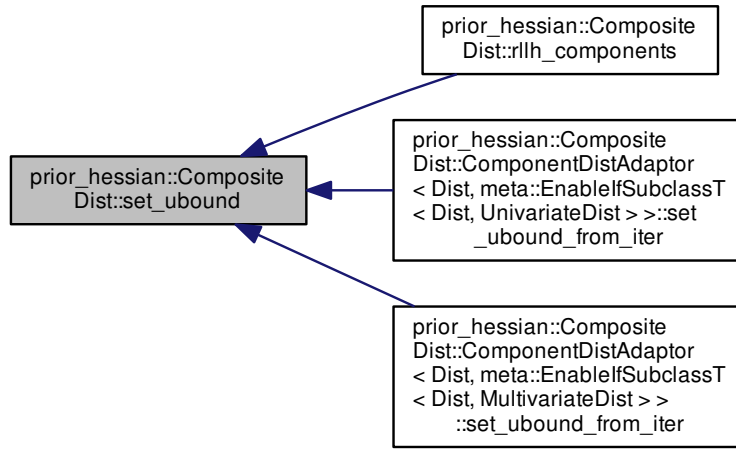


**7.7.5.71** `void prior_hessian::CompositeDist::set_ubound ( const VecT & new_bound ) [inline]`

Definition at line 158 of file `CompositeDist.h`.

Referenced by `rllh_components()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::set_ubound_from_iter()`, and `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::set_ubound_from_iter()`.

Here is the caller graph for this function:

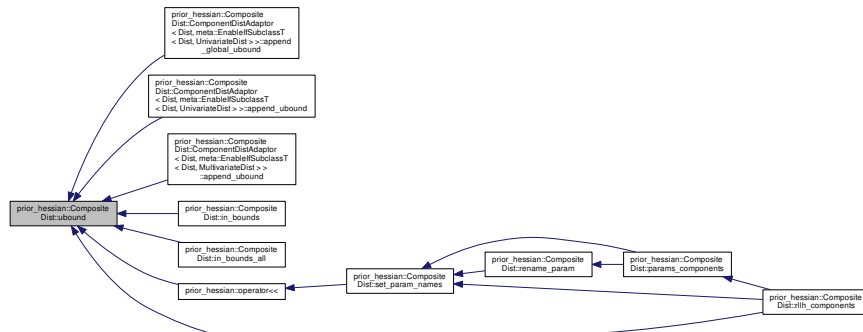


#### 7.7.5.72 VecT prior\_hessian::CompositeDist::ubound( ) const [inline]

Definition at line 147 of file `CompositeDist.h`.

Referenced by `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_global_ubound()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >::append_ubound()`, `prior_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >::append_ubound()`, `in_bounds()`, `in_bounds_all()`, `prior_hessian::operator<<()`, and `rllh_components()`.

Here is the caller graph for this function:



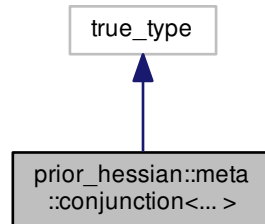
The documentation for this class was generated from the following files:

- [CompositeDist.h](#)
- [CompositeDist.cpp](#)

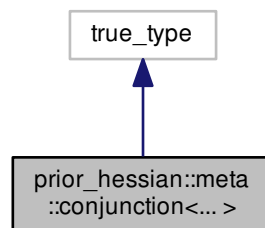
## 7.8 prior\_hessian::meta::conjunction<... > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::conjunction<... >:



Collaboration diagram for prior\_hessian::meta::conjunction<... >:



### 7.8.1 Detailed Description

```
template<class...>  
struct prior_hessian::meta::conjunction<... >
```

Definition at line 66 of file Meta.h.

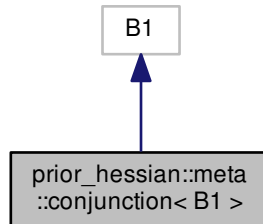
The documentation for this struct was generated from the following file:

- [Meta.h](#)

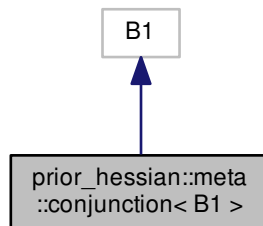
## 7.9 prior\_hessian::meta::conjunction< B1 > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::conjunction< B1 >:



Collaboration diagram for prior\_hessian::meta::conjunction< B1 >:



### 7.9.1 Detailed Description

```
template<class B1>  
struct prior_hessian::meta::conjunction< B1 >
```

Definition at line 67 of file Meta.h.

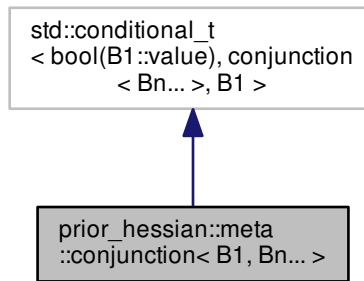
The documentation for this struct was generated from the following file:

- [Meta.h](#)

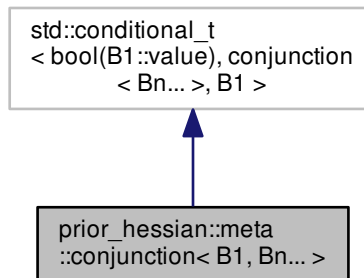
## 7.10 prior\_hessian::meta::conjunction< B1, Bn... > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::conjunction< B1, Bn... >:



Collaboration diagram for prior\_hessian::meta::conjunction< B1, Bn... >:



### 7.10.1 Detailed Description

```
template<class B1, class... Bn>
struct prior_hessian::meta::conjunction< B1, Bn... >
```

Definition at line 69 of file Meta.h.

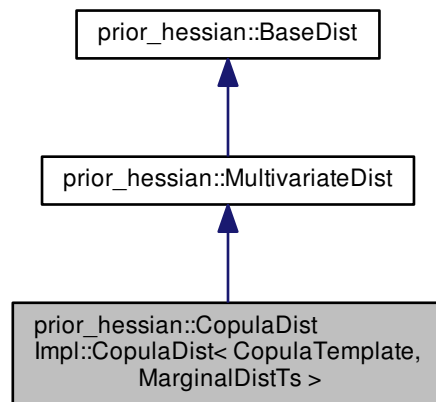
The documentation for this struct was generated from the following file:

- [Meta.h](#)

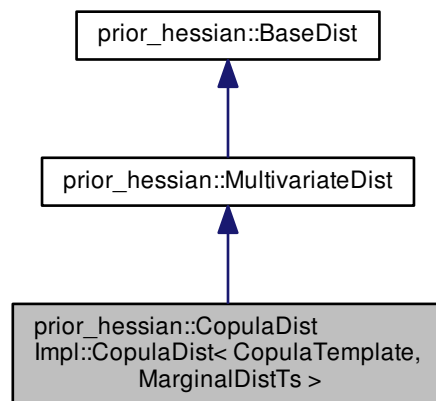
## 7.11 prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/CopulaDist.h>
```

Inheritance diagram for prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >:



Collaboration diagram for prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >:



## Public Types

- using `NdimVecT` = `arma::Col< double >::fixed< _num_dim >`
- using `NdimMatT` = `arma::Mat< double >::fixed< _num_dim, _num_dim >`
- using `NparamsVecT` = `arma::Col< double >`
- using `MarginalDistTupleT` = `std::tuple< MarginalDistTs... >`
- using `CopulaT` = `CopulaTemplate< _num_dim >`
- `template<size_t I>`  
using `MarginalDistT` = `std::tuple_element< I, MarginalDistTupleT >`

## Public Member Functions

- `CopulaDist` ()
- `template<class Copula , class... DistTs, std::enable_if_t< sizeof...(DistTs)==sizeof...(MarginalDistTs), bool > Enable = true>`  
`CopulaDist` (`Copula &&copula`, `DistTs &&...dists`)
- `void initialize_copula` (`const CopulaT &_copula`)
- `void initialize_marginals` (`const MarginalDistTupleT &dists`)
- `NdimVecT lbound` () `const`
- `NdimVecT ubound` () `const`
- `template<class Vec , class Vec2 >`  
`void set_bounds` (`const Vec &lbound`, `const Vec2 &ubound`)
- `template<class Vec >`  
`void set_lbound` (`const Vec &lbound`)
- `template<class Vec >`  
`void set_ubound` (`const Vec &ubound`)
- `bool operator==` (`const CopulaDist< CopulaTemplate, MarginalDistTs... > &o`) `const`
- `bool operator!=` (`const CopulaDist< CopulaTemplate, MarginalDistTs... > &o`) `const`
- `NparamsVecT params` () `const`
- `double get_copula_theta` () `const`
- `void set_copula_theta` (`double theta`)
- `template<class Vec >`  
`void set_params` (`const Vec &params`)
- `template<class Vec >`  
`double cdf` (`const Vec &x`) `const`
- `template<class Vec >`  
`double pdf` (`const Vec &x`) `const`
- `template<class Vec >`  
`double llh` (`const Vec &x`) `const`
- `template<class Vec >`  
`double rllh` (`const Vec &x`) `const`
- `template<class Vec >`  
`NdimVecT grad` (`const Vec &x`) `const`
- `template<class Vec >`  
`NdimVecT grad2` (`const Vec &x`) `const`
- `template<class Vec >`  
`NdimMatT hess` (`const Vec &x`) `const`
- `template<class Vec , class Vec2 >`  
`void grad_grad2_accumulate` (`const Vec &x`, `Vec2 &g`, `Vec2 &g2`) `const`
- `template<class Vec , class Vec2 , class Mat >`  
`void grad_hess_accumulate` (`const Vec &x`, `Vec2 &g`, `Mat &hess`) `const`
- `template<class RngT >`  
`NdimVecT sample` (`RngT &rng`) `const`
- `template<class IterT >`  
`void set_params_iter` (`IterT &params`)

## Static Public Member Functions

- static `IdxT num_params ()`
- static constexpr `IdxT num_components ()`
- static constexpr `IdxT num_dim ()`
- template<class Vec >  
static bool `check_params (const Vec &params)`
- static bool `check_copula_theta (double theta)`
- static const `StringVecT & param_names ()`
- static const `NparamsVecT & param_lbound ()`
- static const `NparamsVecT & param_ubound ()`
- static const `NdimVecT & global_lbound ()`
- static const `NdimVecT & global_ubound ()`
- template<class IterT >  
static bool `check_params_iter (IterT &params)`

## Static Protected Member Functions

- template<class Vec >  
static void `check_bounds (const Vec &lbound, const Vec &ubound)`

## 7.11.1 Detailed Description

```
template<template< int > class CopulaTemplate, class... MarginalDistTs>
class prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >
```

Definition at line 22 of file CopulaDist.h.

## 7.11.2 Member Typedef Documentation

7.11.2.1 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::CopulaT = CopulaTemplate<_num_dim>`

Definition at line 41 of file CopulaDist.h.

7.11.2.2 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<size_t I> using prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::MarginalDistT = std::tuple_element<I,MarginalDistTupleT>`

Definition at line 44 of file CopulaDist.h.

7.11.2.3 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::MarginalDistTupleT = std::tuple<MarginalDistTs...>`

Definition at line 40 of file CopulaDist.h.



7.11.2.4 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_↵  
hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::NdimMatT =  
arma::Mat<double>::fixed<_num_dim,_num_dim>`

Definition at line 32 of file CopulaDist.h.

7.11.2.5 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_↵  
hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::NdimVecT =  
arma::Col<double>::fixed<_num_dim>`

Definition at line 31 of file CopulaDist.h.

7.11.2.6 `template<template< int > class CopulaTemplate, class... MarginalDistTs> using prior_↵  
hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::NparamsVecT =  
arma::Col<double>`

Definition at line 37 of file CopulaDist.h.

### 7.11.3 Constructor & Destructor Documentation

7.11.3.1 `template<template< int > class CopulaTemplate, class... MarginalDistTs> prior_hessian::CopulaDistImpl::↵  
CopulaDist< CopulaTemplate, MarginalDistTs >::CopulaDist ( )`

Definition at line 242 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:



7.11.3.2 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Copula  
, class... DistTs, std::enable_if_t< sizeof...(DistTs)==sizeof...(MarginalDistTs), bool > Enable>  
prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::CopulaDist ( Copula &&  
copula, DistTs &&... dists )`

Definition at line 233 of file CopulaDist.h.

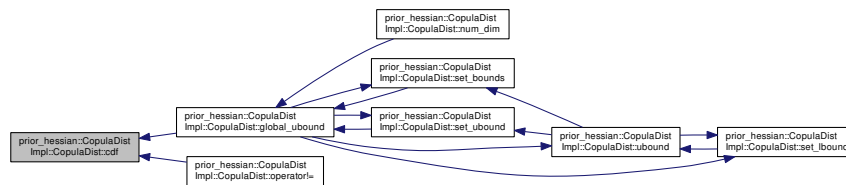
## 7.11.4 Member Function Documentation

7.11.4.1 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > double prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::cdf ( const Vec & x ) const`

Definition at line 385 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=( )`.

Here is the caller graph for this function:



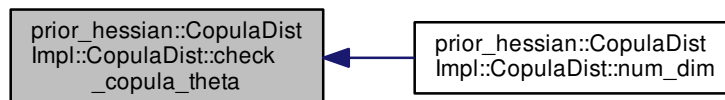
7.11.4.2 `template<class Vec > static void prior_hessian::MultivariateDist::check_bounds ( const Vec & lbound, const Vec & ubound ) [inline], [static], [protected], [inherited]`

Definition at line 57 of file MultivariateDist.h.

7.11.4.3 `template<template< int > class CopulaTemplate, class... MarginalDistTs> static bool prior_hessian::↔ CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::check_copula_theta ( double theta ) [static]`

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

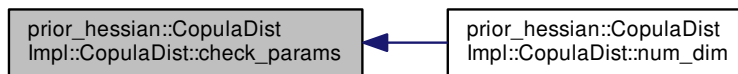
Here is the caller graph for this function:



7.11.4.4 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > static bool prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::check_params ( const Vec & params ) [static]`

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:

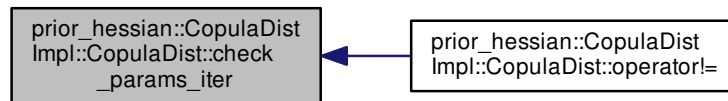


7.11.4.5 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class IterT > bool prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::check_params_iter ( IterT & params ) [static]`

Definition at line 368 of file `CopulaDist.h`.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:

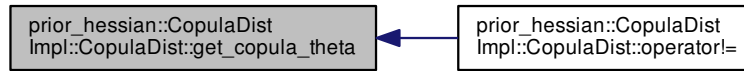


7.11.4.6 `template<template< int > class CopulaTemplate, class... MarginalDistTs> double prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::get_copula_theta ( ) const`

Definition at line 346 of file `CopulaDist.h`.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:

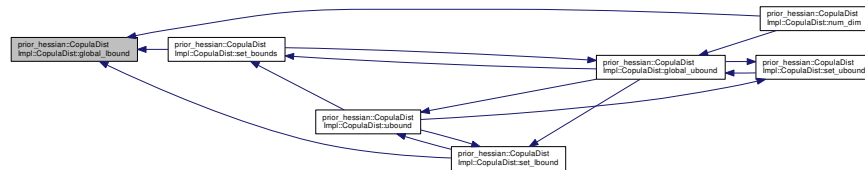


7.11.4.7 `template<template< int > class CopulaTemplate, class... MarginalDistTs> const CopulaDist< CopulaTemplate, MarginalDistTs... >::NdimVecT & prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_lbound ( ) [static]`

Definition at line 536 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_bounds()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_lbound()`.

Here is the caller graph for this function:



7.11.4.8 `template<template< int > class CopulaTemplate, class... MarginalDistTs> const CopulaDist< CopulaTemplate, MarginalDistTs... >::NdimVecT & prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound ( ) [static]`

Definition at line 545 of file CopulaDist.h.

References `prior_hessian::meta::call_in_order()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::cdf()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::lbound()`, `prior_hessian::meta::logical_and_in_order()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_components()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_params()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::pdf()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_bounds()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_lbound()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_params_iter()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.



Here is the caller graph for this function:



7.11.4.10 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > CopulaDist< CopulaTemplate, MarginalDistTs... >::NdimVecT prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad2 ( const Vec & x ) const`

Definition at line 440 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=()`.

Here is the caller graph for this function:

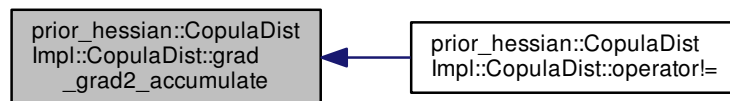


7.11.4.11 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec , class Vec2 > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad_grad2_accumulate ( const Vec & x, Vec2 & g, Vec2 & g2 ) const`

Definition at line 466 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=()`.

Here is the caller graph for this function:

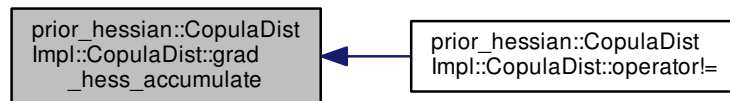


7.11.4.12 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec , class Vec2 , class Mat > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad_hess_accumulate ( const Vec & x, Vec2 & g, Mat & hess ) const`

Definition at line 481 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:



7.11.4.13 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > CopulaDist< CopulaTemplate, MarginalDistTs... >::NdinMatT prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::hess ( const Vec & x ) const`

Definition at line 452 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:

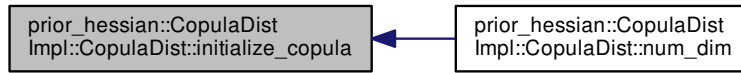


7.11.4.14 `template<template< int > class CopulaTemplate, class... MarginalDistTs> void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::initialize_copula ( const CopulaT & _copula )`

Definition at line 255 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim( )`.

Here is the caller graph for this function:

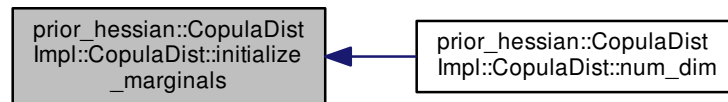


7.11.4.15 `template<template< int > class CopulaTemplate, class... MarginalDistTs> void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::initialize_marginals ( const MarginalDistTupleT & dists )`

Definition at line 262 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:

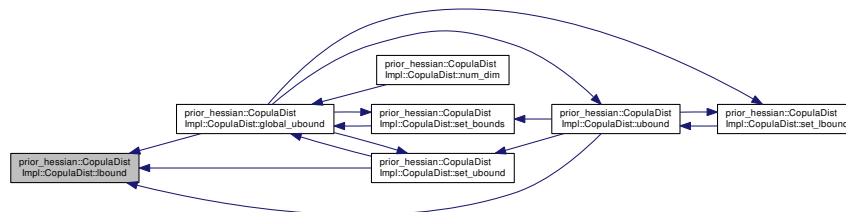


7.11.4.16 `template<template< int > class CopulaTemplate, class... MarginalDistTs> NdimVecT prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::lbound ( ) const [inline]`

Definition at line 67 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

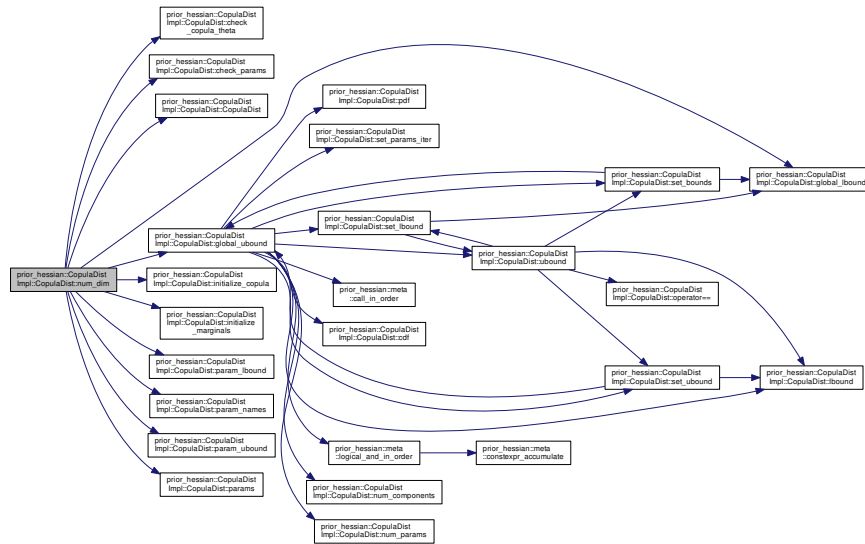
Here is the caller graph for this function:





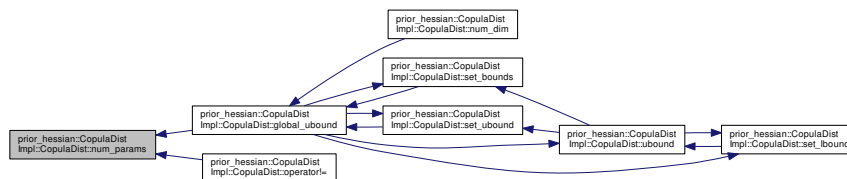


Here is the call graph for this function:



Definition at line 38 of file CopulaDist.h.

Here is the caller graph for this function:



```

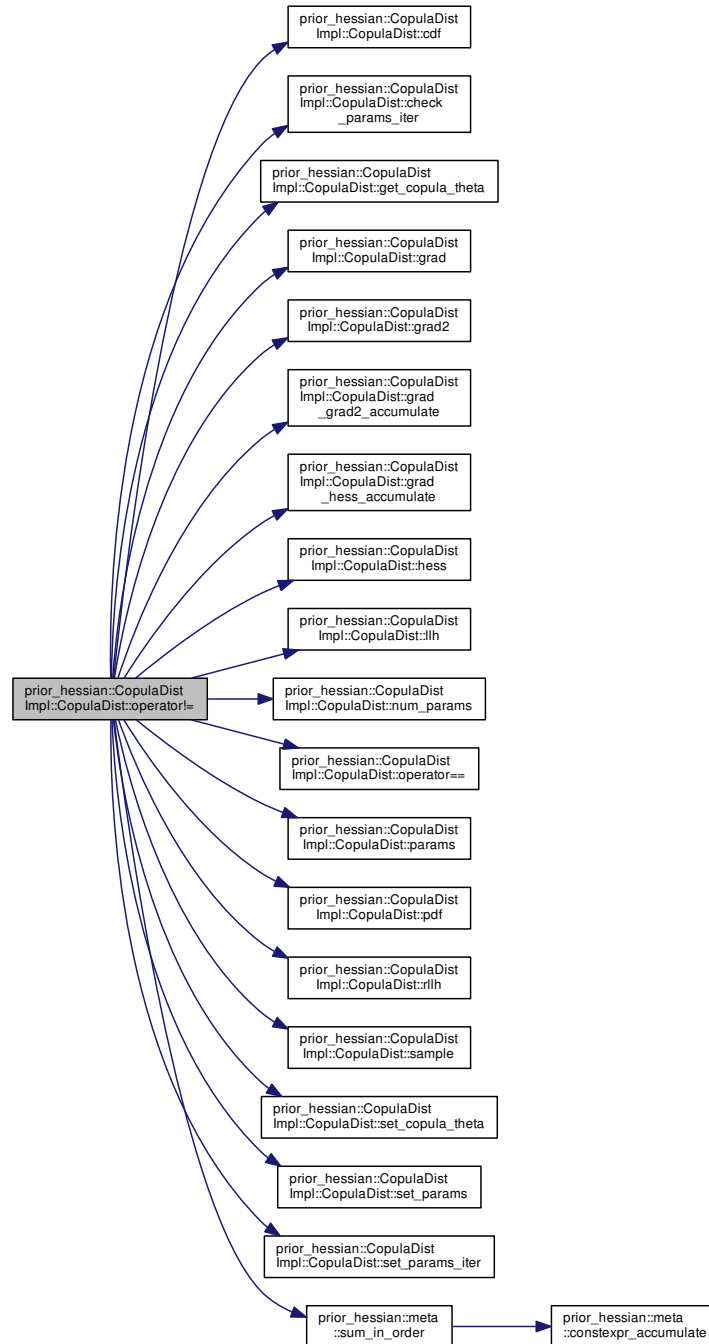
7.11.4.21 template<template< int > class CopulaTemplate, class... MarginalDistTs> bool prior_hessian::CopulaDist←
Impl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!= ( const CopulaDist< CopulaTemplate,
MarginalDistTs... > & o ) const [inline]

```

Definition at line 80 of file CopulaDist.h.

References prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::cdf(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::check\_params\_iter(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::get\_copula\_theta(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad2(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad\_accumulate(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::grad\_hess\_accumulate(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::hess(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::llh(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num\_params(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator==( ), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::params(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::pdf(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::rllh(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::sample(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set\_copula\_theta(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set\_params(), prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set\_params\_iter(), and prior\_hessian::meta::sum\_in\_order().

Here is the call graph for this function:

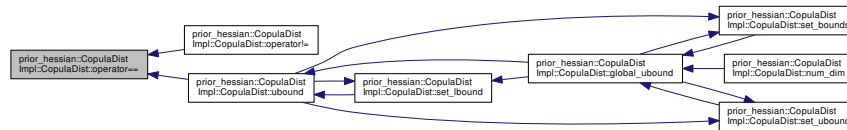


7.11.4.22 `template<template< int > class CopulaTemplate, class... MarginalDistTs> bool prior_hessian::CopulaDist< CopulaTemplate, MarginalDistTs... >::operator==( const CopulaDist< CopulaTemplate, MarginalDistTs... > & o ) const`

Definition at line 330 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

Here is the caller graph for this function:

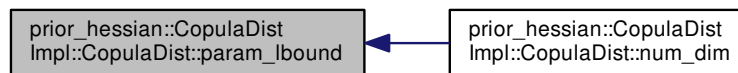


7.11.4.23 `template<template< int > class CopulaTemplate, class... MarginalDistTs> const CopulaDist< CopulaTemplate, MarginalDistTs... >::NparamsVecT & prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::param_lbound ( ) [static]`

Definition at line 518 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:

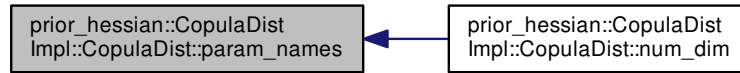


7.11.4.24 `template<template< int > class CopulaTemplate, class... MarginalDistTs> const StringVecT & prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::param_names ( ) [static]`

Definition at line 509 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:

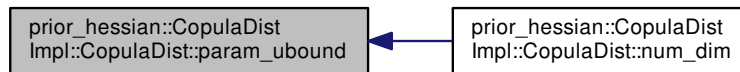


7.11.4.25 `template<template< int > class CopulaTemplate, class... MarginalDistTs> const CopulaDist< CopulaTemplate, MarginalDistTs... >::NparamsVecT & prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::param_ubound ( ) [static]`

Definition at line 527 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`.

Here is the caller graph for this function:

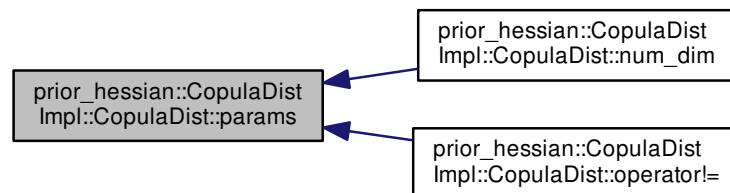


7.11.4.26 `template<template< int > class CopulaTemplate, class... MarginalDistTs> CopulaDist< CopulaTemplate, MarginalDistTs... >::NparamsVecT prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::params ( ) const`

Definition at line 337 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::num_dim()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=( )`.

Here is the caller graph for this function:

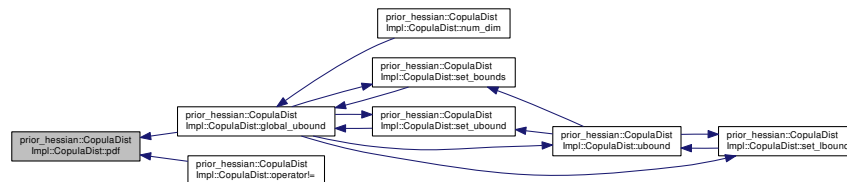


7.11.4.27 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > double  
prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::pdf ( const Vec & x ) const`

Definition at line 394 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:



7.11.4.28 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > double  
prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::rllh ( const Vec & x ) const`

Definition at line 416 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:



7.11.4.29 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class RngT > CopulaDist<  
CopulaTemplate, MarginalDistTs... >::NdinVecT prior_hessian::CopulaDistImpl::CopulaDist<  
CopulaTemplate, MarginalDistTs >::sample ( RngT & rng ) const`

Definition at line 499 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:



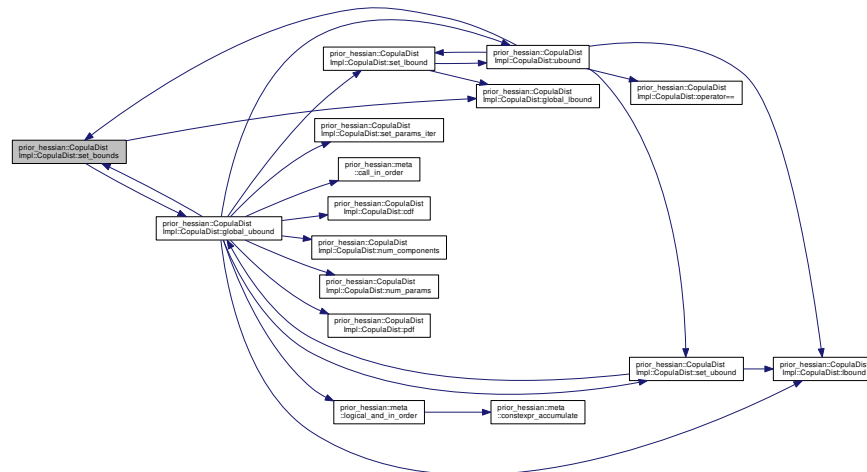
7.11.4.30 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec , class Vec2 > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_bounds ( const Vec & lbound, const Vec2 & ubound )`

Definition at line 271 of file CopulaDist.h.

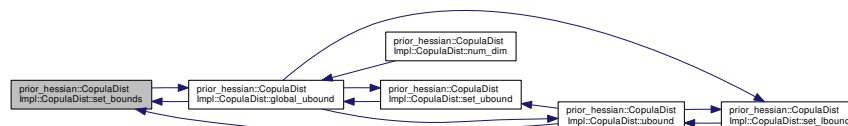
References `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_lbound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

Here is the call graph for this function:



Here is the caller graph for this function:





7.11.4.31 `template<template< int > class CopulaTemplate, class... MarginalDistTs> void prior_hessian::↔  
 CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_copula_theta ( double theta  
 )`

Definition at line 352 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!=( )`.

Here is the caller graph for this function:



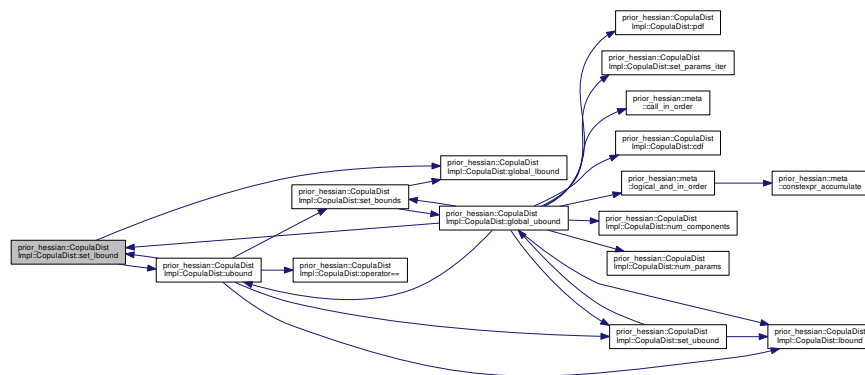
7.11.4.32 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > void  
 prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_lbound ( const Vec &  
 lbound )`

Definition at line 295 of file CopulaDist.h.

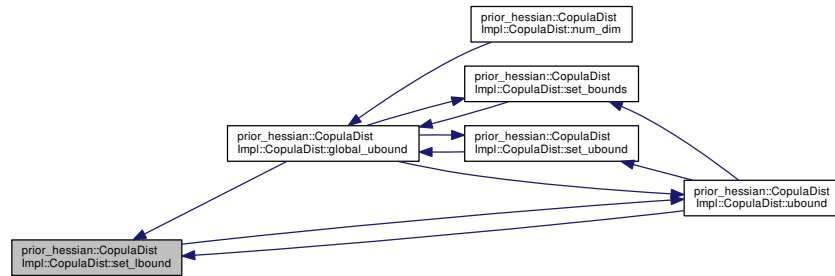
References `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_lbound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.11.4.33 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_params ( const Vec & params )`

Definition at line 359 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:

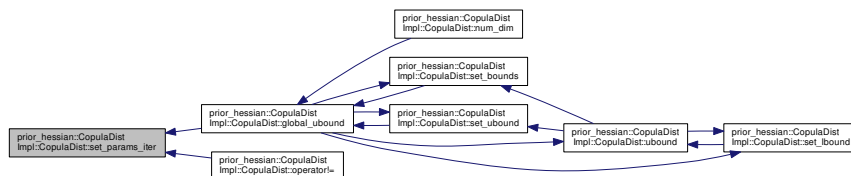


7.11.4.34 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class IterT > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_params_iter ( IterT & params )`

Definition at line 375 of file CopulaDist.h.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound( )`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator!==( )`.

Here is the caller graph for this function:



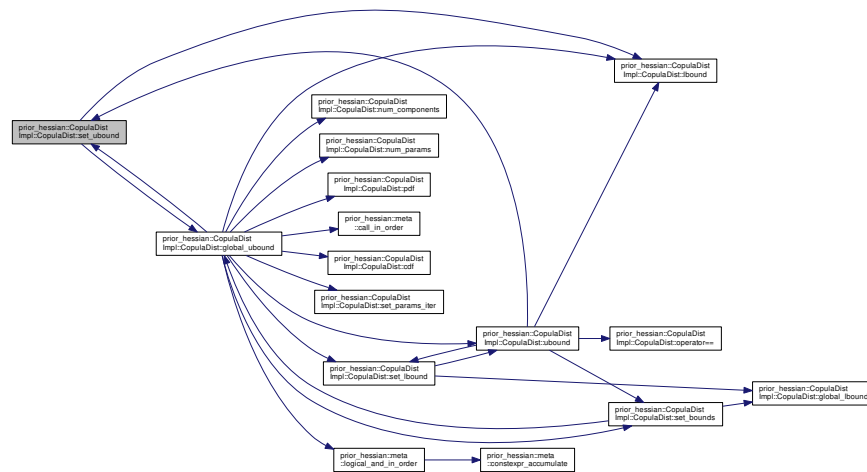
7.11.4.35 `template<template< int > class CopulaTemplate, class... MarginalDistTs> template<class Vec > void prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_ubound ( const Vec & ubound )`

Definition at line 313 of file CopulaDist.h.

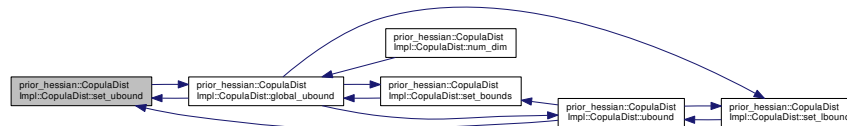
References `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::lbound()`.

Referenced by `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global_ubound()`, and `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.11.4.36 `template<template< int > class CopulaTemplate, class... MarginalDistTs> NdimVecT prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::ubound ( ) const [inline]`

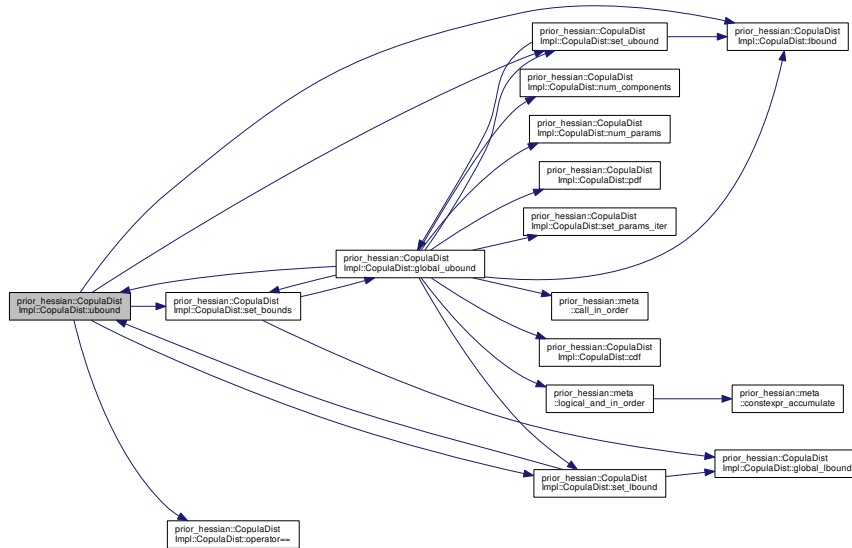
Definition at line 68 of file CopulaDist.h.

References `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::lbound()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::operator==()`, `prior_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set_bounds()`, and `prior_hessian::CopulaDistImpl::CopulaDist<`

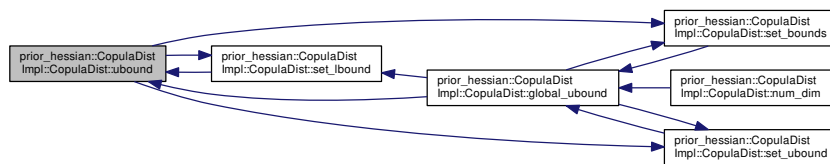
CopulaTemplate, MarginalDistTs >::set\_lbound(), and prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set\_ubound().

Referenced by prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::global\_ubound(), and prior\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >::set\_lbound().

Here is the call graph for this function:



Here is the caller graph for this function:



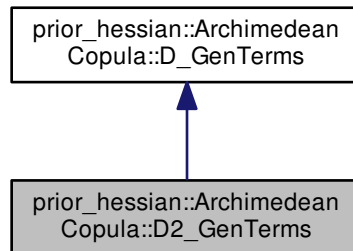
The documentation for this class was generated from the following file:

- [CopulaDist.h](#)

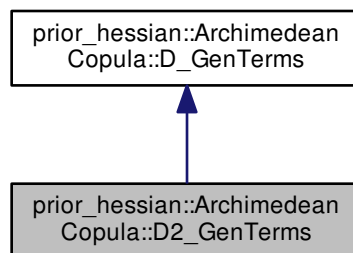
## 7.12 prior\_hessian::ArchimedeanCopula::D2\_GenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for `prior_hessian::ArchimedeanCopula::D2_GenTerms`:



Collaboration diagram for `prior_hessian::ArchimedeanCopula::D2_GenTerms`:



#### Public Attributes

- double [xi\\_n\\_t](#)
- double [log\\_dh\\_gen\\_t](#)
- double [eta\\_n\\_np1\\_t](#)

#### 7.12.1 Detailed Description

Definition at line 17 of file `ArchimedeanCopula.h`.

### 7.12.2 Member Data Documentation

#### 7.12.2.1 double prior\_hessian::ArchimedeanCopula::D\_GenTerms::eta\_n\_np1\_t [inherited]

Definition at line 15 of file ArchimedeanCopula.h.

#### 7.12.2.2 double prior\_hessian::ArchimedeanCopula::D\_GenTerms::log\_dn\_gen\_t [inherited]

Definition at line 14 of file ArchimedeanCopula.h.

#### 7.12.2.3 double prior\_hessian::ArchimedeanCopula::D2\_IGenTerms::xi\_n\_t

Definition at line 18 of file ArchimedeanCopula.h.

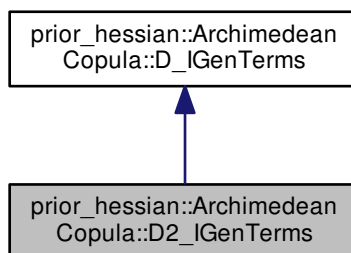
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

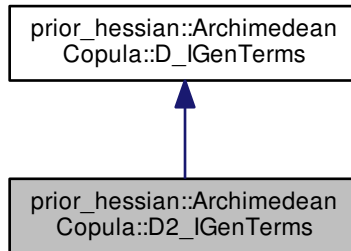
### 7.13 prior\_hessian::ArchimedeanCopula::D2\_IGenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::D2\_IGenTerms:



Collaboration diagram for prior\_hessian::ArchimedeanCopula::D2\_IGenTerms:



#### Public Attributes

- double [d2\\_igen\\_ui](#)
- double [ixi\\_1\\_ui](#)
- double [d1\\_igen\\_ui](#)
- double [ieta\\_21\\_ui](#)

#### 7.13.1 Detailed Description

Definition at line 25 of file ArchimedeanCopula.h.

#### 7.13.2 Member Data Documentation

**7.13.2.1** double prior\_hessian::ArchimedeanCopula::D\_IGenTerms::d1\_igen\_ui [inherited]

Definition at line 22 of file ArchimedeanCopula.h.

**7.13.2.2** double prior\_hessian::ArchimedeanCopula::D2\_IGenTerms::d2\_igen\_ui

Definition at line 26 of file ArchimedeanCopula.h.

**7.13.2.3** double prior\_hessian::ArchimedeanCopula::D\_IGenTerms::ieta\_21\_ui [inherited]

Definition at line 23 of file ArchimedeanCopula.h.

## 7.13.2.4 double prior\_hessian::ArchimedeanCopula::D2\_IGenTerms::ixi\_1\_ui

Definition at line 27 of file ArchimedeanCopula.h.

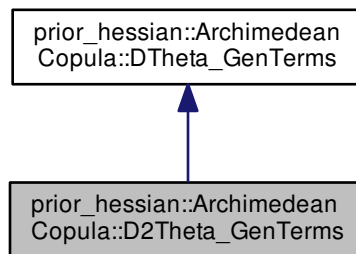
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

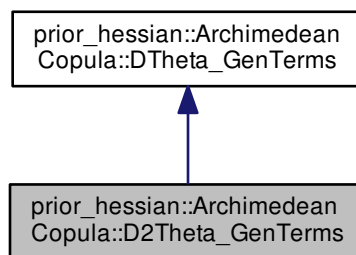
## 7.14 prior\_hessian::ArchimedeanCopula::D2Theta\_GenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::D2Theta\_GenTerms:



Collaboration diagram for prior\_hessian::ArchimedeanCopula::D2Theta\_GenTerms:





## Public Attributes

- double [xi\\_0n\\_t](#)
- double [log\\_dn\\_gen\\_t](#)
- double [eta\\_0n\\_1n\\_t](#)

### 7.14.1 Detailed Description

Definition at line 34 of file ArchimedeanCopula.h.

### 7.14.2 Member Data Documentation

#### 7.14.2.1 double prior\_hessian::ArchimedeanCopula::DTheta\_GenTerms::eta\_0n\_1n\_t [inherited]

Definition at line 32 of file ArchimedeanCopula.h.

#### 7.14.2.2 double prior\_hessian::ArchimedeanCopula::DTheta\_GenTerms::log\_dn\_gen\_t [inherited]

Definition at line 31 of file ArchimedeanCopula.h.

#### 7.14.2.3 double prior\_hessian::ArchimedeanCopula::D2Theta\_GenTerms::xi\_0n\_t

Definition at line 35 of file ArchimedeanCopula.h.

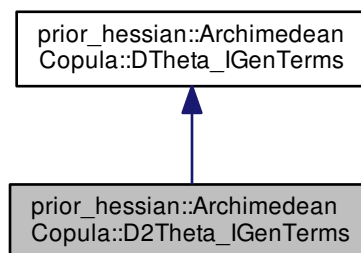
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

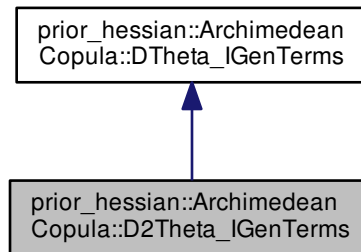
## 7.15 prior\_hessian::ArchimedeanCopula::D2Theta\_IGenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::D2Theta\_IGenTerms:



Collaboration diagram for prior\_hessian::ArchimedeanCopula::D2Theta\_IGenTerms:



#### Public Attributes

- double `sum_d20_igen_u` = 0
- double `sum_ixi_01_u` = 0
- double `sum_log_d1_igen_u` = 0
- double `sum_d10_igen_u` = 0
- double `sum_ieta_01_11_u` = 0

#### 7.15.1 Detailed Description

Definition at line 43 of file ArchimedeanCopula.h.

#### 7.15.2 Member Data Documentation

7.15.2.1 `double prior_hessian::ArchimedeanCopula::DTheta_IGenTerms::sum_d10_igen_u = 0` `[inherited]`

Definition at line 40 of file ArchimedeanCopula.h.

7.15.2.2 `double prior_hessian::ArchimedeanCopula::D2Theta_IGenTerms::sum_d20_igen_u = 0`

Definition at line 44 of file ArchimedeanCopula.h.

7.15.2.3 `double prior_hessian::ArchimedeanCopula::DTheta_IGenTerms::sum_ieta_01_11_u = 0` `[inherited]`

Definition at line 41 of file ArchimedeanCopula.h.

7.15.2.4 `double prior_hessian::ArchimedeanCopula::D2Theta_IGenTerms::sum_ixi_01_u = 0`

Definition at line 45 of file ArchimedeanCopula.h.

7.15.2.5 `double prior_hessian::ArchimedeanCopula::DTheta_lGenTerms::sum_log_d1_igen_u = 0` [inherited]

Definition at line 39 of file ArchimedeanCopula.h.

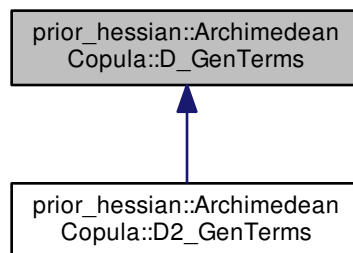
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

## 7.16 prior\_hessian::ArchimedeanCopula::D\_GenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::D\_GenTerms:



### Public Attributes

- double [log\\_dn\\_gen\\_t](#)
- double [eta\\_n\\_np1\\_t](#)

### 7.16.1 Detailed Description

Definition at line 13 of file ArchimedeanCopula.h.

### 7.16.2 Member Data Documentation

7.16.2.1 `double prior_hessian::ArchimedeanCopula::D_GenTerms::eta_n_np1_t`

Definition at line 15 of file ArchimedeanCopula.h.

## 7.16.2.2 double prior\_hessian::ArchimedeanCopula::D\_GenTerms::log\_dn\_gen\_t

Definition at line 14 of file ArchimedeanCopula.h.

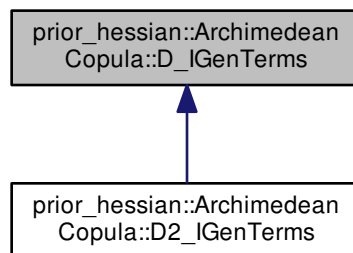
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

## 7.17 prior\_hessian::ArchimedeanCopula::D\_IGenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::D\_IGenTerms:



## Public Attributes

- double [d1\\_igen\\_ui](#)
- double [ieta\\_21\\_ui](#)

## 7.17.1 Detailed Description

Definition at line 21 of file ArchimedeanCopula.h.

## 7.17.2 Member Data Documentation

## 7.17.2.1 double prior\_hessian::ArchimedeanCopula::D\_IGenTerms::d1\_igen\_ui

Definition at line 22 of file ArchimedeanCopula.h.

### 7.17.2.2 `double prior_hessian::ArchimedeanCopula::D_IGenTerms::ieta_21_ui`

Definition at line 23 of file ArchimedeanCopula.h.

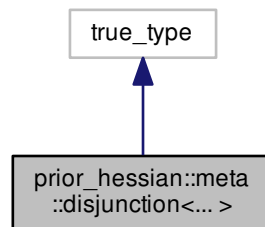
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

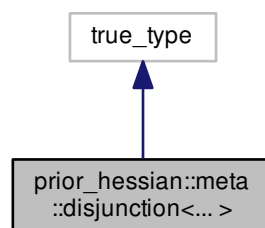
## 7.18 `prior_hessian::meta::disjunction<... >` Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
Meta.h>
```

Inheritance diagram for `prior_hessian::meta::disjunction<... >`:



Collaboration diagram for `prior_hessian::meta::disjunction<... >`:



## 7.18.1 Detailed Description

```
template<class...>
struct prior_hessian::meta::disjunction<... >
```

Definition at line 72 of file Meta.h.

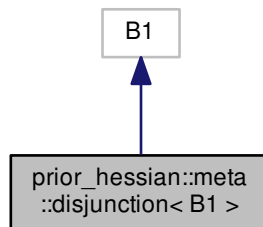
The documentation for this struct was generated from the following file:

- [Meta.h](#)

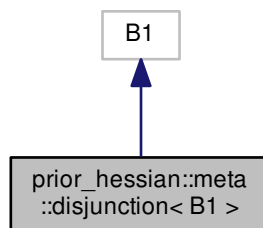
## 7.19 prior\_hessian::meta::disjunction&lt; B1 &gt; Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::disjunction< B1 >:



Collaboration diagram for prior\_hessian::meta::disjunction< B1 >:



### 7.19.1 Detailed Description

```
template<class B1>
struct prior_hessian::meta::disjunction< B1 >
```

Definition at line 73 of file Meta.h.

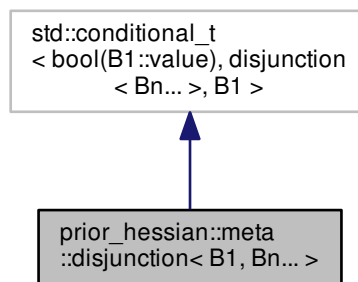
The documentation for this struct was generated from the following file:

- [Meta.h](#)

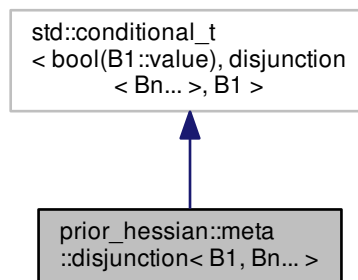
## 7.20 prior\_hessian::meta::disjunction< B1, Bn... > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::disjunction< B1, Bn... >:



Collaboration diagram for prior\_hessian::meta::disjunction< B1, Bn... >:



### 7.20.1 Detailed Description

```
template<class B1, class... Bn>
struct prior_hessian::meta::disjunction< B1, Bn... >
```

Definition at line 75 of file Meta.h.

The documentation for this struct was generated from the following file:

- [Meta.h](#)

## 7.21 prior\_hessian::detail::dist\_adaptor\_traits< Dist > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
BoundsAdaptedDist.h>
```

### Public Types

- using [bounds\\_adapted\\_dist](#) = void

### Static Public Attributes

- static constexpr bool [adaptable\\_bounds](#) = false

### 7.21.1 Detailed Description

```
template<class Dist>
class prior_hessian::detail::dist_adaptor_traits< Dist >
```

Definition at line 42 of file BoundsAdaptedDist.h.

### 7.21.2 Member Typedef Documentation

7.21.2.1 `template<class Dist> using prior_hessian::detail::dist_adaptor_traits< Dist >::bounds_adapted_dist = void`

Definition at line 44 of file BoundsAdaptedDist.h.



### 7.21.3 Member Data Documentation

7.21.3.1 `template<class Dist> constexpr bool prior_hessian::detail::dist_adaptor_traits< Dist >::adaptable_bounds = false [static]`

Definition at line 45 of file BoundsAdaptedDist.h.

The documentation for this class was generated from the following file:

- [BoundsAdaptedDist.h](#)

## 7.22 prior\_hessian::detail::dist\_adaptor\_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↔
CopulaDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... >`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

### 7.22.1 Detailed Description

```
template<template< int > class CopulaTemplate, class... DistTs>
struct prior_hessian::detail::dist_adaptor_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >
```

Definition at line 198 of file CopulaDist.h.

### 7.22.2 Member Typedef Documentation

7.22.2.1 `template<template< int > class CopulaTemplate, class... DistTs> using prior_hessian::detail::dist ↔ adaptor_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >::bounds_adapted_dist = CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs...>`

Definition at line 200 of file CopulaDist.h.

## 7.22.3 Member Data Documentation

7.22.3.1 `template<template< int > class CopulaTemplate, class... DistTs> constexpr bool prior_hessian::detail::dist_adaptor_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >::adaptable_bounds = true`  
`[static]`

Definition at line 201 of file CopulaDist.h.

The documentation for this struct was generated from the following file:

- [CopulaDist.h](#)

## 7.23 prior\_hessian::detail::dist\_adaptor\_traits&lt; GammaDist &gt; Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
TruncatedGammaDist.h>
```

## Public Types

- using `bounds_adapted_dist` = `TruncatedGammaDist`

## Static Public Attributes

- static constexpr bool `adaptable_bounds` = false

## 7.23.1 Detailed Description

```
template<>
struct prior_hessian::detail::dist_adaptor_traits< GammaDist >
```

Definition at line 28 of file TruncatedGammaDist.h.

## 7.23.2 Member Typedef Documentation

7.23.2.1 using `prior_hessian::detail::dist_adaptor_traits< GammaDist >::bounds_adapted_dist` = `TruncatedGammaDist`

Definition at line 30 of file TruncatedGammaDist.h.

### 7.23.3 Member Data Documentation

**7.23.3.1** `constexpr bool prior_hessian::detail::dist_adaptor_traits< GammaDist >::adaptable_bounds = false`  
`[static]`

Definition at line 31 of file TruncatedGammaDist.h.

The documentation for this struct was generated from the following file:

- [TruncatedGammaDist.h](#)

## 7.24 `prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > >` Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
TruncatedMultivariateNormalDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `TruncatedMultivariateNormalDist< Ndim >`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = false

### 7.24.1 Detailed Description

```
template<int Ndim>
struct prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > >
```

Definition at line 33 of file TruncatedMultivariateNormalDist.h.

### 7.24.2 Member Typedef Documentation

**7.24.2.1** `template<int Ndim> using prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > >::bounds_adapted_dist = TruncatedMultivariateNormalDist<Ndim>`

Definition at line 35 of file TruncatedMultivariateNormalDist.h.

### 7.24.3 Member Data Documentation

7.24.3.1 `template<int Ndim> constexpr bool prior_hessian::detail::dist_adaptor_traits< MultivariateNormalDist< Ndim > >::adaptable_bounds = false [static]`

Definition at line 36 of file TruncatedMultivariateNormalDist.h.

The documentation for this struct was generated from the following file:

- [TruncatedMultivariateNormalDist.h](#)

## 7.25 prior\_hessian::detail::dist\_adaptor\_traits< NormalDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
TruncatedNormalDist.h>
```

### Public Types

- using `bounds_adapted_dist` = [TruncatedNormalDist](#)

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = false

### 7.25.1 Detailed Description

```
template<>  
struct prior_hessian::detail::dist_adaptor_traits< NormalDist >
```

Definition at line 30 of file TruncatedNormalDist.h.

### 7.25.2 Member Typedef Documentation

7.25.2.1 using `prior_hessian::detail::dist_adaptor_traits< NormalDist >::bounds_adapted_dist` = `TruncatedNormalDist`

Definition at line 32 of file TruncatedNormalDist.h.

### 7.25.3 Member Data Documentation

7.25.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< NormalDist >::adaptable_bounds = false`  
`[static]`

Definition at line 33 of file `TruncatedNormalDist.h`.

The documentation for this struct was generated from the following file:

- [TruncatedNormalDist.h](#)

## 7.26 prior\_hessian::detail::dist\_adaptor\_traits< ParetoDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
TruncatedParetoDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `TruncatedParetoDist`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = false

### 7.26.1 Detailed Description

```
template<>
struct prior_hessian::detail::dist_adaptor_traits< ParetoDist >
```

Definition at line 29 of file `TruncatedParetoDist.h`.

### 7.26.2 Member Typedef Documentation

7.26.2.1 using `prior_hessian::detail::dist_adaptor_traits< ParetoDist >::bounds_adapted_dist` = `TruncatedParetoDist`

Definition at line 31 of file `TruncatedParetoDist.h`.

## 7.26.3 Member Data Documentation

7.26.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< ParetoDist >::adaptable_bounds = false`  
`[static]`

Definition at line 32 of file `TruncatedParetoDist.h`.

The documentation for this struct was generated from the following file:

- [TruncatedParetoDist.h](#)

## 7.27 prior\_hessian::detail::dist\_adaptor\_traits&lt; ScaledSymmetricBetaDist &gt; Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
ScaledSymmetricBetaDist.h>
```

## Public Types

- using `bounds_adapted_dist` = `ScaledSymmetricBetaDist`

## Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

## 7.27.1 Detailed Description

```
template<>
struct prior_hessian::detail::dist_adaptor_traits< ScaledSymmetricBetaDist >
```

Definition at line 35 of file `ScaledSymmetricBetaDist.h`.

## 7.27.2 Member Typedef Documentation

7.27.2.1 using `prior_hessian::detail::dist_adaptor_traits< ScaledSymmetricBetaDist >::bounds_adapted_dist` = `ScaledSymmetricBetaDist`

Definition at line 37 of file `ScaledSymmetricBetaDist.h`.

### 7.27.3 Member Data Documentation

7.27.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< ScaledSymmetricBetaDist >::adaptable_bounds = true` `[static]`

Definition at line 38 of file ScaledSymmetricBetaDist.h.

The documentation for this struct was generated from the following file:

- [ScaledSymmetricBetaDist.h](#)

## 7.28 prior\_hessian::detail::dist\_adaptor\_traits< SymmetricBetaDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
ScaledSymmetricBetaDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `ScaledSymmetricBetaDist`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = false

### 7.28.1 Detailed Description

```
template<>
struct prior_hessian::detail::dist_adaptor_traits< SymmetricBetaDist >
```

Definition at line 28 of file ScaledSymmetricBetaDist.h.

### 7.28.2 Member Typedef Documentation

7.28.2.1 using `prior_hessian::detail::dist_adaptor_traits< SymmetricBetaDist >::bounds_adapted_dist` = `ScaledSymmetricBetaDist`

Definition at line 30 of file ScaledSymmetricBetaDist.h.

### 7.28.3 Member Data Documentation

7.28.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< SymmetricBetaDist >::adaptable_bounds = false`  
[static]

Definition at line 31 of file ScaledSymmetricBetaDist.h.

The documentation for this struct was generated from the following file:

- [ScaledSymmetricBetaDist.h](#)

## 7.29 prior\_hessian::detail::dist\_adaptor\_traits< TruncatedGammaDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
TruncatedGammaDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `TruncatedGammaDist`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

### 7.29.1 Detailed Description

```
template<>  
struct prior_hessian::detail::dist_adaptor_traits< TruncatedGammaDist >
```

Definition at line 35 of file TruncatedGammaDist.h.

### 7.29.2 Member Typedef Documentation

7.29.2.1 using `prior_hessian::detail::dist_adaptor_traits< TruncatedGammaDist >::bounds_adapted_dist` = `TruncatedGammaDist`

Definition at line 37 of file TruncatedGammaDist.h.



### 7.29.3 Member Data Documentation

7.29.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< TruncatedGammaDist >::adaptable_bounds = true`  
`[static]`

Definition at line 38 of file `TruncatedGammaDist.h`.

The documentation for this struct was generated from the following file:

- [TruncatedGammaDist.h](#)

## 7.30 `prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > >` Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
TruncatedMultivariateNormalDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `TruncatedMultivariateNormalDist< Ndim >`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

### 7.30.1 Detailed Description

```
template<int Ndim>
struct prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > >
```

Definition at line 40 of file `TruncatedMultivariateNormalDist.h`.

### 7.30.2 Member Typedef Documentation

7.30.2.1 `template<int Ndim> using prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > >::bounds_adapted_dist = TruncatedMultivariateNormalDist<Ndim>`

Definition at line 42 of file `TruncatedMultivariateNormalDist.h`.

### 7.30.3 Member Data Documentation

7.30.3.1 `template<int Ndim> constexpr bool prior_hessian::detail::dist_adaptor_traits< TruncatedMultivariateNormalDist< Ndim > >::adaptable_bounds = true` [static]

Definition at line 43 of file TruncatedMultivariateNormalDist.h.

The documentation for this struct was generated from the following file:

- [TruncatedMultivariateNormalDist.h](#)

## 7.31 prior\_hessian::detail::dist\_adaptor\_traits< TruncatedNormalDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
TruncatedNormalDist.h>
```

### Public Types

- using `bounds_adapted_dist` = [TruncatedNormalDist](#)

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

### 7.31.1 Detailed Description

```
template<>  
struct prior_hessian::detail::dist_adaptor_traits< TruncatedNormalDist >
```

Definition at line 37 of file TruncatedNormalDist.h.

### 7.31.2 Member Typedef Documentation

7.31.2.1 using `prior_hessian::detail::dist_adaptor_traits< TruncatedNormalDist >::bounds_adapted_dist` = `TruncatedNormalDist`

Definition at line 39 of file TruncatedNormalDist.h.

### 7.31.3 Member Data Documentation

**7.31.3.1** `constexpr bool prior_hessian::detail::dist_adaptor_traits< TruncatedNormalDist >::adaptable_bounds = true`  
`[static]`

Definition at line 40 of file `TruncatedNormalDist.h`.

The documentation for this struct was generated from the following file:

- [TruncatedNormalDist.h](#)

## 7.32 prior\_hessian::detail::dist\_adaptor\_traits< TruncatedParetoDist > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
TruncatedParetoDist.h>
```

### Public Types

- using `bounds_adapted_dist` = `TruncatedParetoDist`

### Static Public Attributes

- static constexpr bool `adaptable_bounds` = true

### 7.32.1 Detailed Description

```
template<>
struct prior_hessian::detail::dist_adaptor_traits< TruncatedParetoDist >
```

Definition at line 36 of file `TruncatedParetoDist.h`.

### 7.32.2 Member Typedef Documentation

**7.32.2.1** using `prior_hessian::detail::dist_adaptor_traits< TruncatedParetoDist >::bounds_adapted_dist` = `TruncatedParetoDist`

Definition at line 38 of file `TruncatedParetoDist.h`.

## 7.32.3 Member Data Documentation

7.32.3.1 `constexpr bool prior_hessian::detail::dist_adaptor_traits< TruncatedParetoDist >::adaptable_bounds = true`  
`[static]`

Definition at line 39 of file `TruncatedParetoDist.h`.

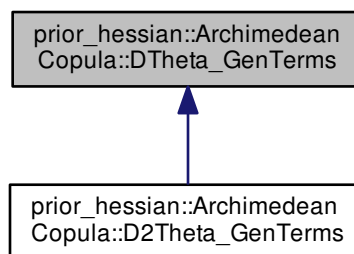
The documentation for this struct was generated from the following file:

- [TruncatedParetoDist.h](#)

## 7.33 prior\_hessian::ArchimedeanCopula::DTheta\_GenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for `prior_hessian::ArchimedeanCopula::DTheta_GenTerms`:



## Public Attributes

- double [log\\_dn\\_gen\\_t](#)
- double [eta\\_0n\\_1n\\_t](#)

## 7.33.1 Detailed Description

Definition at line 30 of file `ArchimedeanCopula.h`.

## 7.33.2 Member Data Documentation

7.33.2.1 `double prior_hessian::ArchimedeanCopula::DTheta_GenTerms::eta_0n_1n_t`

Definition at line 32 of file `ArchimedeanCopula.h`.

### 7.33.2.2 double prior\_hessian::ArchimedeanCopula::DTheta\_GenTerms::log\_dn\_gen\_t

Definition at line 31 of file ArchimedeanCopula.h.

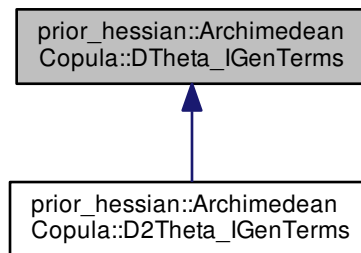
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

## 7.34 prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ArchimedeanCopula.h>
```

Inheritance diagram for prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms:



### Public Attributes

- double [sum\\_log\\_d1\\_igen\\_u](#) = 0
- double [sum\\_d10\\_igen\\_u](#) = 0
- double [sum\\_ieta\\_01\\_11\\_u](#) = 0

### 7.34.1 Detailed Description

Definition at line 38 of file ArchimedeanCopula.h.

### 7.34.2 Member Data Documentation

#### 7.34.2.1 double prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms::sum\_d10\_igen\_u = 0

Definition at line 40 of file ArchimedeanCopula.h.

7.34.2.2 double prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms::sum\_ieta\_01\_11\_u = 0

Definition at line 41 of file ArchimedeanCopula.h.

7.34.2.3 double prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms::sum\_log\_d1\_igen\_u = 0

Definition at line 39 of file ArchimedeanCopula.h.

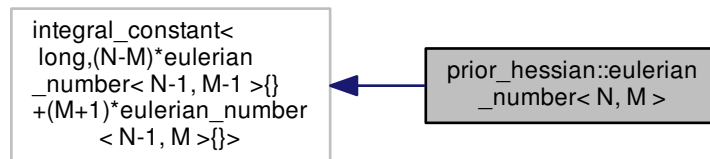
The documentation for this struct was generated from the following file:

- [ArchimedeanCopula.h](#)

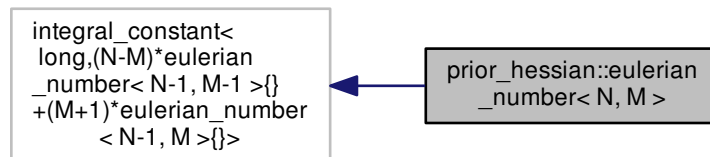
## 7.35 prior\_hessian::eulerian\_number< N, M > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
EulerianPolynomial.h>
```

Inheritance diagram for prior\_hessian::eulerian\_number< N, M >:



Collaboration diagram for prior\_hessian::eulerian\_number< N, M >:



### 7.35.1 Detailed Description

```
template<long N, long M>
struct prior_hessian::eulerian_number< N, M >
```

Definition at line 17 of file EulerianPolynomial.h.

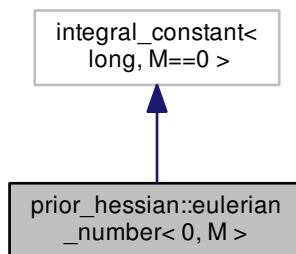
The documentation for this struct was generated from the following file:

- [EulerianPolynomial.h](#)

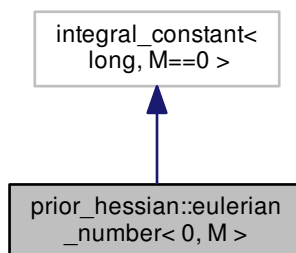
### 7.36 prior\_hessian::eulerian\_number< 0, M > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
EulerianPolynomial.h>
```

Inheritance diagram for prior\_hessian::eulerian\_number< 0, M >:



Collaboration diagram for prior\_hessian::eulerian\_number< 0, M >:



## 7.36.1 Detailed Description

```
template<long M>
struct prior_hessian::eulerian_number< 0, M >
```

Definition at line 20 of file EulerianPolynomial.h.

The documentation for this struct was generated from the following file:

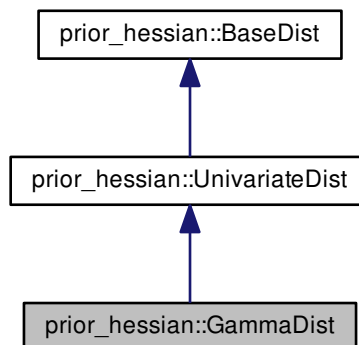
- [EulerianPolynomial.h](#)

## 7.37 prior\_hessian::GammaDist Class Reference

Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.

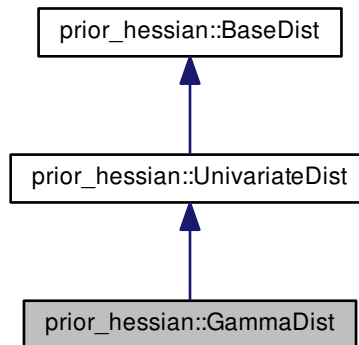
```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵
GammaDist.h>
```

Inheritance diagram for prior\_hessian::GammaDist:





Collaboration diagram for prior\_hessian::GammaDist:



### Public Types

- using `NparamsVecT` = `arma::Col< double >::fixed< _num_params >`

### Public Member Functions

- `GammaDist` (double `scale`, double `shape`)
- `GammaDist` ()
- `template<class Vec , meta::ConstructableIfNotSelfT< Vec, GammaDist > = true>`  
`GammaDist` (const Vec &`params`)
- double `get_param` (int `idx`) const
- void `set_param` (int `idx`, double `val`)
- `NparamsVecT params` () const
- `template<class Vec >`  
void `set_params` (const Vec &`p`)
- void `set_params` (double `scale`, double `shape`)
- bool `operator==` (const `GammaDist` &`o`) const
- bool `operator!=` (const `GammaDist` &`o`) const
- double `scale` () const
- double `shape` () const
- void `set_scale` (double `val`)
- void `set_shape` (double `val`)
- double `mean` () const
- double `median` () const
- double `cdf` (double `x`) const
- double `icdf` (double `u`) const
- double `pdf` (double `x`) const
- double `llh` (double `x`) const
- double `rllh` (double `x`) const

- double [grad](#) (double x) const
- double [grad2](#) (double x) const
- void [grad\\_grad2\\_accumulate](#) (double x, double &g, double &g2) const
- template<class RngT >  
double [sample](#) (RngT &rng) const
- template<class IterT >  
void [set\\_params\\_iter](#) (IterT &params)

#### Static Public Member Functions

- static constexpr [IdxT](#) [num\\_params](#) ()
- static constexpr double [lbound](#) ()
- static constexpr double [ubound](#) ()
- static bool [in\\_bounds](#) (double u)
- static const [StringVecT](#) & [param\\_names](#) ()
- static const [NparamsVecT](#) & [param\\_lbound](#) ()
- static const [NparamsVecT](#) & [param\\_ubound](#) ()
- static bool [check\\_params](#) (double [shape](#), double [scale](#))
- template<class Vec >  
static bool [check\\_params](#) (const Vec &params)
- template<class IterT >  
static bool [check\\_params\\_iter](#) (IterT &params)
- static constexpr [IdxT](#) [num\\_dim](#) ()

#### Static Protected Member Functions

- static void [check\\_bounds](#) (double [lbound](#), double [ubound](#))

#### 7.37.1 Detailed Description

Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.

Definition at line 22 of file GammaDist.h.

#### 7.37.2 Member Typedef Documentation

7.37.2.1 using prior\_hessian::GammaDist::NparamsVecT = arma::Col<double>::fixed<\_num\_params>

Definition at line 26 of file GammaDist.h.

#### 7.37.3 Constructor & Destructor Documentation

7.37.3.1 prior\_hessian::GammaDist::GammaDist ( double *scale*, double *shape* )

Definition at line 25 of file GammaDist.cpp.

### 7.37.3.2 `prior_hessian::GammaDist::GammaDist ( ) [inline]`

Definition at line 43 of file GammaDist.h.

Referenced by `param_ubound()`.

Here is the caller graph for this function:

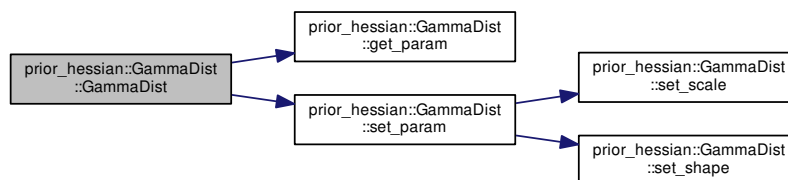


### 7.37.3.3 `template<class Vec , meta::ConstructableIfNotSelf< Vec, GammaDist > = true> prior_hessian::GammaDist::GammaDist ( const Vec & params ) [inline], [explicit]`

Definition at line 45 of file GammaDist.h.

References `get_param()`, and `set_param()`.

Here is the call graph for this function:



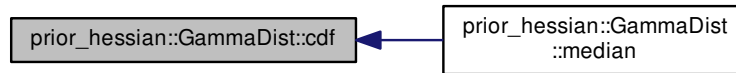
## 7.37.4 Member Function Documentation

### 7.37.4.1 `double prior_hessian::GammaDist::cdf ( double x ) const`

Definition at line 53 of file GammaDist.cpp.

Referenced by `median()`.

Here is the caller graph for this function:



**7.37.4.2** `void prior_hessian::UnivariateDist::check_bounds ( double lbound, double ubound )` `[static]`, `[protected]`, `[inherited]`

Definition at line 22 of file `UnivariateDist.cpp`.

Referenced by `prior_hessian::UnivariateDist::UnivariateDist()`.

Here is the caller graph for this function:

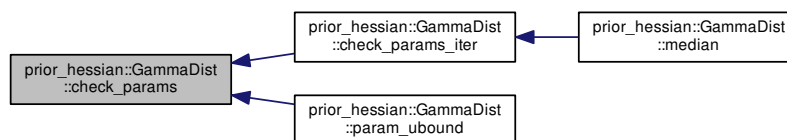


**7.37.4.3** `bool prior_hessian::GammaDist::check_params ( double shape, double scale )` `[inline]`, `[static]`

Definition at line 107 of file `GammaDist.h`.

Referenced by `check_params_iter()`, and `param_ubound()`.

Here is the caller graph for this function:



7.37.4.4 `template<class Vec > bool prior_hessian::GammaDist::check_params ( const Vec & params ) [static]`

Definition at line 113 of file GammaDist.h.

References `params()`.

Here is the call graph for this function:



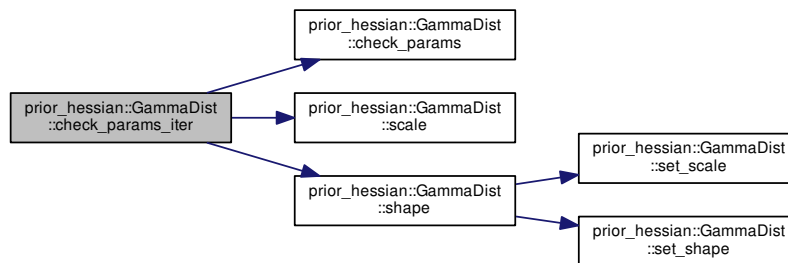
7.37.4.5 `template<class IterT > bool prior_hessian::GammaDist::check_params_iter ( IterT & params ) [static]`

Definition at line 183 of file GammaDist.h.

References `check_params()`, `scale()`, and `shape()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



#### 7.37.4.6 double prior\_hessian::GammaDist::get\_param ( int *idx* ) const [inline]

Definition at line 119 of file GammaDist.h.

Referenced by GammaDist().

Here is the caller graph for this function:



#### 7.37.4.7 double prior\_hessian::GammaDist::grad ( double *x* ) const [inline]

Definition at line 155 of file GammaDist.h.

Referenced by median().

Here is the caller graph for this function:



#### 7.37.4.8 double prior\_hessian::GammaDist::grad2 ( double *x* ) const [inline]

Definition at line 161 of file GammaDist.h.

Referenced by median().

Here is the caller graph for this function:

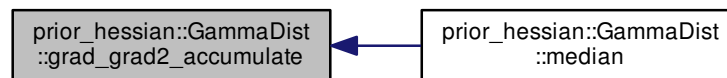


7.37.4.9 `void prior_hessian::GammaDist::grad_grad2_accumulate ( double x, double & g, double & g2 ) const` `[inline]`

Definition at line 167 of file GammaDist.h.

Referenced by `median()`.

Here is the caller graph for this function:

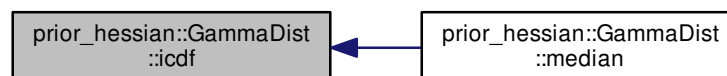


7.37.4.10 `double prior_hessian::GammaDist::icdf ( double u ) const`

Definition at line 58 of file GammaDist.cpp.

Referenced by `median()`.

Here is the caller graph for this function:

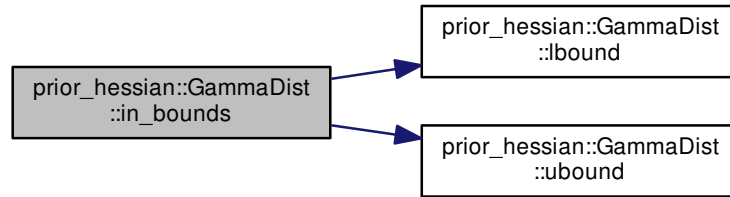


7.37.4.11 `static bool prior_hessian::GammaDist::in_bounds ( double u )` `[inline]`, `[static]`

Definition at line 32 of file GammaDist.h.

References `lbound()`, and `ubound()`.

Here is the call graph for this function:



7.37.4.12 `static constexpr double prior_hessian::GammaDist::lbound ( ) [inline], [static]`

Definition at line 30 of file `GammaDist.h`.

Referenced by `in_bounds()`.

Here is the caller graph for this function:



7.37.4.13 `double prior_hessian::GammaDist::llh ( double x ) const`

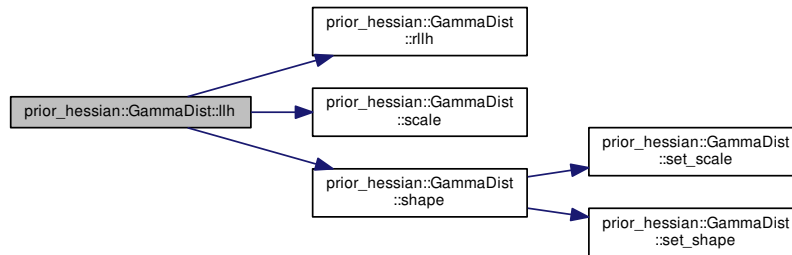
Definition at line 72 of file `GammaDist.cpp`.

References `rllh()`, `scale()`, and `shape()`.

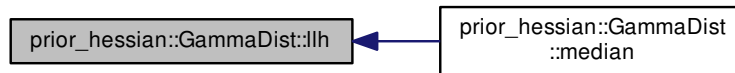
Referenced by `median()`.



Here is the call graph for this function:



Here is the caller graph for this function:



**7.37.4.14** `double prior_hessian::GammaDist::mean ( ) const` `[inline]`

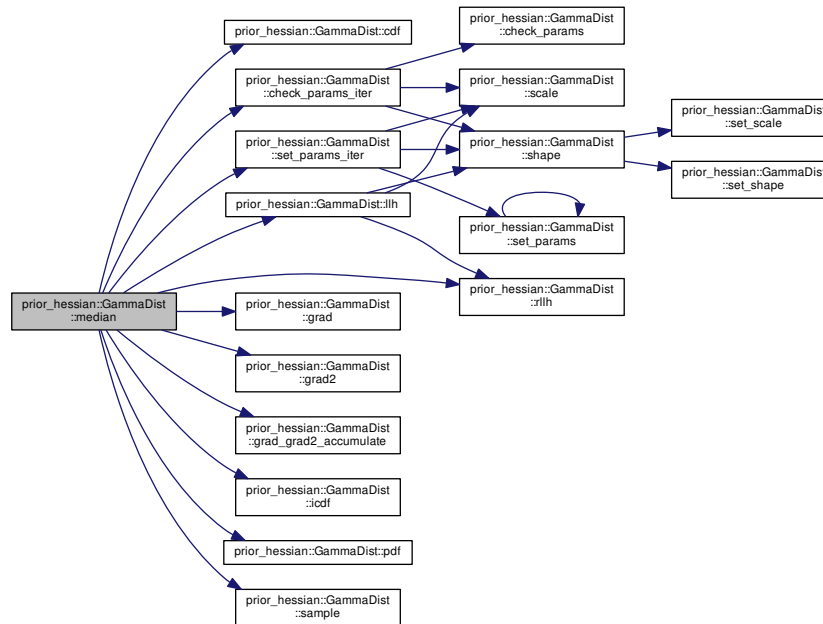
Definition at line 61 of file `GammaDist.h`.

**7.37.4.15** `double prior_hessian::GammaDist::median ( ) const` `[inline]`

Definition at line 62 of file `GammaDist.h`.

References `cdf()`, `check_params_iter()`, `grad()`, `grad2()`, `grad_grad2_accumulate()`, `icdf()`, `llh()`, `pdf()`, `rllh()`, `sample()`, and `set_params_iter()`.

Here is the call graph for this function:



**7.37.4.16** `static constexpr IdxT prior_hessian::UnivariateDist::num_dim ( )` `[inline]`, `[static]`, `[inherited]`

Definition at line 17 of file UnivariateDist.h.

**7.37.4.17** `static constexpr IdxT prior_hessian::GammaDist::num_params ( )` `[inline]`, `[static]`

Definition at line 29 of file GammaDist.h.

**7.37.4.18** `bool prior_hessian::GammaDist::operator!= ( const GammaDist & o ) const` `[inline]`

Definition at line 54 of file GammaDist.h.

References `operator==( )`.

Here is the call graph for this function:



7.37.4.19 `bool prior_hessian::GammaDist::operator==( const GammaDist & o ) const [inline]`

Definition at line 53 of file GammaDist.h.

Referenced by `operator!=( )`.

Here is the caller graph for this function:



7.37.4.20 `static const NparamsVecT& prior_hessian::GammaDist::param_lbound ( ) [inline],[static]`

Definition at line 35 of file GammaDist.h.

7.37.4.21 `static const StringVecT& prior_hessian::GammaDist::param_names ( ) [inline],[static]`

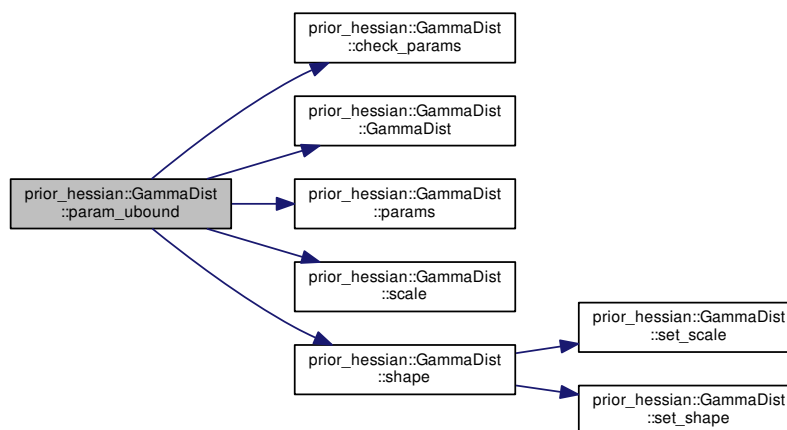
Definition at line 34 of file GammaDist.h.

7.37.4.22 `static const NparamsVecT& prior_hessian::GammaDist::param_ubound ( ) [inline],[static]`

Definition at line 36 of file GammaDist.h.

References `check_params()`, `GammaDist()`, `params()`, `scale()`, and `shape()`.

Here is the call graph for this function:

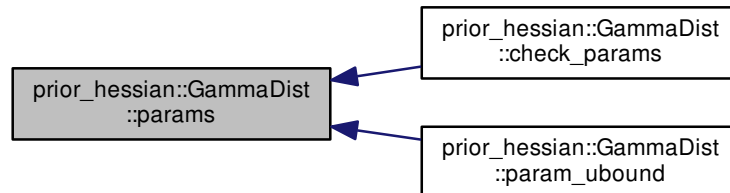


#### 7.37.4.23 NparamsVecT prior\_hessian::GammaDist::params ( ) const [inline]

Definition at line 49 of file GammaDist.h.

Referenced by check\_params(), and param\_ubound().

Here is the caller graph for this function:

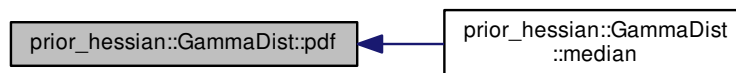


#### 7.37.4.24 double prior\_hessian::GammaDist::pdf ( double x ) const

Definition at line 65 of file GammaDist.cpp.

Referenced by median().

Here is the caller graph for this function:

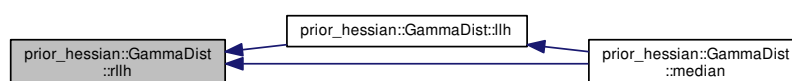


#### 7.37.4.25 double prior\_hessian::GammaDist::rllh ( double x ) const [inline]

Definition at line 149 of file GammaDist.h.

Referenced by llh(), and median().

Here is the caller graph for this function:

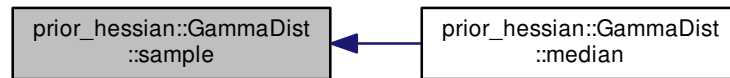


7.37.4.26 `template<class RngT > double prior_hessian::GammaDist::sample ( RngT & rng ) const`

Definition at line 175 of file GammaDist.h.

Referenced by `median()`.

Here is the caller graph for this function:

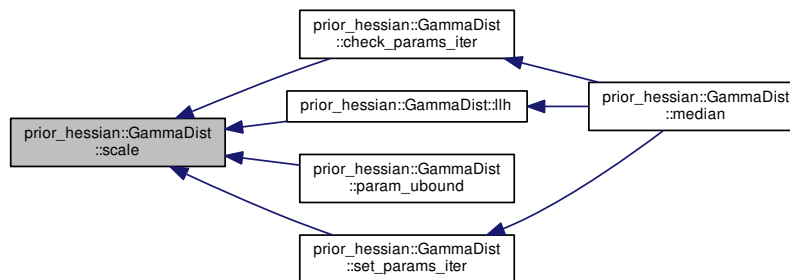


7.37.4.27 `double prior_hessian::GammaDist::scale ( ) const [inline]`

Definition at line 56 of file GammaDist.h.

Referenced by `check_params_iter()`, `llh()`, `param_ubound()`, and `set_params_iter()`.

Here is the caller graph for this function:



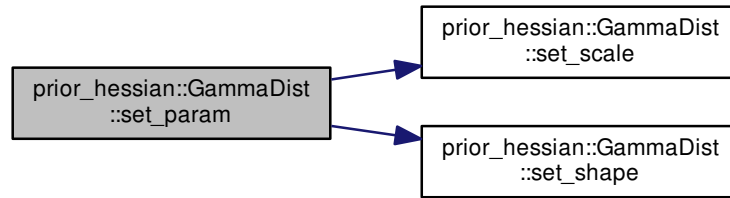
7.37.4.28 `void prior_hessian::GammaDist::set_param ( int idx, double val ) [inline]`

Definition at line 133 of file GammaDist.h.

References `set_scale()`, and `set_shape()`.

Referenced by `GammaDist()`.

Here is the call graph for this function:



Here is the caller graph for this function:



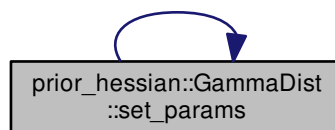
7.37.4.29 `template<class Vec > void prior_hessian::GammaDist::set_params ( const Vec & p ) [inline]`

Definition at line 51 of file `GammaDist.h`.

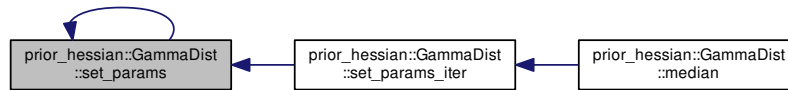
References `set_params()`.

Referenced by `set_params()`, and `set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:



#### 7.37.4.30 void prior\_hessian::GammaDist::set\_params ( double *scale*, double *shape* )

Definition at line 46 of file GammaDist.cpp.

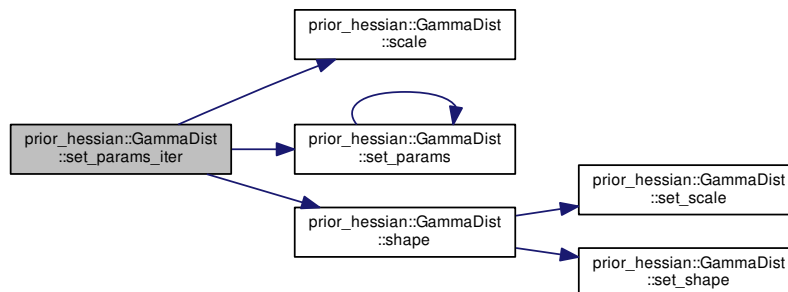
#### 7.37.4.31 template<class IterT > void prior\_hessian::GammaDist::set\_params\_iter ( IterT & *params* )

Definition at line 191 of file GammaDist.h.

References `scale()`, `set_params()`, and `shape()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

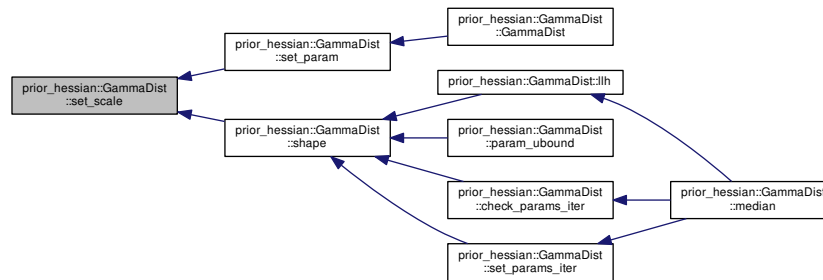


## 7.37.4.32 void prior\_hessian::GammaDist::set\_scale ( double val )

Definition at line 34 of file GammaDist.cpp.

Referenced by set\_param(), and shape().

Here is the caller graph for this function:

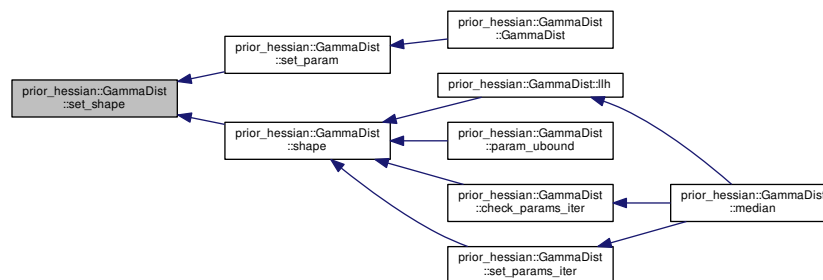


## 7.37.4.33 void prior\_hessian::GammaDist::set\_shape ( double val )

Definition at line 40 of file GammaDist.cpp.

Referenced by set\_param(), and shape().

Here is the caller graph for this function:





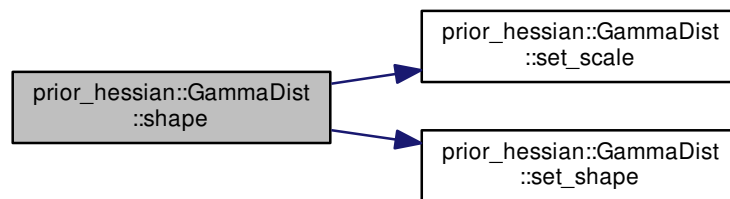
#### 7.37.4.34 `double prior_hessian::GammaDist::shape ( ) const [inline]`

Definition at line 57 of file GammaDist.h.

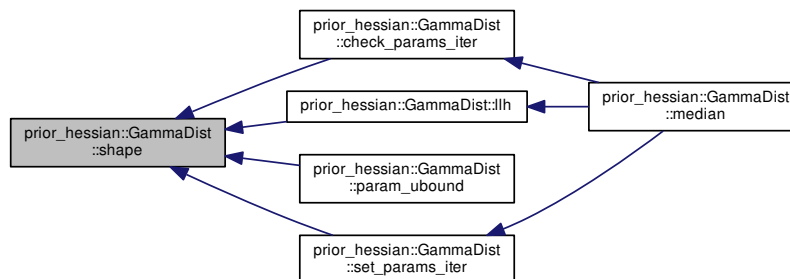
References `set_scale()`, and `set_shape()`.

Referenced by `check_params_iter()`, `llh()`, `param_ubound()`, and `set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:

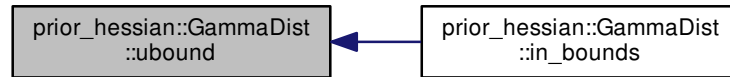


#### 7.37.4.35 `static constexpr double prior_hessian::GammaDist::ubound ( ) [inline],[static]`

Definition at line 31 of file GammaDist.h.

Referenced by `in_bounds()`.

Here is the caller graph for this function:



The documentation for this class was generated from the following files:

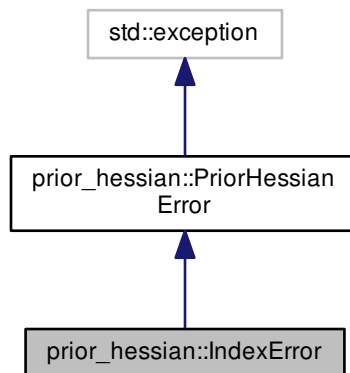
- [GammaDist.h](#)
- [GammaDist.cpp](#)

## 7.38 prior\_hessian::IndexError Struct Reference

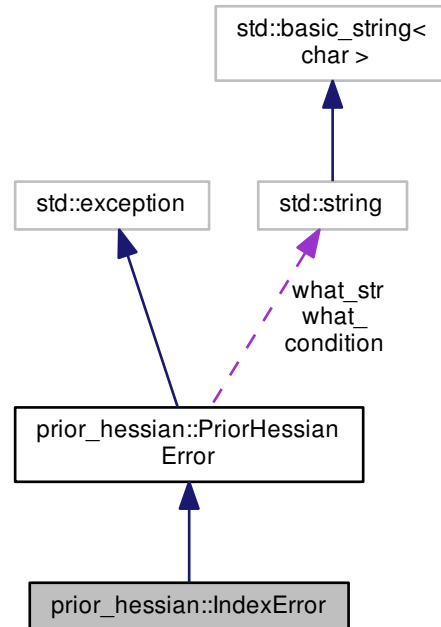
Indicates a index access was out of bounds.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/PriorHessianError.h>
```

Inheritance diagram for `prior_hessian::IndexError`:



Collaboration diagram for `prior_hessian::IndexError`:



#### Public Member Functions

- `IndexError` (`std::string` message)
- `const char * what () const noexcept override`

#### Protected Attributes

- `std::string condition`
- `std::string what_str`
- `std::string what_`

#### 7.38.1 Detailed Description

Indicates a index access was out of bounds.

Definition at line 65 of file `PriorHessianError.h`.

### 7.38.2 Constructor & Destructor Documentation

#### 7.38.2.1 `prior_hessian::IndexError::IndexError ( std::string message )` `[inline]`

Definition at line 67 of file `PriorHessianError.h`.

### 7.38.3 Member Function Documentation

#### 7.38.3.1 `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file `PriorHessianError.h`.

### 7.38.4 Member Data Documentation

#### 7.38.4.1 `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file `PriorHessianError.h`.

#### 7.38.4.2 `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file `PriorHessianError.h`.

#### 7.38.4.3 `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file `PriorHessianError.h`.

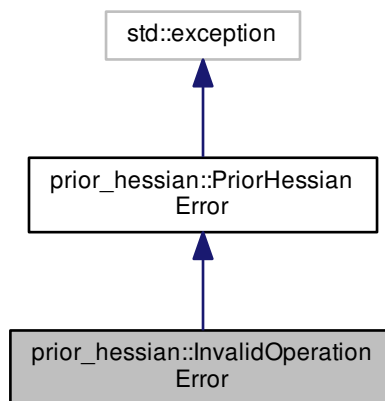
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

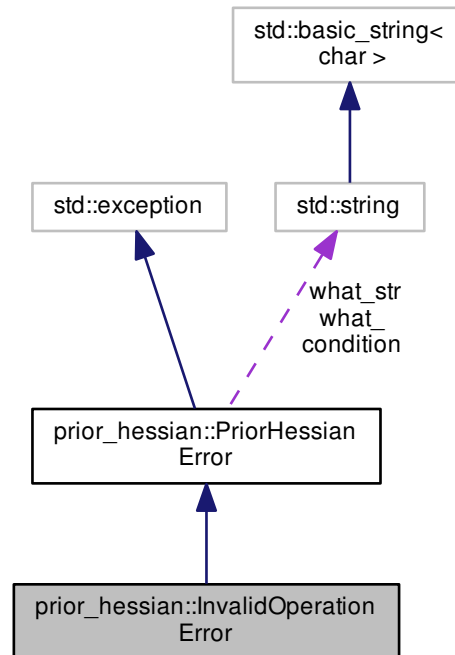
### 7.39 prior\_hessian::InvalidOperationError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::InvalidOperationError:



Collaboration diagram for prior\_hessian::InvalidOperationError:



#### Public Member Functions

- [InvalidOperationError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.39.1 Detailed Description

Definition at line 70 of file PriorHessianError.h.

#### 7.39.2 Constructor & Destructor Documentation

##### 7.39.2.1 prior\_hessian::InvalidOperationError::InvalidOperationError ( std::string *message* ) [inline]

Definition at line 72 of file PriorHessianError.h.

### 7.39.3 Member Function Documentation

**7.39.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline], [override], [noexcept], [inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.39.4 Member Data Documentation

**7.39.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected], [inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.39.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected], [inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.39.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected], [inherited]`

Definition at line 47 of file PriorHessianError.h.

The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

## 7.40 prior\_hessian::meta::is\_copula< T, U > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
Meta.h>
```

### Static Public Attributes

- static constexpr bool [value](#) = decltype(is\_copula::test(std::declval<U>()))::value

### 7.40.1 Detailed Description

```
template<template< template< int > class, class... > class T, typename U>
class prior_hessian::meta::is_copula< T, U >
```

Definition at line 102 of file Meta.h.

## 7.40.2 Member Data Documentation

7.40.2.1 `template<template< template< int > class, class... > class T, typename U > constexpr bool  
prior_hessian::meta::is_copula< T, U >::value = decltype(is_copula::test(std::declval<U>()))::value [static]`

Definition at line 107 of file Meta.h.

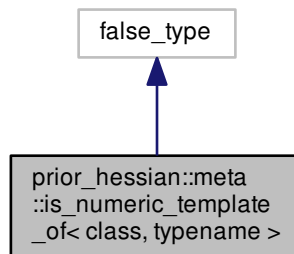
The documentation for this class was generated from the following file:

- [Meta.h](#)

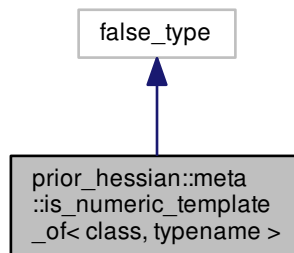
## 7.41 prior\_hessian::meta::is\_numeric\_template\_of&lt; class, typename &gt; Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::is\_numeric\_template\_of< class, typename >:



Collaboration diagram for prior\_hessian::meta::is\_numeric\_template\_of< class, typename >:





### 7.41.1 Detailed Description

```
template<template< int... > class, typename>
struct prior_hessian::meta::is_numeric_template_of< class, typename >
```

Definition at line 86 of file Meta.h.

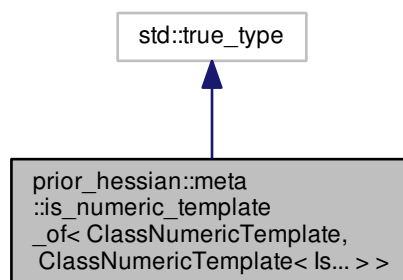
The documentation for this struct was generated from the following file:

- [Meta.h](#)

### 7.42 prior\_hessian::meta::is\_numeric\_template\_of< ClassNumericTemplate, ClassNumericTemplate< Is... > > Struct Template Reference

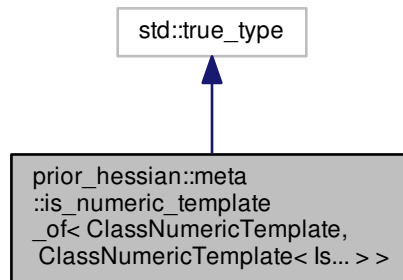
```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::is\_numeric\_template\_of< ClassNumericTemplate, ClassNumericTemplate< Is... > >:



Collaboration diagram for prior\_hessian::meta::is\_numeric\_template\_of< ClassNumericTemplate, ClassNumericTemplate< Is... > >:

Template< Is... > >:



#### 7.42.1 Detailed Description

```
template<template< int... > class ClassNumericTemplate, int... Is>
struct prior_hessian::meta::is_numeric_template_of< ClassNumericTemplate, ClassNumericTemplate< Is... > >
```

Definition at line 89 of file Meta.h.

The documentation for this struct was generated from the following file:

- [Meta.h](#)

### 7.43 prior\_hessian::meta::is\_subclass\_of\_numeric\_template< T, U > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
Meta.h>
```

#### Static Public Attributes

- static constexpr bool [value](#) = decltype(is\_subclass\_of\_numeric\_template::test(std::declval<U>()))::value

#### 7.43.1 Detailed Description

```
template<template< int... > class T, typename U>
class prior_hessian::meta::is_subclass_of_numeric_template< T, U >
```

Definition at line 92 of file Meta.h.

### 7.43.2 Member Data Documentation

7.43.2.1 `template<template< int... > class T, typename U> constexpr bool prior_hessian::meta::is_subclass_of_↵  
 numeric_template< T, U >::value = decltype(is_subclass_of_numeric_template::test(std::declval<U>()))::value  
 [static]`

Definition at line 97 of file Meta.h.

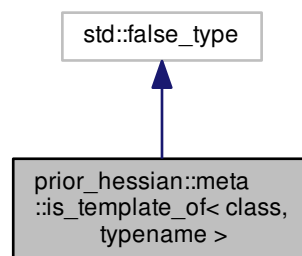
The documentation for this class was generated from the following file:

- [Meta.h](#)

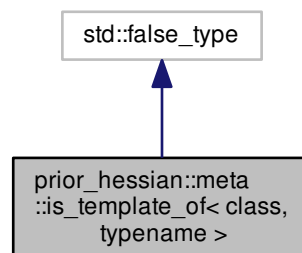
### 7.44 prior\_hessian::meta::is\_template\_of< class, typename > Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::is\_template\_of< class, typename >:



Collaboration diagram for prior\_hessian::meta::is\_template\_of< class, typename >:



## 7.44.1 Detailed Description

```
template<template< typename... > class, typename>  
struct prior_hessian::meta::is_template_of< class, typename >
```

Definition at line 79 of file Meta.h.

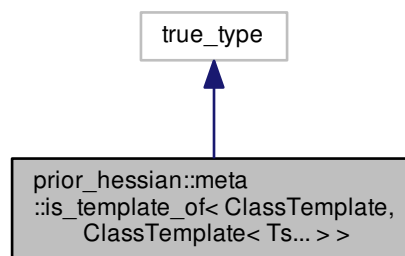
The documentation for this struct was generated from the following file:

- [Meta.h](#)

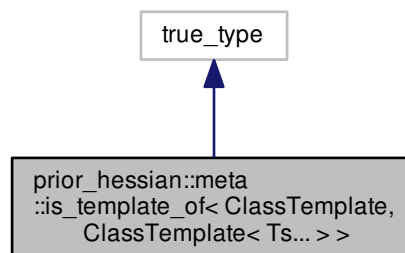
## 7.45 prior\_hessian::meta::is\_template\_of&lt; ClassTemplate, ClassTemplate&lt; Ts... &gt; &gt; Struct Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
Meta.h>
```

Inheritance diagram for prior\_hessian::meta::is\_template\_of< ClassTemplate, ClassTemplate< Ts... > >:



Collaboration diagram for prior\_hessian::meta::is\_template\_of< ClassTemplate, ClassTemplate< Ts... > >:



### 7.45.1 Detailed Description

```
template<template< typename... > class ClassTemplate, typename... Ts>
struct prior_hessian::meta::is_template_of< ClassTemplate, ClassTemplate< Ts... > >
```

Definition at line 82 of file Meta.h.

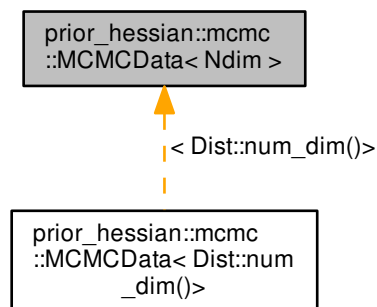
The documentation for this struct was generated from the following file:

- [Meta.h](#)

## 7.46 prior\_hessian::mcmc::MCMCData< Ndim > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
TruncatedMultivariateDist.h>
```

Inheritance diagram for prior\_hessian::mcmc::MCMCData< Ndim >:



### Public Types

- using [NdimVecT](#) = arma::Col< double >::fixed< Ndim >

### Public Member Functions

- [MCMCData](#) ()
- [MCMCData](#) (const [MCMCData](#)< Ndim > &o)
- [MCMCData](#)< Ndim > & [operator=](#) (const [MCMCData](#)< Ndim > &o)

## Public Attributes

- [NdimVecT sample](#)
- double [rllh](#)
- int [nsample](#) =0
- std::mutex [mutex](#)

## 7.46.1 Detailed Description

```
template<int Ndim>
class prior_hessian::mcmc::MCMCData< Ndim >
```

Definition at line 22 of file TruncatedMultivariateDist.h.

## 7.46.2 Member Typedef Documentation

7.46.2.1 `template<int Ndim> using prior_hessian::mcmc::MCMCData< Ndim >::NdimVecT = arma::Col<double>::fixed<Ndim>`

Definition at line 24 of file TruncatedMultivariateDist.h.

## 7.46.3 Constructor &amp; Destructor Documentation

7.46.3.1 `template<int Ndim> prior_hessian::mcmc::MCMCData< Ndim >::MCMCData ( ) [inline]`

Definition at line 25 of file TruncatedMultivariateDist.h.

7.46.3.2 `template<int Ndim> prior_hessian::mcmc::MCMCData< Ndim >::MCMCData ( const MCMCData< Ndim > & o ) [inline]`

Definition at line 26 of file TruncatedMultivariateDist.h.

## 7.46.4 Member Function Documentation

7.46.4.1 `template<int Ndim> MCMCData<Ndim>& prior_hessian::mcmc::MCMCData< Ndim >::operator= ( const MCMCData< Ndim > & o ) [inline]`

Definition at line 37 of file TruncatedMultivariateDist.h.

### 7.46.5 Member Data Documentation

**7.46.5.1** `template<int Ndim> std::mutex prior_hessian::mcmc::MCMCData< Ndim >::mutex` [mutable]

Definition at line 51 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::MCMCData()`, and `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::operator=()`.

**7.46.5.2** `template<int Ndim> int prior_hessian::mcmc::MCMCData< Ndim >::nsample = 0`

Definition at line 50 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::MCMCData()`, and `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::operator=()`.

**7.46.5.3** `template<int Ndim> double prior_hessian::mcmc::MCMCData< Ndim >::rllh`

Definition at line 49 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::MCMCData()`, `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::operator=()`, and `prior_hessian::TruncatedMultivariateDist< Dist >::sample()`.

**7.46.5.4** `template<int Ndim> NdimVecT prior_hessian::mcmc::MCMCData< Ndim >::sample`

Definition at line 48 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::MCMCData()`, `prior_hessian::TruncatedMultivariateDist< Dist >::mean()`, `prior_hessian::mcmc::MCMCData< Dist::num_dim()>::operator=()`, and `prior_hessian::TruncatedMultivariateDist< Dist >::sample()`.

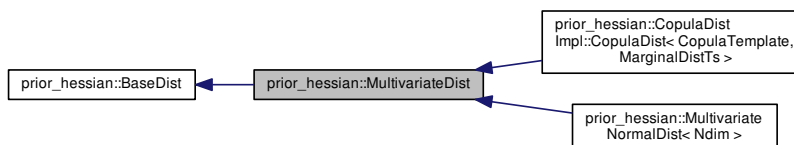
The documentation for this class was generated from the following file:

- [TruncatedMultivariateDist.h](#)

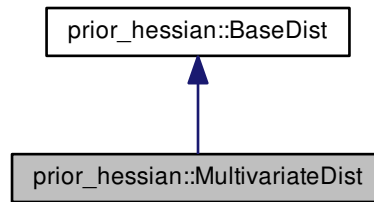
## 7.47 prior\_hessian::MultivariateDist Class Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/TruncatedMultivariateDist.h>
```

Inheritance diagram for `prior_hessian::MultivariateDist`:



Collaboration diagram for prior\_hessian::MultivariateDist:



#### Public Member Functions

- [MultivariateDist](#) ()

#### Static Protected Member Functions

- `template<class Vec >`  
static void [check\\_bounds](#) (const Vec &lbound, const Vec &ubound)

#### 7.47.1 Detailed Description

Definition at line 15 of file MultivariateDist.h.

#### 7.47.2 Constructor & Destructor Documentation

##### 7.47.2.1 prior\_hessian::MultivariateDist::MultivariateDist ( ) [inline]

Definition at line 18 of file MultivariateDist.h.

#### 7.47.3 Member Function Documentation

##### 7.47.3.1 `template<class Vec > static void prior_hessian::MultivariateDist::check_bounds ( const Vec & lbound, const Vec & ubound ) [inline], [static], [protected]`

Definition at line 57 of file MultivariateDist.h.

The documentation for this class was generated from the following file:

- [MultivariateDist.h](#)

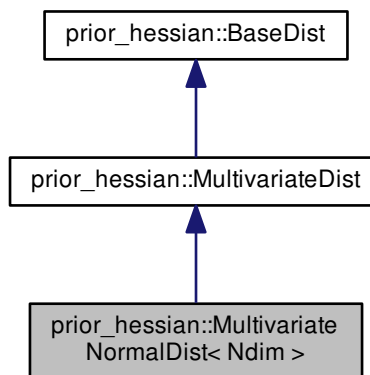


## 7.48 prior\_hessian::MultivariateNormalDist< Ndim > Class Template Reference

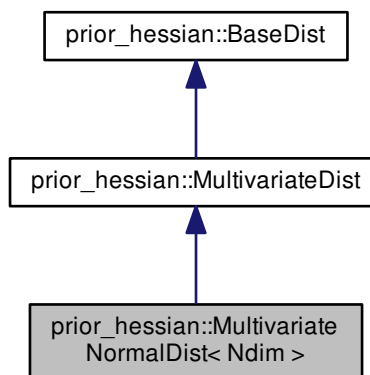
Multivariate Normal distribution.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
MultivariateNormalDist.h>
```

Inheritance diagram for prior\_hessian::MultivariateNormalDist< Ndim >:



Collaboration diagram for prior\_hessian::MultivariateNormalDist< Ndim >:



## Public Types

- using `NdimVecT` = `arma::Col< double >::fixed< Ndim >`
- using `NdimMatT` = `arma::Mat< double >::fixed< Ndim, Ndim >`
- using `NparamsVecT` = `arma::Col< double >::fixed< _num_params >`

## Public Member Functions

- `MultivariateNormalDist` ()
- `template<class Vec , class Mat >`  
`MultivariateNormalDist` (Vec &&`mu`, Mat &&`sigma`)
- `const NdimVecT & mu` () const
- `const NdimMatT & sigma` () const
- `const NdimMatT & sigma_inv` () const
- `template<class Vec >`  
`void set_mu` (Vec &&`val`)
- `template<class Mat >`  
`void set_sigma` (Mat &&`val`)
- `bool operator==` (const `MultivariateNormalDist`< Ndim > &`o`) const
- `bool operator!=` (const `MultivariateNormalDist`< Ndim > &`o`) const
- `double get_param` (int `idx`) const
- `NparamsVecT params` () const
- `template<class Vec >`  
`void set_params` (const Vec &`p`)
- `template<class Vec , class Mat >`  
`void set_params` (Vec &&`mu`, Mat &&`sigma`)
- `NdimVecT mean` () const
- `NdimVecT mode` () const
- `template<class Vec >`  
`double cdf` (Vec `x`) const
- `template<class Vec >`  
`double pdf` (const Vec &`x`) const
- `template<class Vec >`  
`double llh` (const Vec &`x`) const
- `template<class Vec >`  
`double rllh` (const Vec &`x`) const
- `template<class Vec >`  
`NdimVecT grad` (const Vec &`x`) const
- `template<class Vec >`  
`NdimVecT grad2` (const Vec &`x`) const
- `template<class Vec >`  
`NdimMatT hess` (const Vec &`x`) const
- `template<class Vec , class Vec2 >`  
`void grad_grad2_accumulate` (const Vec &`x`, Vec2 &`g`, Vec2 &`g2`) const
- `template<class Vec , class Vec2 , class Mat >`  
`void grad_hess_accumulate` (const Vec &`x`, Vec2 &`g`, Mat &`hess`) const
- `template<class RngT >`  
`NdimVecT sample` (RngT &`rng`) const
- `template<class IterT >`  
`void append_params` (IterT &`params`) const
- `template<class IterT >`  
`void set_params_iter` (IterT &`params`)
- `template<>`  
`double cdf` (Vec `x`) const

### Static Public Member Functions

- static constexpr `IdxT num_params ()`
- static constexpr `IdxT num_dim ()`
- static const `NdimVecT & lbound ()`
- static const `NdimVecT & ubound ()`
- template<class Vec >  
static bool `in_bounds` (const Vec &u)
- static const `StringVecT & param_names ()`
- static const `NparamsVecT & param_lbound ()`
- static const `NparamsVecT & param_ubound ()`
- template<class Vec >  
static bool `check_mu` (const Vec &mu)
- template<class Mat >  
static bool `check_sigma` (const Mat &sigma)
- template<class Vec , class Mat >  
static bool `check_params` (const Vec &mu, const Mat &sigma)
- template<class Vec >  
static bool `check_params` (const Vec &params)
- template<class IterT >  
static bool `check_params_iter` (IterT &params)

### Static Protected Member Functions

- template<class Vec >  
static void `check_bounds` (const Vec &lbound, const Vec &ubound)

#### 7.48.1 Detailed Description

```
template<int Ndim>
class prior_hessian::MultivariateNormalDist< Ndim >
```

Multivariate Normal distribution.

#### Parameters

<i>Ndim</i>	Number of dimensions $\geq 2$
-------------	-------------------------------

Definition at line 20 of file MultivariateNormalDist.h.

#### 7.48.2 Member Typedef Documentation

7.48.2.1 `template<int Ndim> using prior_hessian::MultivariateNormalDist< Ndim >::NdimMatT = arma::Mat<double>::fixed<Ndim,Ndim>`

Definition at line 26 of file MultivariateNormalDist.h.

7.48.2.2 `template<int Ndim> using prior_hessian::MultivariateNormalDist< Ndim >::NdimVecT = arma::Col<double>::fixed<Ndim>`

Definition at line 25 of file MultivariateNormalDist.h.

7.48.2.3 `template<int Ndim> using prior_hessian::MultivariateNormalDist< Ndim >::NparamsVecT = arma::Col<double>::fixed<_num_params>`

Definition at line 27 of file MultivariateNormalDist.h.

### 7.48.3 Constructor & Destructor Documentation

7.48.3.1 `template<int Ndim> prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist ( )`

Definition at line 174 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the caller graph for this function:

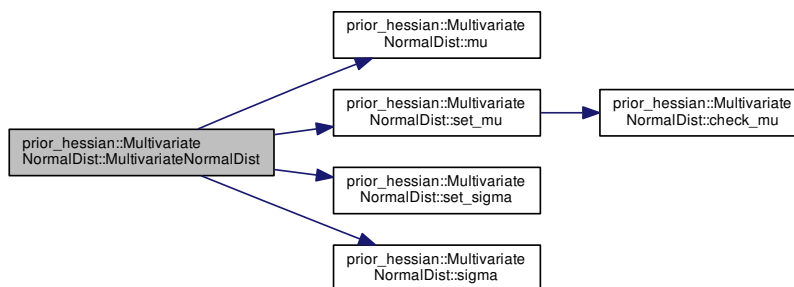


7.48.3.2 `template<int Ndim> template<class Vec , class Mat > prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist ( Vec && mu, Mat && sigma )`

Definition at line 187 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_sigma()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Here is the call graph for this function:

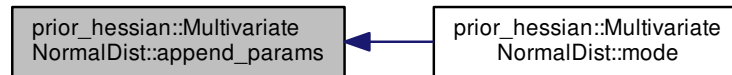


## 7.48.4 Member Function Documentation

7.48.4.1 `template<int Ndim> template<class IterT > void prior_hessian::MultivariateNormalDist< Ndim >::append_params ( IterT & params ) const`

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the caller graph for this function:



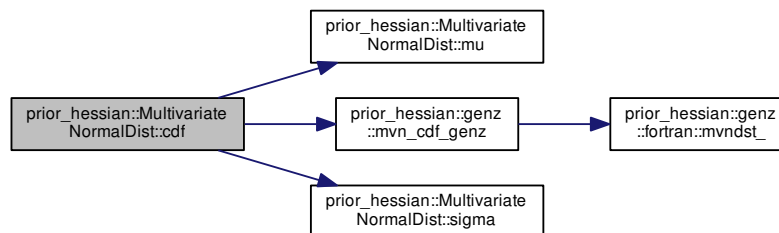
7.48.4.2 `template<int Ndim> template<class Vec > double prior_hessian::MultivariateNormalDist< Ndim >::cdf ( Vec x ) const`

Definition at line 481 of file `MultivariateNormalDist.h`.

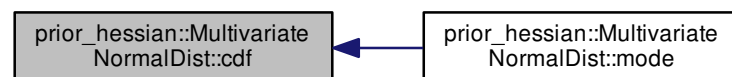
References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::genz::mvn_cdf_genz()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:

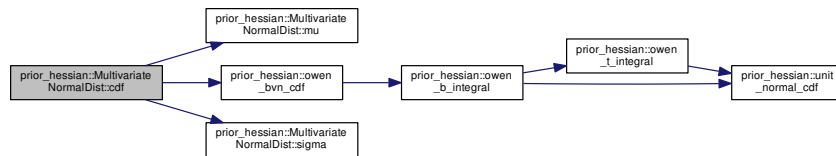


7.48.4.3 `template<> double prior_hessian::MultivariateNormalDist< 2 >::cdf ( Vec x ) const`

Definition at line 490 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::owen_bvn_cdf()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Here is the call graph for this function:

7.48.4.4 `template<class Vec > static void prior_hessian::MultivariateDist::check_bounds ( const Vec & lbound, const Vec & ubound ) [inline],[static],[protected],[inherited]`

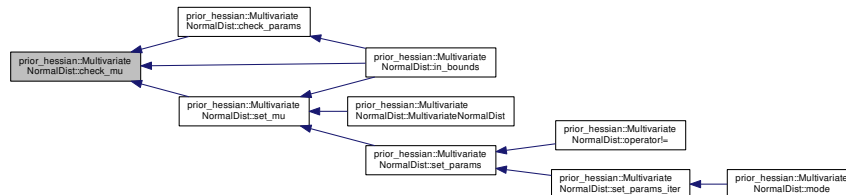
Definition at line 57 of file MultivariateDist.h.

7.48.4.5 `template<int Ndim> template<class Vec > bool prior_hessian::MultivariateNormalDist< Ndim >::check_mu ( const Vec & mu ) [static]`

Definition at line 196 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::check_params()`, `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_mu()`.

Here is the caller graph for this function:



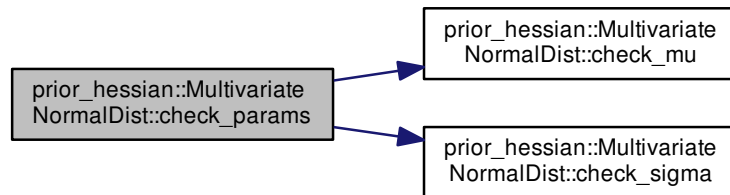
7.48.4.6 `template<int Ndim> template<class Vec , class Mat > bool prior_hessian::MultivariateNormalDist< Ndim >::check_params ( const Vec & mu, const Mat & sigma ) [static]`

Definition at line 213 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::check_mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::check_sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the call graph for this function:



Here is the caller graph for this function:

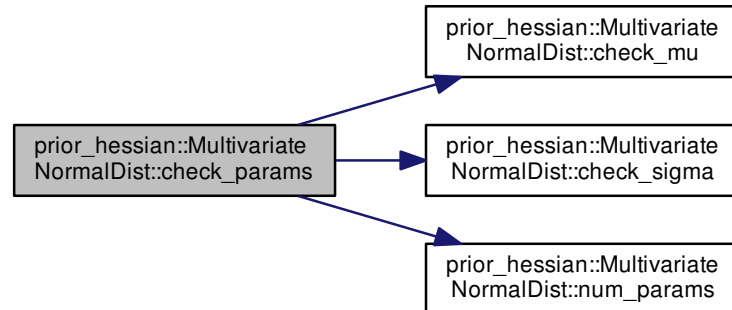


7.48.4.7 `template<int Ndim> template<class Vec > bool prior_hessian::MultivariateNormalDist< Ndim >::check_params ( const Vec & params ) [static]`

Definition at line 220 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::check_mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::check_sigma()`, and `prior_hessian::MultivariateNormalDist< Ndim >::num_params()`.

Here is the call graph for this function:



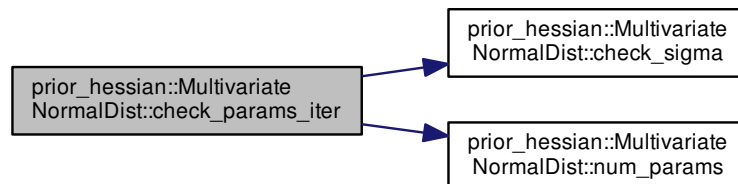
7.48.4.8 `template<int Ndim> template<class IterT > bool prior_hessian::MultivariateNormalDist< Ndim >::check_params_iter ( IterT & params ) [static]`

Definition at line 228 of file `MultivariateNormalDist.h`.

References `prior_hessian::MultivariateNormalDist< Ndim >::check_sigma()`, and `prior_hessian::MultivariateNormalDist< Ndim >::num_params()`.

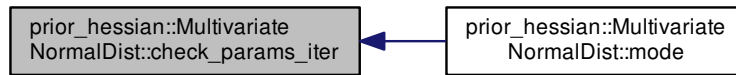
Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:





Here is the caller graph for this function:

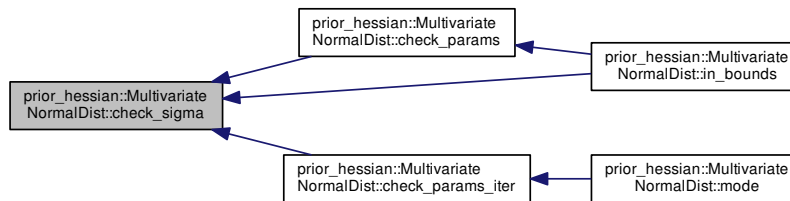


**7.48.4.9** `template<int Ndim> template<class Mat > bool prior_hessian::MultivariateNormalDist< Ndim >::check_sigma ( const Mat & sigma ) [static]`

Definition at line 203 of file `MultivariateNormalDist.h`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::check_params()`, `prior_hessian::MultivariateNormalDist< Ndim >::check_params_iter()`, and `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the caller graph for this function:



**7.48.4.10** `template<int Ndim> double prior_hessian::MultivariateNormalDist< Ndim >::get_param ( int idx ) const`

Definition at line 441 of file `MultivariateNormalDist.h`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::operator!==( )`.

Here is the caller graph for this function:



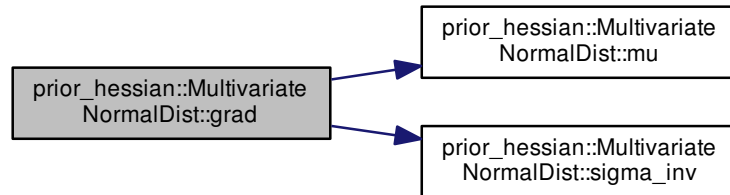
7.48.4.11 `template<int Ndim> template<class Vec > MultivariateNormalDist< Ndim >::NdimVecT  
prior_hessian::MultivariateNormalDist< Ndim >::grad ( const Vec & x ) const`

Definition at line 523 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



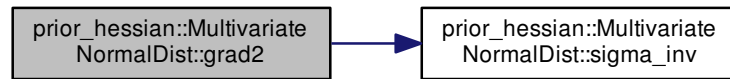
7.48.4.12 `template<int Ndim> template<class Vec > MultivariateNormalDist< Ndim >::NdimVecT  
prior_hessian::MultivariateNormalDist< Ndim >::grad2 ( const Vec & x ) const`

Definition at line 531 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



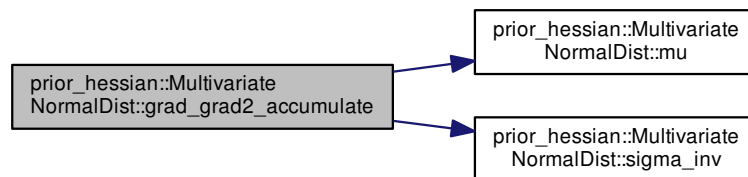
7.48.4.13 `template<int Ndim> template<class Vec , class Vec2 > void prior_hessian::MultivariateNormalDist< Ndim >::grad_grad2_accumulate ( const Vec & x, Vec2 & g, Vec2 & g2 ) const`

Definition at line 546 of file `MultivariateNormalDist.h`.

References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



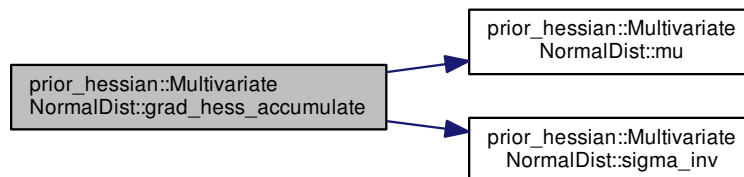
7.48.4.14 `template<int Ndim> template<class Vec , class Vec2 , class Mat > void prior_hessian::MultivariateNormalDist< Ndim >::grad_hess_accumulate ( const Vec & x, Vec2 & g, Mat & hess ) const`

Definition at line 554 of file `MultivariateNormalDist.h`.

References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



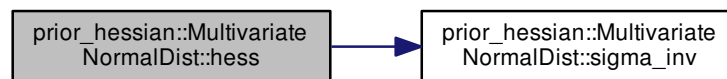
7.48.4.15 `template<int Ndim> template<class Vec > MultivariateNormalDist< Ndim >::NdimMatT  
prior_hessian::MultivariateNormalDist< Ndim >::hess ( const Vec & x ) const`

Definition at line 539 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:

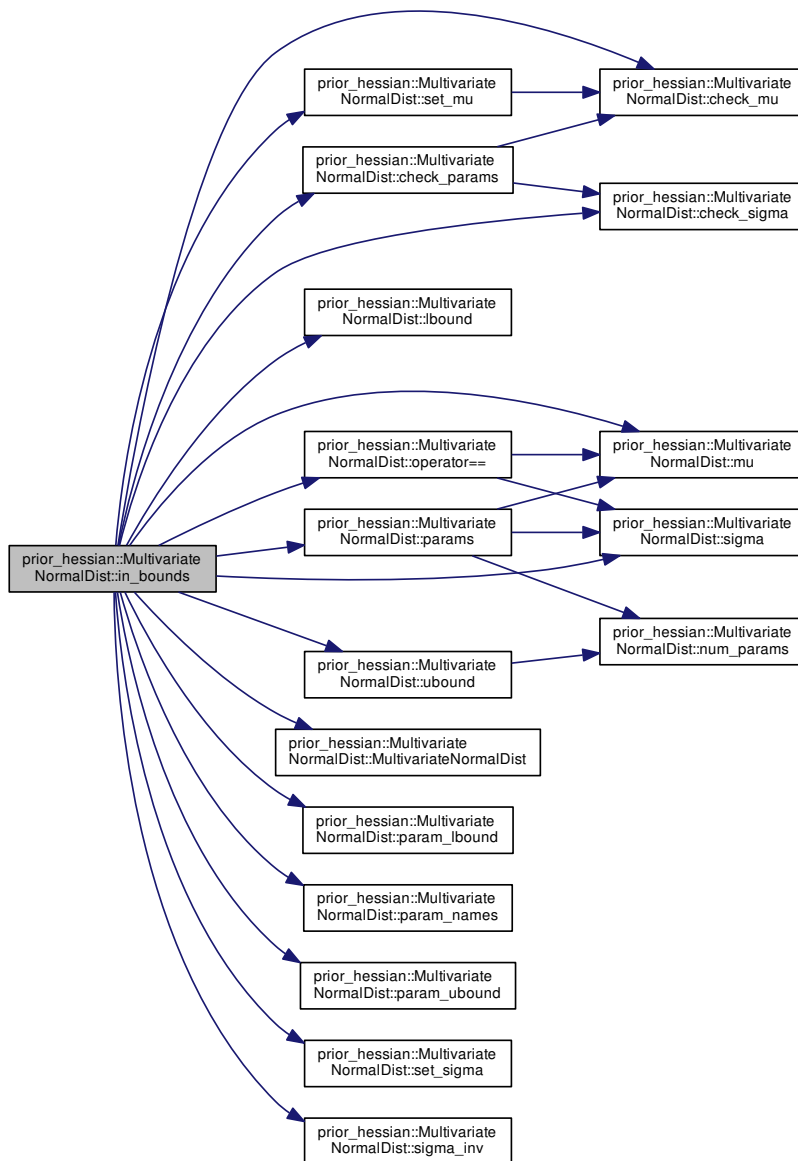


7.48.4.16 `template<int Ndim> template<class Vec > static bool prior_hessian::MultivariateNormalDist< Ndim  
>::in_bounds ( const Vec & u ) [inline],[static]`

Definition at line 34 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::check_mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::check_params()`, `prior_hessian::MultivariateNormalDist< Ndim >::check_sigma()`, `prior_hessian::MultivariateNormalDist< Ndim >::lbound()`, `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist()`, `prior_hessian::MultivariateNormalDist< Ndim >::operator==()`, `prior_hessian::MultivariateNormalDist< Ndim >::param_lbound()`, `prior_hessian::MultivariateNormalDist< Ndim >::param_names()`, `prior_hessian::MultivariateNormalDist< Ndim >::param_ubound()`, `prior_hessian::MultivariateNormalDist< Ndim >::params()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_sigma()`, `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`, `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`, and `prior_hessian::MultivariateNormalDist< Ndim >::ubound()`.

Here is the call graph for this function:

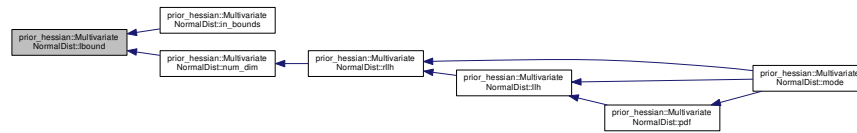


7.48.4.17 `template<int Ndim> const MultivariateNormalDist< Ndim >::NdimVecT & prior_hessian::MultivariateNormalDist< Ndim >::lbound ( ) [static]`

Definition at line 298 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::num_dim()`.

Here is the caller graph for this function:



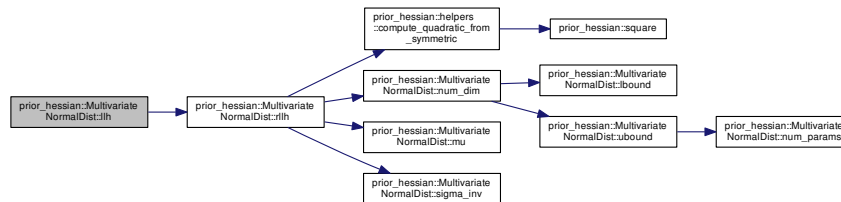
**7.48.4.18** `template<int Ndim> template<class Vec > double prior_hessian::MultivariateNormalDist< Ndim >::llh ( const Vec & x ) const`

Definition at line 507 of file MultivariateNormalDist.h.

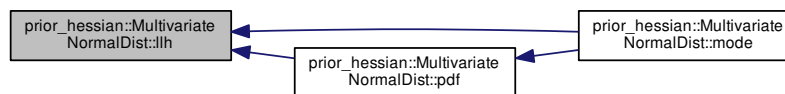
References `prior_hessian::MultivariateNormalDist< Ndim >::rllh()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`, and `prior_hessian::MultivariateNormalDist< Ndim >::pdf()`.

Here is the call graph for this function:



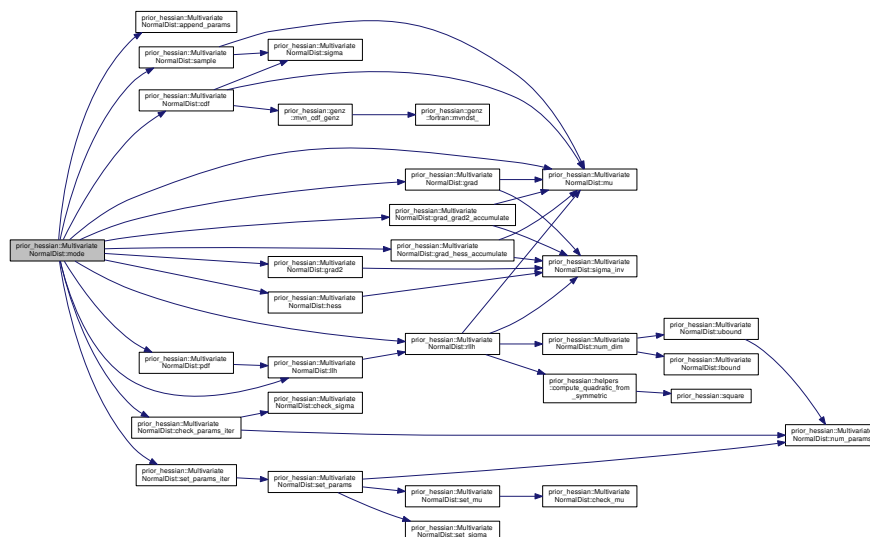
Here is the caller graph for this function:



Here is the call graph for this function:



Here is the call graph for this function:



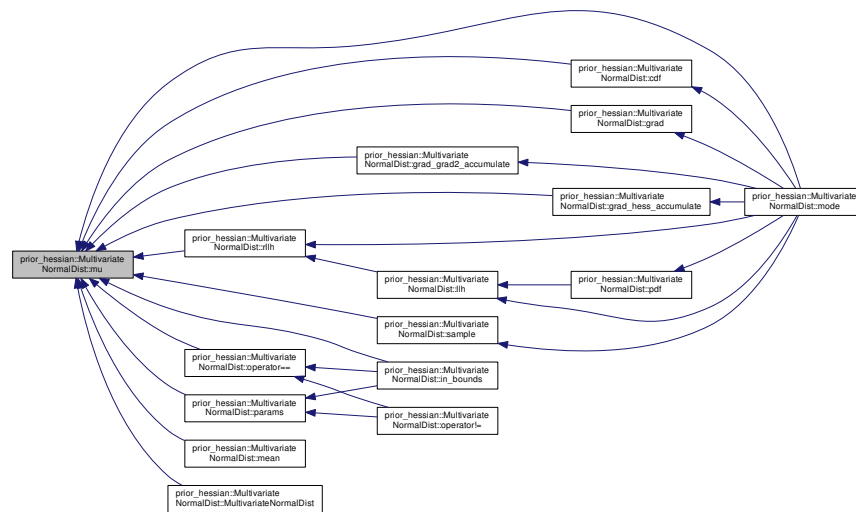


7.48.4.21 `template<int Ndim> const MultivariateNormalDist< Ndim >::NdimVecT & prior_hessian::MultivariateNormalDist< Ndim >::mu ( ) const`

Definition at line 376 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::cdf()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad_grad2_accumulate()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad_hess_accumulate()`, `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, `prior_hessian::MultivariateNormalDist< Ndim >::mean()`, `prior_hessian::MultivariateNormalDist< Ndim >::mode()`, `prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist()`, `prior_hessian::MultivariateNormalDist< Ndim >::operator==()`, `prior_hessian::MultivariateNormalDist< Ndim >::params()`, `prior_hessian::MultivariateNormalDist< Ndim >::rllh()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sample()`.

Here is the caller graph for this function:



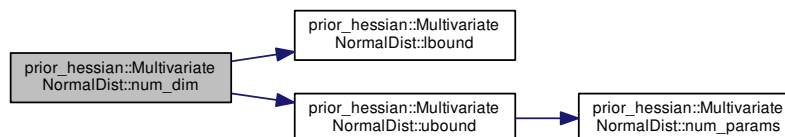
7.48.4.22 `template<int Ndim> static constexpr IdxT prior_hessian::MultivariateNormalDist< Ndim >::num_dim ( ) [inline], [static]`

Definition at line 30 of file MultivariateNormalDist.h.

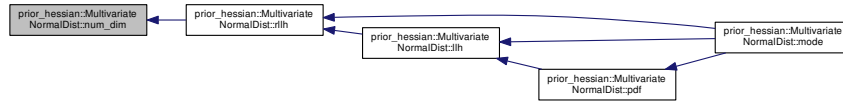
References `prior_hessian::MultivariateNormalDist< Ndim >::lbound()`, and `prior_hessian::MultivariateNormalDist< Ndim >::ubound()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::rllh()`.

Here is the call graph for this function:



Here is the caller graph for this function:

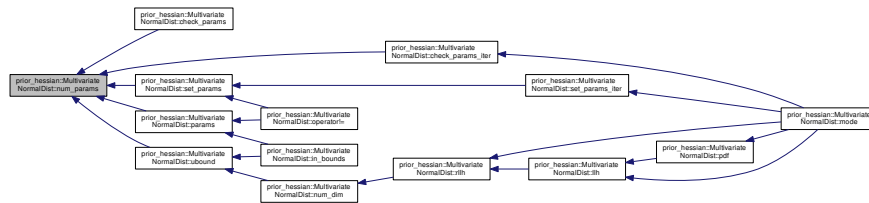


**7.48.4.23** `template<int Ndim> static constexpr IdxT prior_hessian::MultivariateNormalDist< Ndim >::num_params ( )`  
`[inline], [static]`

Definition at line 29 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::check_params()`, `prior_hessian::MultivariateNormalDist< Ndim >::check_params_iter()`, `prior_hessian::MultivariateNormalDist< Ndim >::params()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_params()`, and `prior_hessian::MultivariateNormalDist< Ndim >::ubound()`.

Here is the caller graph for this function:

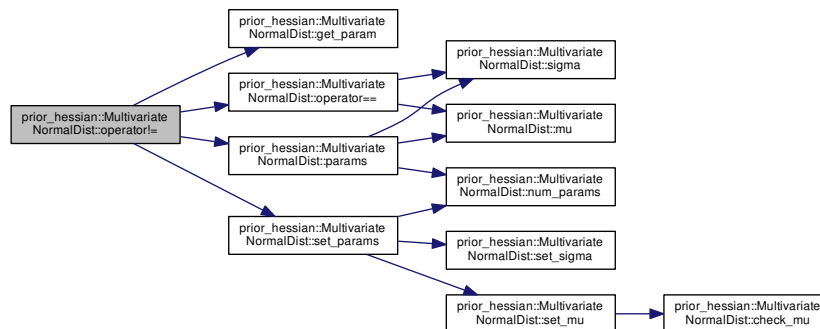


**7.48.4.24** `template<int Ndim> bool prior_hessian::MultivariateNormalDist< Ndim >::operator!=( const MultivariateNormalDist< Ndim > & o ) const` `[inline]`

Definition at line 61 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::get_param()`, `prior_hessian::MultivariateNormalDist< Ndim >::operator==()`, `prior_hessian::MultivariateNormalDist< Ndim >::params()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_params()`.

Here is the call graph for this function:



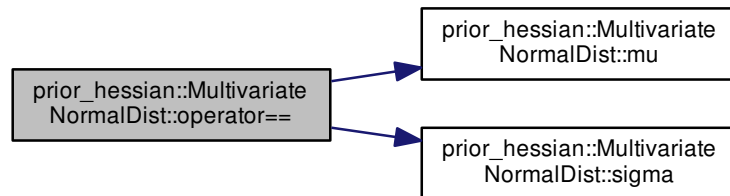
7.48.4.25 `template<int Ndim> bool prior_hessian::MultivariateNormalDist< Ndim >::operator==( const MultivariateNormalDist< Ndim > & o ) const`

Definition at line 425 of file MultivariateNormalDist.h.

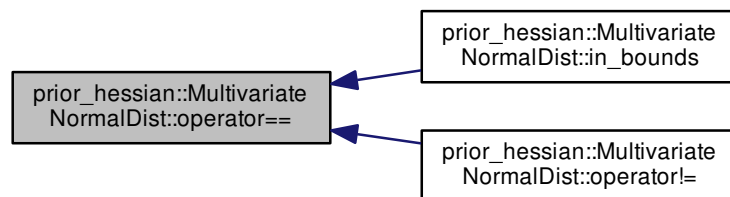
References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::operator!=( )`.

Here is the call graph for this function:



Here is the caller graph for this function:

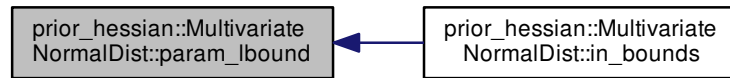


7.48.4.26 `template<int Ndim> const MultivariateNormalDist< Ndim >::NparamsVecT & prior_hessian::MultivariateNormalDist< Ndim >::param_lbound( ) [static]`

Definition at line 280 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the caller graph for this function:



**7.48.4.27** `template<int Ndim> const StringVecT & prior_hessian::MultivariateNormalDist< Ndim >::param_names ( )`  
`[static]`

Definition at line 271 of file `MultivariateNormalDist.h`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the caller graph for this function:

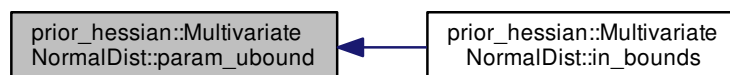


**7.48.4.28** `template<int Ndim> const MultivariateNormalDist< Ndim >::NparamsVecT & prior_hessian::MultivariateNormalDist< Ndim >::param_ubound ( )`  
`[static]`

Definition at line 289 of file `MultivariateNormalDist.h`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`.

Here is the caller graph for this function:



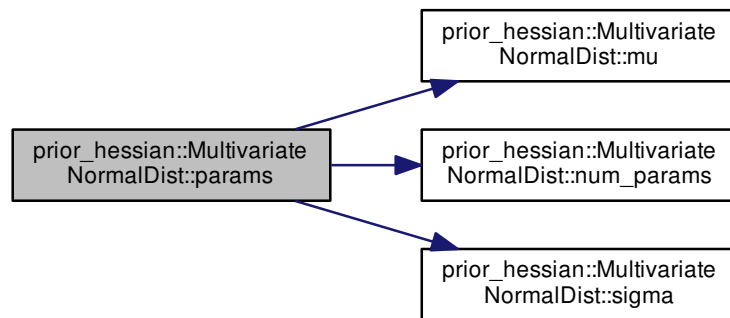
7.48.4.29 `template<int Ndim> MultivariateNormalDist< Ndim >::NparamsVecT prior_hessian::MultivariateNormalDist< Ndim >::params ( ) const`

Definition at line 432 of file MultivariateNormalDist.h.

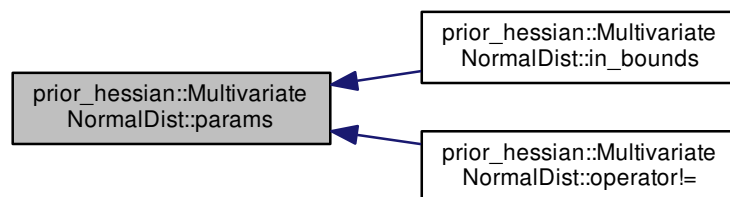
References `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::num_params()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



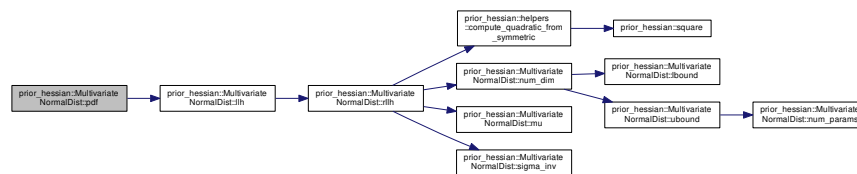
7.48.4.30 `template<int Ndim> template<class Vec > double prior_hessian::MultivariateNormalDist< Ndim >::pdf ( const Vec & x ) const`

Definition at line 497 of file MultivariateNormalDist.h.

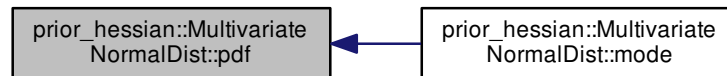
References `prior_hessian::MultivariateNormalDist< Ndim >::llh()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



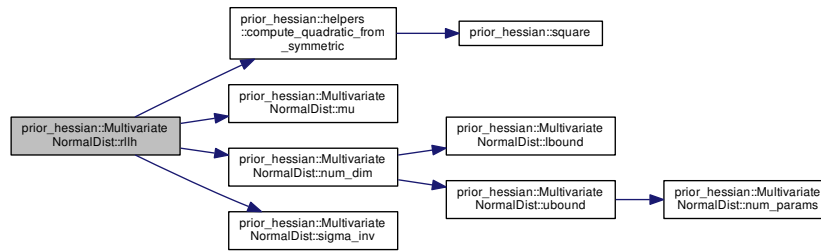
7.48.4.31 `template<int Ndim> template<class Vec > double prior_hessian::MultivariateNormalDist< Ndim >::rllh ( const Vec & x ) const`

Definition at line 515 of file MultivariateNormalDist.h.

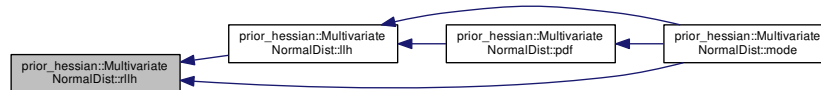
References `prior_hessian::helpers::compute_quadratic_from_symmetric()`, `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, `prior_hessian::MultivariateNormalDist< Ndim >::num_dim()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::llh()`, and `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



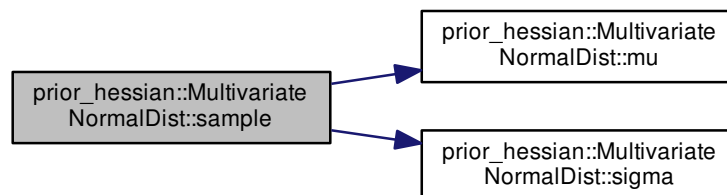
**7.48.4.32** `template<int Ndim> template<class RngT > MultivariateNormalDist< Ndim >::NdimVecT  
prior_hessian::MultivariateNormalDist< Ndim >::sample ( RngT & rng ) const`

Definition at line 563 of file MultivariateNormalDist.h.

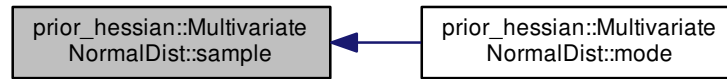
References `prior_hessian::constants::log2pi`, `prior_hessian::MultivariateNormalDist< Ndim >::mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.48.4.33 `template<int Ndim> template<class Vec > void prior_hessian::MultivariateNormalDist< Ndim >::set_mu ( Vec && val )`

Definition at line 396 of file `MultivariateNormalDist.h`.

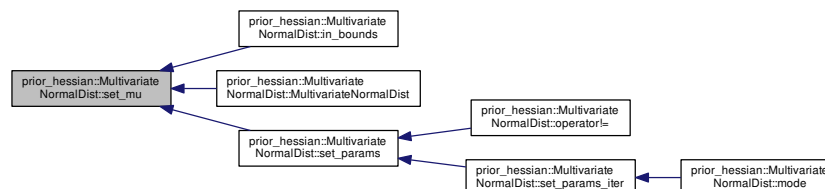
References `prior_hessian::MultivariateNormalDist< Ndim >::check_mu()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, `prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_params()`.

Here is the call graph for this function:



Here is the caller graph for this function:





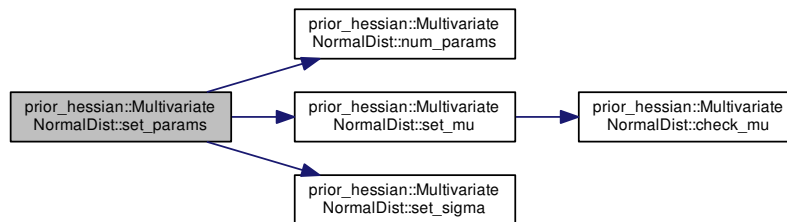
7.48.4.34 `template<int Ndim> template<class Vec > void prior_hessian::MultivariateNormalDist< Ndim >::set_params ( const Vec & p )`

Definition at line 453 of file MultivariateNormalDist.h.

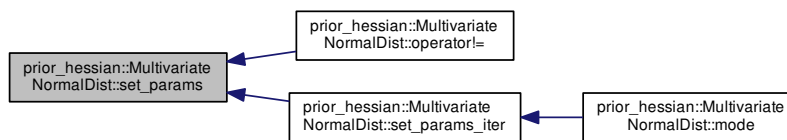
References `prior_hessian::MultivariateNormalDist< Ndim >::num_params()`, `prior_hessian::MultivariateNormalDist< Ndim >::set_mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_sigma()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::operator!=()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:

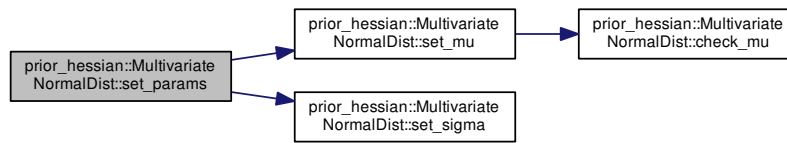


7.48.4.35 `template<int Ndim> template<class Vec , class Mat > void prior_hessian::MultivariateNormalDist< Ndim >::set_params ( Vec && mu, Mat && sigma )`

Definition at line 461 of file MultivariateNormalDist.h.

References `prior_hessian::MultivariateNormalDist< Ndim >::set_mu()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_sigma()`.

Here is the call graph for this function:



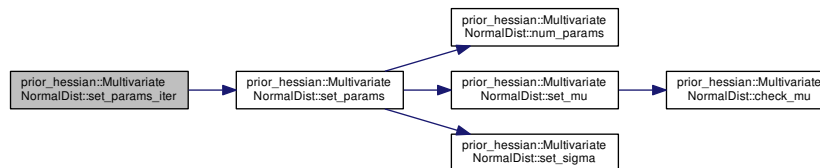
**7.48.4.36** `template<int Ndim> template<class IterT > void prior_hessian::MultivariateNormalDist< Ndim >::set_params_iter ( IterT & params )`

Definition at line 469 of file `MultivariateNormalDist.h`.

References `prior_hessian::MultivariateNormalDist< Ndim >::set_params()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::mode()`.

Here is the call graph for this function:



Here is the caller graph for this function:

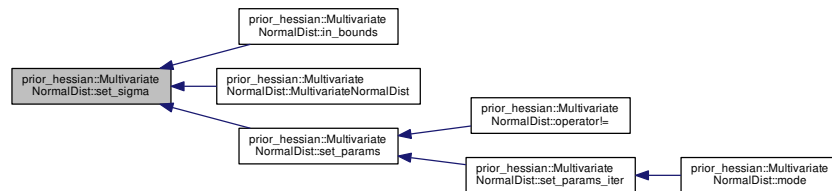


7.48.4.37 `template<int Ndim> template<class Mat > void prior_hessian::MultivariateNormalDist< Ndim >::set_sigma ( Mat && val )`

Definition at line 401 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, `prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist()`, and `prior_hessian::MultivariateNormalDist< Ndim >::set_params()`.

Here is the caller graph for this function:

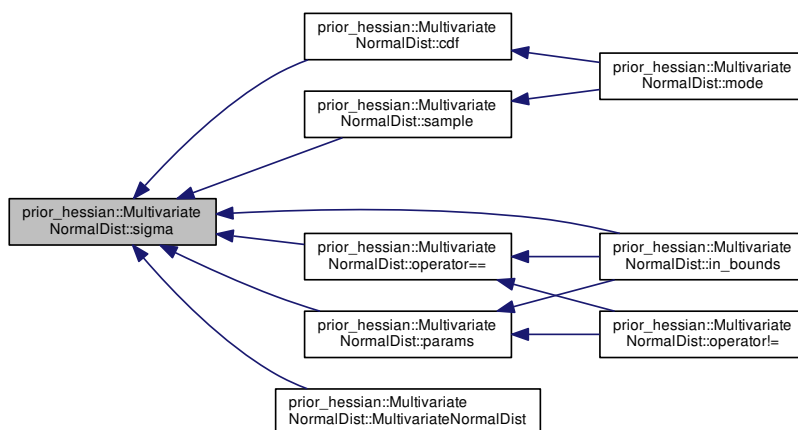


7.48.4.38 `template<int Ndim> const MultivariateNormalDist< Ndim >::NdimMatT & prior_hessian::MultivariateNormalDist< Ndim >::sigma ( ) const`

Definition at line 381 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::cdf()`, `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, `prior_hessian::MultivariateNormalDist< Ndim >::MultivariateNormalDist()`, `prior_hessian::MultivariateNormalDist< Ndim >::operator==()`, `prior_hessian::MultivariateNormalDist< Ndim >::params()`, and `prior_hessian::MultivariateNormalDist< Ndim >::sample()`.

Here is the caller graph for this function:

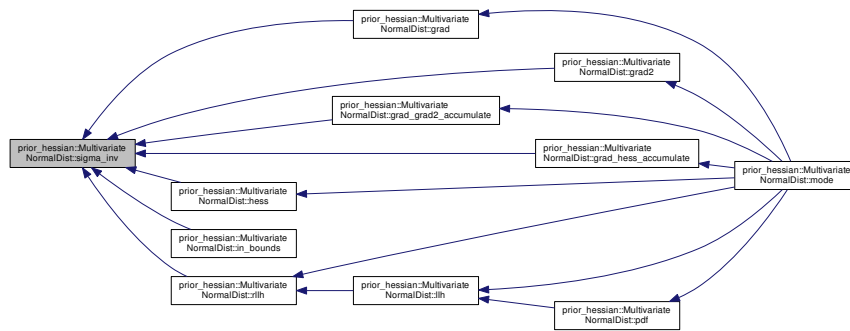


7.48.4.39 `template<int Ndim> const MultivariateNormalDist< Ndim >::NdimMatT & prior_hessian::MultivariateNormalDist< Ndim >::sigma_inv ( ) const`

Definition at line 386 of file MultivariateNormalDist.h.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::grad()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad2()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad_grad2_accumulate()`, `prior_hessian::MultivariateNormalDist< Ndim >::grad_hess_accumulate()`, `prior_hessian::MultivariateNormalDist< Ndim >::hess()`, `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::rllh()`.

Here is the caller graph for this function:



7.48.4.40 `template<int Ndim> const MultivariateNormalDist< Ndim >::NdimVecT & prior_hessian::MultivariateNormalDist< Ndim >::ubound ( ) [static]`

Definition at line 307 of file MultivariateNormalDist.h.

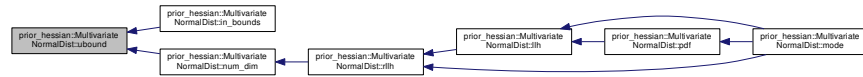
References `prior_hessian::MultivariateNormalDist< Ndim >::num_params()`.

Referenced by `prior_hessian::MultivariateNormalDist< Ndim >::in_bounds()`, and `prior_hessian::MultivariateNormalDist< Ndim >::num_dim()`.

Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

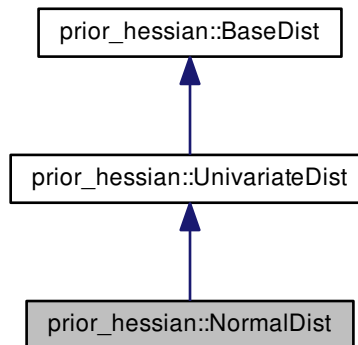
- [MultivariateNormalDist.h](#)

## 7.49 prior\_hessian::NormalDist Class Reference

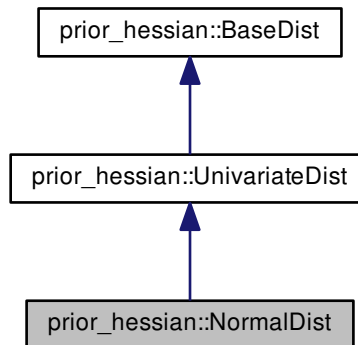
Normal distribution with truncation.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
NormalDist.h>
```

Inheritance diagram for prior\_hessian::NormalDist:



Collaboration diagram for prior\_hessian::NormalDist:



### Public Types

- using `NparamsVecT` = `arma::Col< double >::fixed< _num_params >`

### Public Member Functions

- `NormalDist` (double `mu`, double `sigma`)
- `NormalDist` ()
- `template<class Vec , meta::ConstructableIfNotSelfT< Vec, NormalDist > = true>`  
`NormalDist` (const Vec &`params`)
- double `mu` () const
- double `sigma` () const
- void `set_mu` (double val)
- void `set_sigma` (double val)
- bool `operator==` (const `NormalDist` &o) const
- bool `operator!=` (const `NormalDist` &o) const
- double `get_param` (int idx) const
- void `set_param` (int idx, double val)
- `NparamsVecT` `params` () const
- void `set_params` (double `mu`, double `sigma`)
- `template<class Vec >`  
void `set_params` (const Vec &p)
- double `mean` () const
- double `median` () const
- double `cdf` (double x) const
- double `icdf` (double u) const
- double `pdf` (double x) const
- double `llh` (double x) const
- double `rllh` (double x) const

- double [grad](#) (double x) const
- double [grad2](#) (double x) const
- void [grad\\_grad2\\_accumulate](#) (double x, double &g, double &g2) const
- template<class RngT >  
double [sample](#) (RngT &rng) const
- template<class IterT >  
void [append\\_params\\_iter](#) (IterT &params) const
- template<class IterT >  
void [set\\_params\\_iter](#) (IterT &params)

#### Static Public Member Functions

- static constexpr [IdxT num\\_params](#) ()
- static constexpr double [lbound](#) ()
- static constexpr double [ubound](#) ()
- static bool [in\\_bounds](#) (double u)
- static const [StringVecT](#) & [param\\_names](#) ()
- static const [NparamsVecT](#) & [param\\_lbound](#) ()
- static const [NparamsVecT](#) & [param\\_ubound](#) ()
- static bool [check\\_params](#) (double mu, double sigma)
- template<class Vec >  
static bool [check\\_params](#) (const Vec &p)
- template<class IterT >  
static bool [check\\_params\\_iter](#) (IterT &params)
- static constexpr [IdxT num\\_dim](#) ()

#### Static Protected Member Functions

- static void [check\\_bounds](#) (double lbound, double ubound)

#### 7.49.1 Detailed Description

Normal distribution with truncation.

Definition at line 21 of file NormalDist.h.

#### 7.49.2 Member Typedef Documentation

7.49.2.1 `using prior_hessian::NormalDist::NparamsVecT = arma::Col<double>::fixed<_num_params>`

Definition at line 25 of file NormalDist.h.

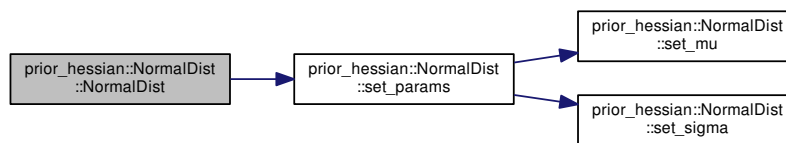
## 7.49.3 Constructor &amp; Destructor Documentation

7.49.3.1 prior\_hessian::NormalDist::NormalDist ( double *mu*, double *sigma* )

Definition at line 27 of file NormalDist.cpp.

References `set_params()`.

Here is the call graph for this function:

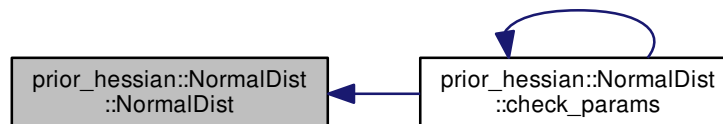


## 7.49.3.2 prior\_hessian::NormalDist::NormalDist ( ) [inline]

Definition at line 43 of file NormalDist.h.

Referenced by `check_params()`.

Here is the caller graph for this function:

7.49.3.3 `template<class Vec , meta::ConstructableIfNotSelfT< Vec, NormalDist > = true> prior_hessian::NormalDist::NormalDist ( const Vec & params ) [inline], [explicit]`

Definition at line 45 of file NormalDist.h.



#### 7.49.4 Member Function Documentation

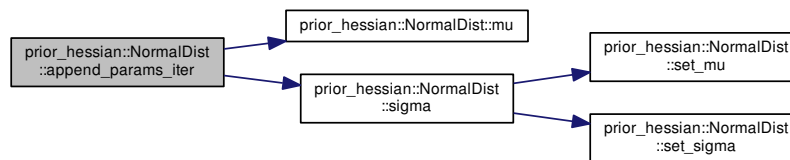
##### 7.49.4.1 `template<class IterT > void prior_hessian::NormalDist::append_params_iter ( IterT & params ) const`

Definition at line 205 of file NormalDist.h.

References `mu()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



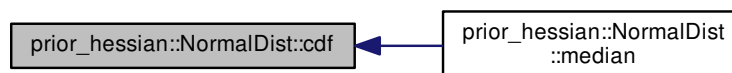
##### 7.49.4.2 `double prior_hessian::NormalDist::cdf ( double x ) const`

Definition at line 42 of file NormalDist.cpp.

References `prior_hessian::constants::sqrt2_inv`.

Referenced by `median()`.

Here is the caller graph for this function:



7.49.4.3 `void prior_hessian::UnivariateDist::check_bounds ( double lbound, double ubound )` `[static]`, `[protected]`, `[inherited]`

Definition at line 22 of file UnivariateDist.cpp.

Referenced by `prior_hessian::UnivariateDist::UnivariateDist()`.

Here is the caller graph for this function:

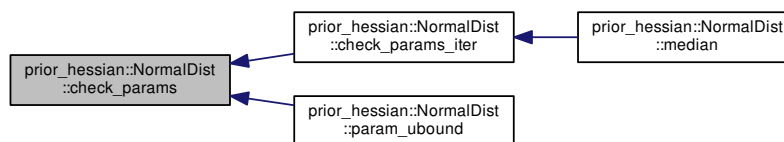


7.49.4.4 `bool prior_hessian::NormalDist::check_params ( double mu, double sigma )` `[inline]`, `[static]`

Definition at line 121 of file NormalDist.h.

Referenced by `check_params_iter()`, and `param_ubound()`.

Here is the caller graph for this function:



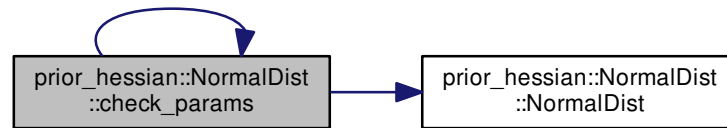
7.49.4.5 `template<class Vec > static bool prior_hessian::NormalDist::check_params ( const Vec & p )` `[inline]`, `[static]`

Definition at line 39 of file NormalDist.h.

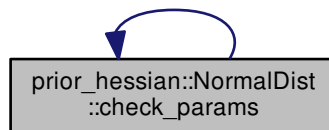
References `check_params()`, and `NormalDist()`.

Referenced by `check_params()`.

Here is the call graph for this function:



Here is the caller graph for this function:



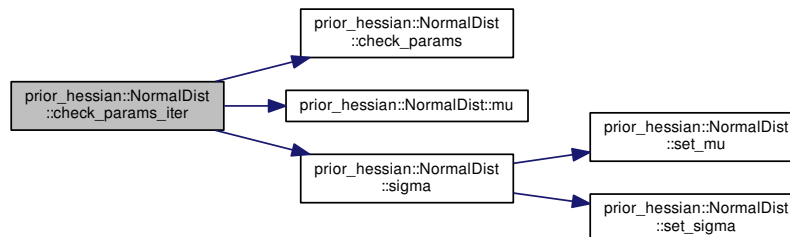
7.49.4.6 `template<class IterT> bool prior_hessian::NormalDist::check_params_iter ( IterT & params ) [static]`

Definition at line 197 of file `NormalDist.h`.

References `check_params()`, `mu()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



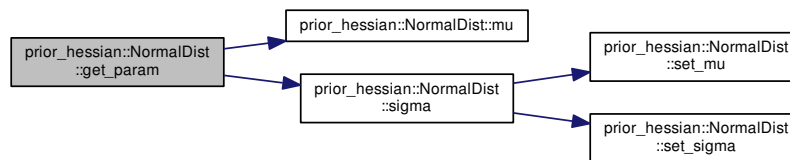
#### 7.49.4.7 double prior\_hessian::NormalDist::get\_param ( int *idx* ) const [inline]

Definition at line 127 of file NormalDist.h.

References `mu()`, and `sigma()`.

Referenced by `operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.49.4.8 `double prior_hessian::NormalDist::grad ( double x ) const [inline]`

Definition at line 168 of file NormalDist.h.

References `prior_hessian::square()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.49.4.9 `double prior_hessian::NormalDist::grad2 ( double x ) const [inline]`

Definition at line 174 of file NormalDist.h.

References `prior_hessian::square()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



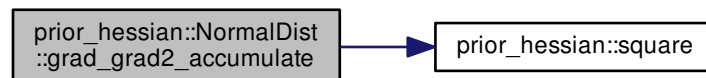
7.49.4.10 void prior\_hessian::NormalDist::grad\_grad2\_accumulate ( double x, double & g, double & g2 ) const [inline]

Definition at line 180 of file NormalDist.h.

References prior\_hessian::square().

Referenced by median().

Here is the call graph for this function:



Here is the caller graph for this function:



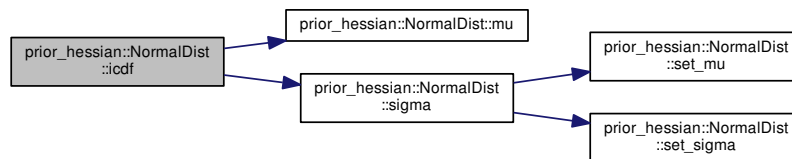
#### 7.49.4.11 `double prior_hessian::NormalDist::icdf ( double $u$ ) const`

Definition at line 47 of file NormalDist.cpp.

References `mu()`, `sigma()`, and `prior_hessian::constants::sqrt2`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

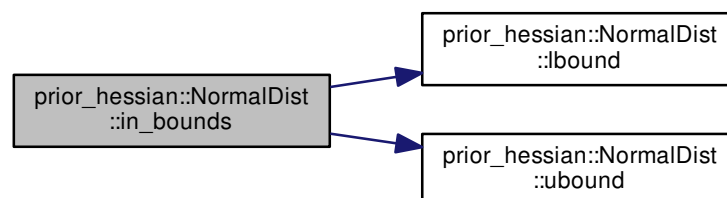


#### 7.49.4.12 `static bool prior_hessian::NormalDist::in_bounds ( double $u$ ) [inline], [static]`

Definition at line 31 of file NormalDist.h.

References `lbound()`, and `ubound()`.

Here is the call graph for this function:



#### 7.49.4.13 static constexpr double prior\_hessian::NormalDist::lbound ( ) [inline],[static]

Definition at line 29 of file NormalDist.h.

Referenced by in\_bounds().

Here is the caller graph for this function:



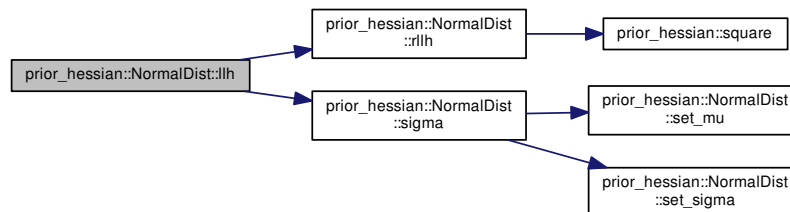
#### 7.49.4.14 double prior\_hessian::NormalDist::llh ( double x ) const

Definition at line 72 of file NormalDist.cpp.

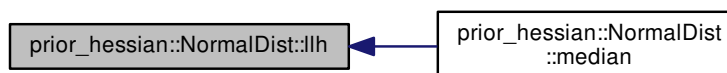
References `prior_hessian::constants::log2pi`, `rllh()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



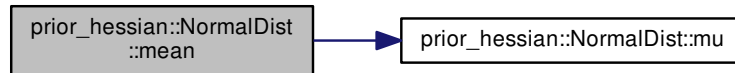


#### 7.49.4.15 `double prior_hessian::NormalDist::mean ( ) const [inline]`

Definition at line 62 of file NormalDist.h.

References `mu()`.

Here is the call graph for this function:

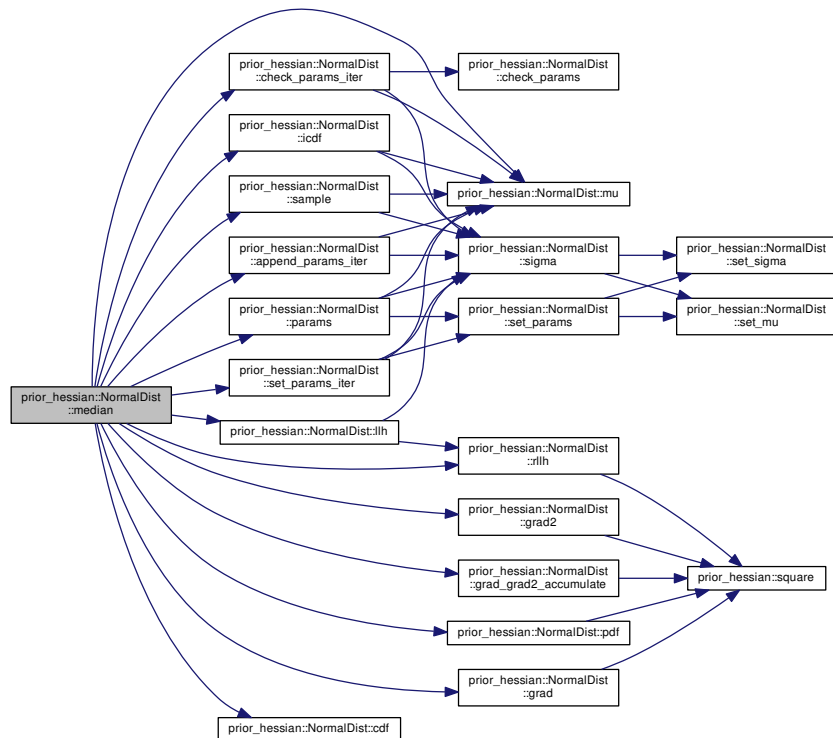


#### 7.49.4.16 `double prior_hessian::NormalDist::median ( ) const [inline]`

Definition at line 63 of file NormalDist.h.

References `append_params_iter()`, `cdf()`, `check_params_iter()`, `grad()`, `grad2()`, `grad_grad2_accumulate()`, `icdf()`, `llh()`, `mu()`, `params()`, `pdf()`, `rlh()`, `sample()`, and `set_params_iter()`.

Here is the call graph for this function:

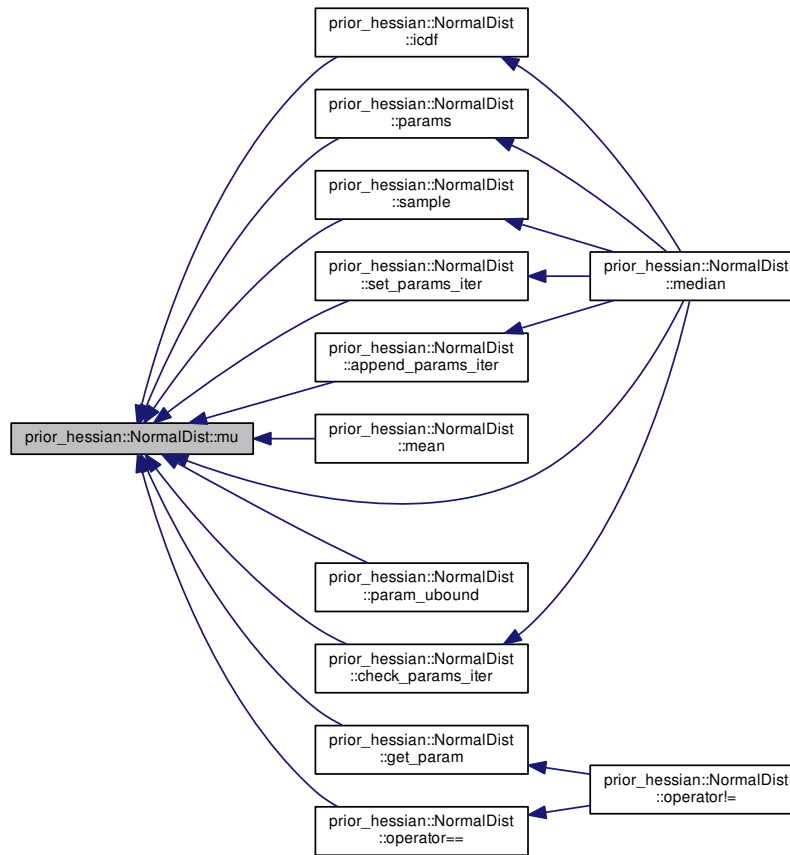


#### 7.49.4.17 double prior\_hessian::NormalDist::mu ( ) const [inline]

Definition at line 48 of file NormalDist.h.

Referenced by `append_params_iter()`, `check_params_iter()`, `get_param()`, `icdf()`, `mean()`, `median()`, `operator==()`, `param_ubound()`, `params()`, `sample()`, and `set_params_iter()`.

Here is the caller graph for this function:



#### 7.49.4.18 static constexpr IdxT prior\_hessian::UnivariateDist::num\_dim ( ) [inline],[static],[inherited]

Definition at line 17 of file UnivariateDist.h.

#### 7.49.4.19 static constexpr IdxT prior\_hessian::NormalDist::num\_params ( ) [inline],[static]

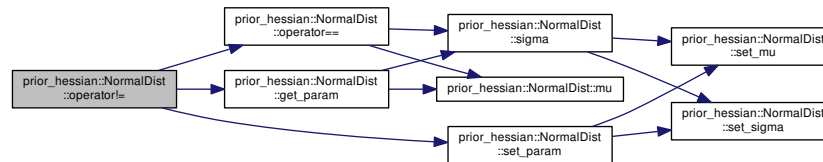
Definition at line 28 of file NormalDist.h.

7.49.4.20 `bool prior_hessian::NormalDist::operator!= ( const NormalDist & o ) const [inline]`

Definition at line 53 of file NormalDist.h.

References `get_param()`, `operator==()`, and `set_param()`.

Here is the call graph for this function:



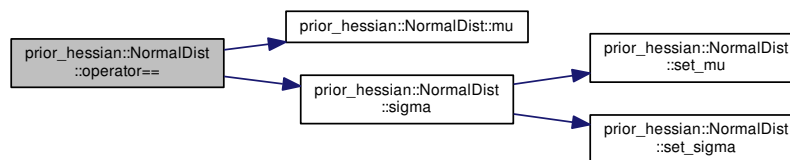
7.49.4.21 `bool prior_hessian::NormalDist::operator== ( const NormalDist & o ) const [inline]`

Definition at line 52 of file NormalDist.h.

References `mu()`, and `sigma()`.

Referenced by `operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.49.4.22 `static const NparamsVecT& prior_hessian::NormalDist::param_lbound ( ) [inline], [static]`

Definition at line 34 of file NormalDist.h.

7.49.4.23 `static const StringVecT& prior_hessian::NormalDist::param_names ( ) [inline], [static]`

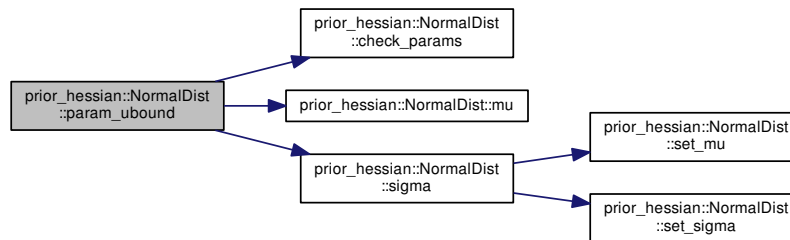
Definition at line 33 of file NormalDist.h.

7.49.4.24 `static const NparamsVecT& prior_hessian::NormalDist::param_ubound ( ) [inline], [static]`

Definition at line 35 of file NormalDist.h.

References `check_params()`, `mu()`, and `sigma()`.

Here is the call graph for this function:



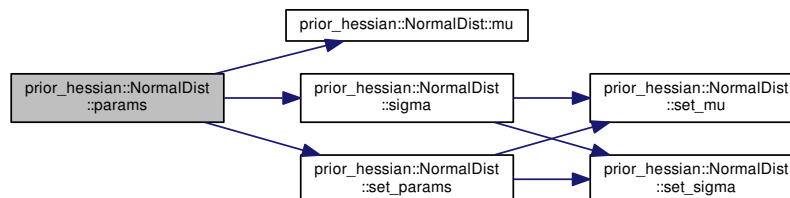
7.49.4.25 `NparamsVecT prior_hessian::NormalDist::params ( ) const [inline]`

Definition at line 57 of file NormalDist.h.

References `mu()`, `set_params()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



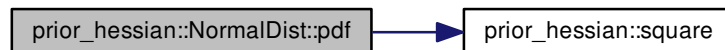
7.49.4.26 `double prior_hessian::NormalDist::pdf ( double x ) const [inline]`

Definition at line 156 of file `NormalDist.h`.

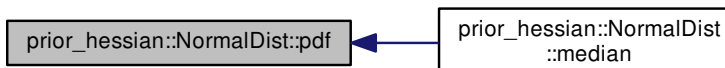
References `prior_hessian::constants::sqrt2pi_inv`, and `prior_hessian::square()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



#### 7.49.4.27 double prior\_hessian::NormalDist::rllh ( double x ) const [inline]

Definition at line 162 of file NormalDist.h.

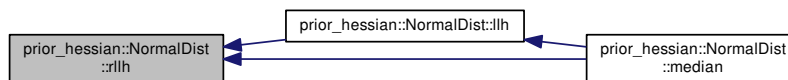
References `prior_hessian::square()`.

Referenced by `llh()`, and `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



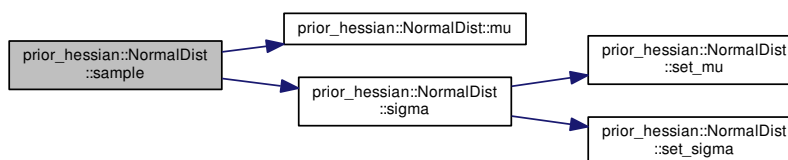
#### 7.49.4.28 template<class RngT > double prior\_hessian::NormalDist::sample ( RngT & rng ) const

Definition at line 188 of file NormalDist.h.

References `mu()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

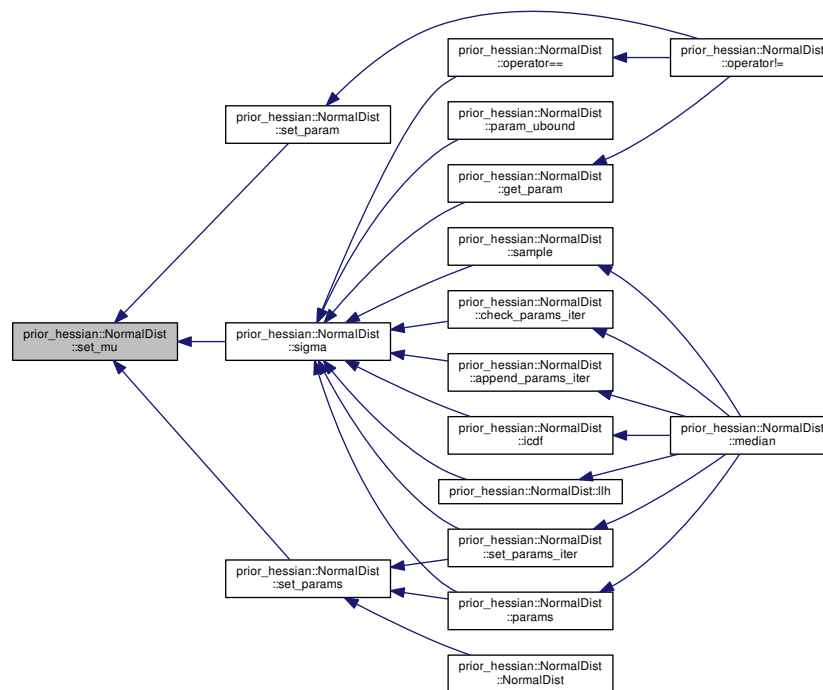


7.49.4.29 `void prior_hessian::NormalDist::set_mu ( double val ) [inline]`

Definition at line 110 of file `NormalDist.h`.

Referenced by `set_param()`, `set_params()`, and `sigma()`.

Here is the caller graph for this function:



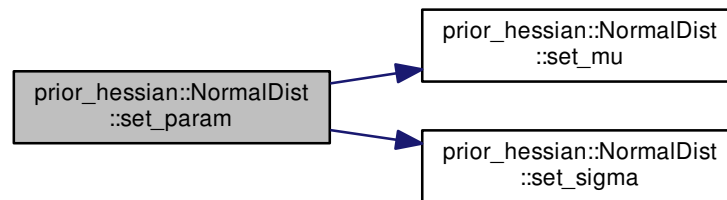
7.49.4.30 void prior\_hessian::NormalDist::set\_param ( int *idx*, double *val* ) [inline]

Definition at line 141 of file NormalDist.h.

References set\_mu(), and set\_sigma().

Referenced by operator!=( ).

Here is the call graph for this function:



Here is the caller graph for this function:



7.49.4.31 void prior\_hessian::NormalDist::set\_params ( double *mu*, double *sigma* ) [inline]

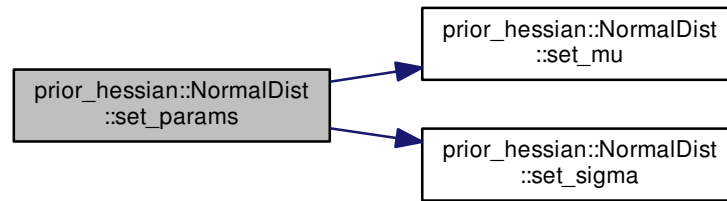
Definition at line 114 of file NormalDist.h.

References set\_mu(), and set\_sigma().

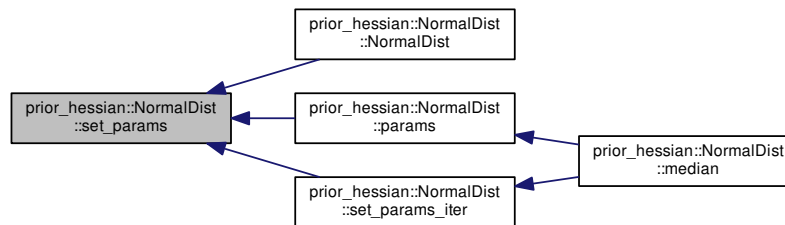
Referenced by NormalDist(), params(), and set\_params\_iter().



Here is the call graph for this function:



Here is the caller graph for this function:



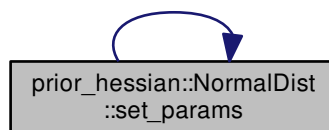
**7.49.4.32** `template<class Vec > void prior_hessian::NormalDist::set_params ( const Vec & p ) [inline]`

Definition at line 60 of file NormalDist.h.

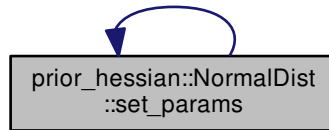
References `set_params()`.

Referenced by `set_params()`.

Here is the call graph for this function:



Here is the caller graph for this function:



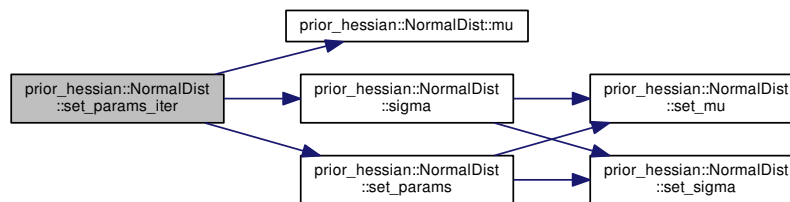
#### 7.49.4.33 `template<class IterT > void prior_hessian::NormalDist::set_params_iter ( IterT & params )`

Definition at line 213 of file `NormalDist.h`.

References `mu()`, `set_params()`, and `sigma()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

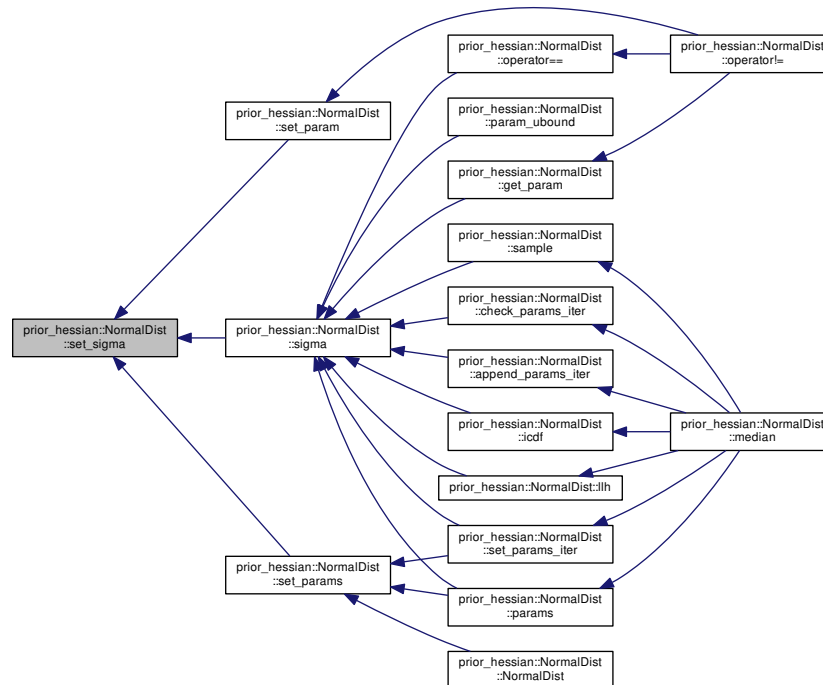


#### 7.49.4.34 void prior\_hessian::NormalDist::set\_sigma ( double val )

Definition at line 35 of file NormalDist.cpp.

Referenced by set\_param(), set\_params(), and sigma().

Here is the caller graph for this function:



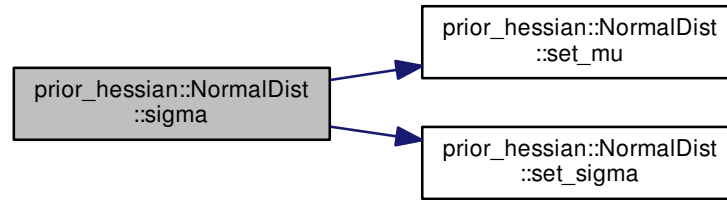
#### 7.49.4.35 double prior\_hessian::NormalDist::sigma ( ) const [inline]

Definition at line 49 of file NormalDist.h.

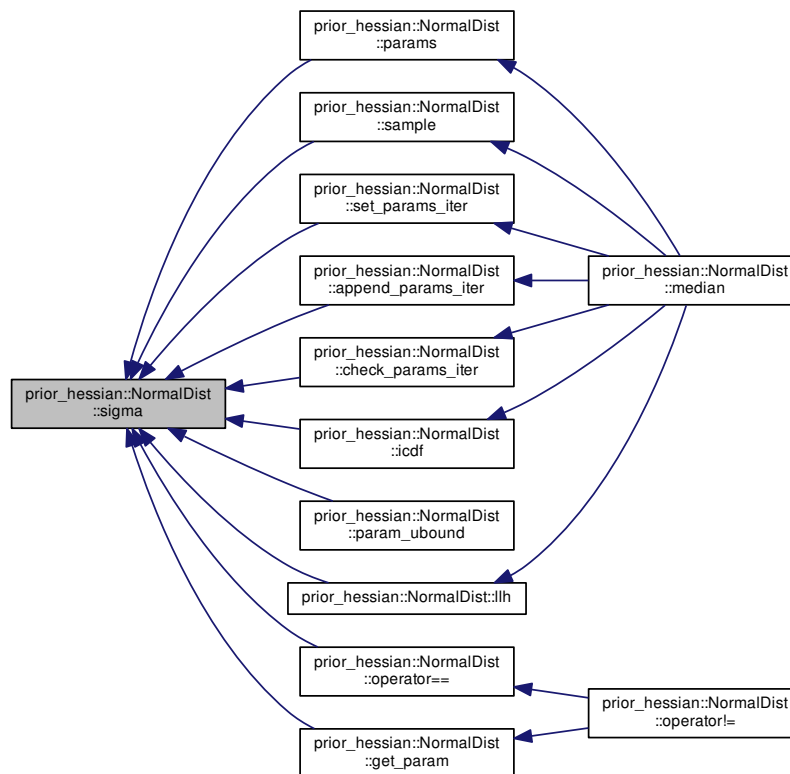
References set\_mu(), and set\_sigma().

Referenced by append\_params\_iter(), check\_params\_iter(), get\_param(), icdf(), llh(), operator==(), param\_ubound(), params(), sample(), and set\_params\_iter().

Here is the call graph for this function:



Here is the caller graph for this function:



7.49.4.36 `static constexpr double prior_hessian::NormalDist::ubound ( ) [inline], [static]`

Definition at line 30 of file `NormalDist.h`.

Referenced by `in_bounds()`.

Here is the caller graph for this function:



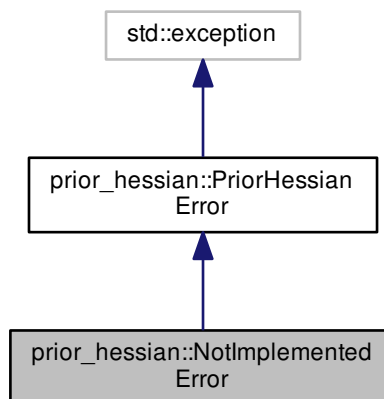
The documentation for this class was generated from the following files:

- [NormalDist.h](#)
- [NormalDist.cpp](#)

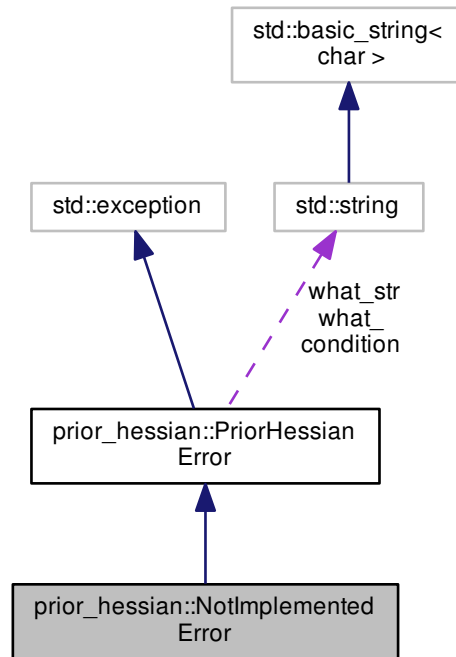
## 7.50 prior\_hessian::NotImplementedError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for `prior_hessian::NotImplementedError`:



Collaboration diagram for prior\_hessian::NotImplementedError:



#### Public Member Functions

- [NotImplementedError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.50.1 Detailed Description

Definition at line 115 of file PriorHessianError.h.

#### 7.50.2 Constructor & Destructor Documentation

##### 7.50.2.1 prior\_hessian::NotImplementedError::NotImplementedError ( std::string *message* ) [inline]

Definition at line 117 of file PriorHessianError.h.

### 7.50.3 Member Function Documentation

**7.50.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline], [override], [noexcept], [inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.50.4 Member Data Documentation

**7.50.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected], [inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.50.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected], [inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.50.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected], [inherited]`

Definition at line 47 of file PriorHessianError.h.

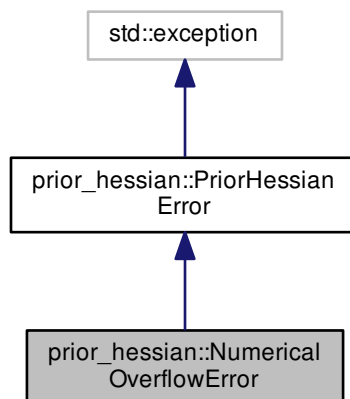
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

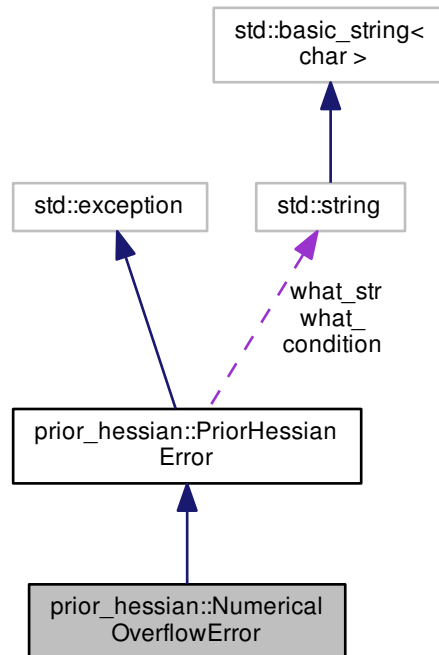
## 7.51 prior\_hessian::NumericalOverflowError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::NumericalOverflowError:



Collaboration diagram for prior\_hessian::NumericalOverflowError:



#### Public Member Functions

- [NumericalOverflowError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.51.1 Detailed Description

Definition at line 110 of file PriorHessianError.h.

#### 7.51.2 Constructor & Destructor Documentation

##### 7.51.2.1 prior\_hessian::NumericalOverflowError::NumericalOverflowError ( std::string *message* ) [inline]

Definition at line 112 of file PriorHessianError.h.



### 7.51.3 Member Function Documentation

**7.51.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline], [override], [noexcept], [inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.51.4 Member Data Documentation

**7.51.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected], [inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.51.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected], [inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.51.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected], [inherited]`

Definition at line 47 of file PriorHessianError.h.

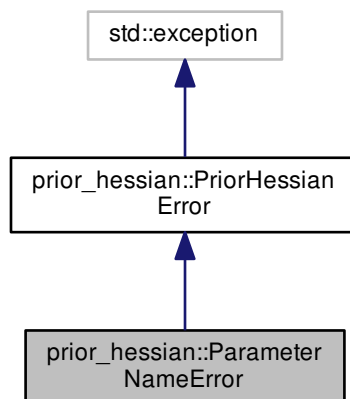
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

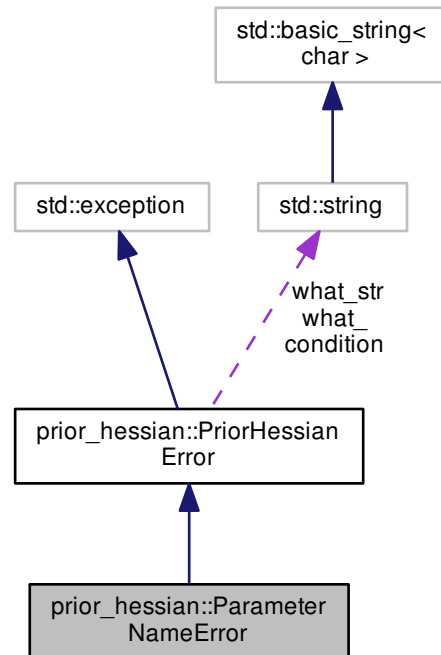
## 7.52 prior\_hessian::ParameterNameError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::ParameterNameError:



Collaboration diagram for prior\_hessian::ParameterNameError:



#### Public Member Functions

- [ParameterNameError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.52.1 Detailed Description

Definition at line 85 of file PriorHessianError.h.

#### 7.52.2 Constructor & Destructor Documentation

##### 7.52.2.1 prior\_hessian::ParameterNameError::ParameterNameError ( std::string *message* ) [inline]

Definition at line 87 of file PriorHessianError.h.

### 7.52.3 Member Function Documentation

**7.52.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline], [override], [noexcept], [inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.52.4 Member Data Documentation

**7.52.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected], [inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.52.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected], [inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.52.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected], [inherited]`

Definition at line 47 of file PriorHessianError.h.

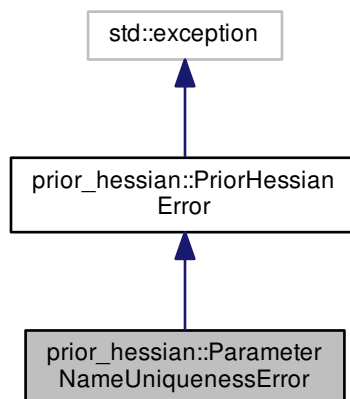
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

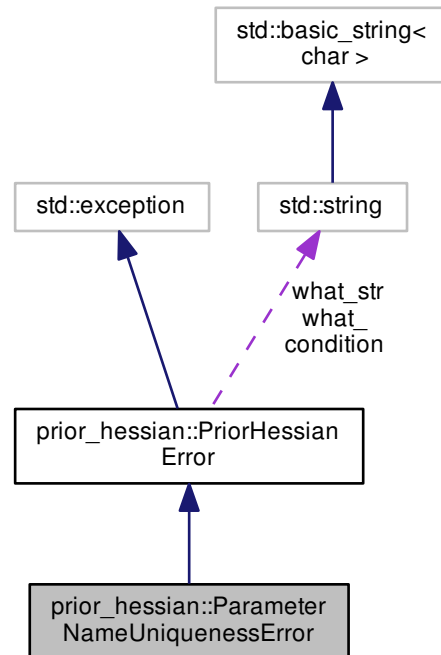
## 7.53 prior\_hessian::ParameterNameUniquenessError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::ParameterNameUniquenessError:



Collaboration diagram for prior\_hessian::ParameterNameUniquenessError:



#### Public Member Functions

- [ParameterNameUniquenessError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.53.1 Detailed Description

Definition at line 89 of file PriorHessianError.h.

#### 7.53.2 Constructor & Destructor Documentation

7.53.2.1 prior\_hessian::ParameterNameUniquenessError::ParameterNameUniquenessError ( std::string *message* ) `[inline]`

Definition at line 91 of file PriorHessianError.h.

### 7.53.3 Member Function Documentation

**7.53.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.53.4 Member Data Documentation

**7.53.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.53.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.53.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file PriorHessianError.h.

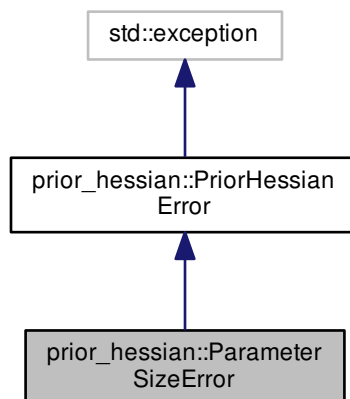
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

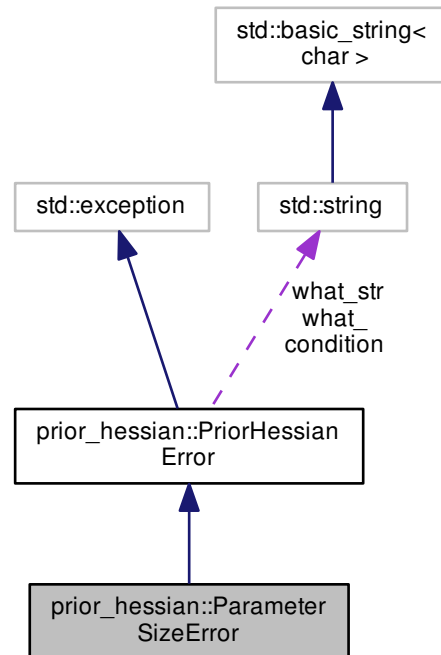
## 7.54 prior\_hessian::ParameterSizeError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::ParameterSizeError:



Collaboration diagram for prior\_hessian::ParameterSizeError:



#### Public Member Functions

- [ParameterSizeError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.54.1 Detailed Description

Definition at line 75 of file PriorHessianError.h.

#### 7.54.2 Constructor & Destructor Documentation

##### 7.54.2.1 prior\_hessian::ParameterSizeError::ParameterSizeError ( std::string *message* ) [inline]

Definition at line 77 of file PriorHessianError.h.

### 7.54.3 Member Function Documentation

**7.54.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline], [override], [noexcept], [inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.54.4 Member Data Documentation

**7.54.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected], [inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.54.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected], [inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.54.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected], [inherited]`

Definition at line 47 of file PriorHessianError.h.

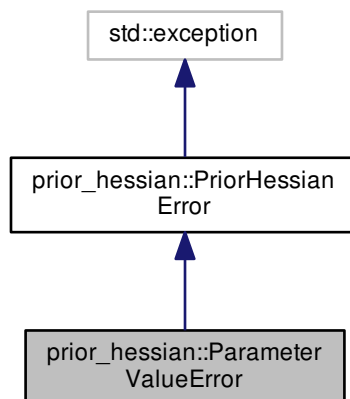
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

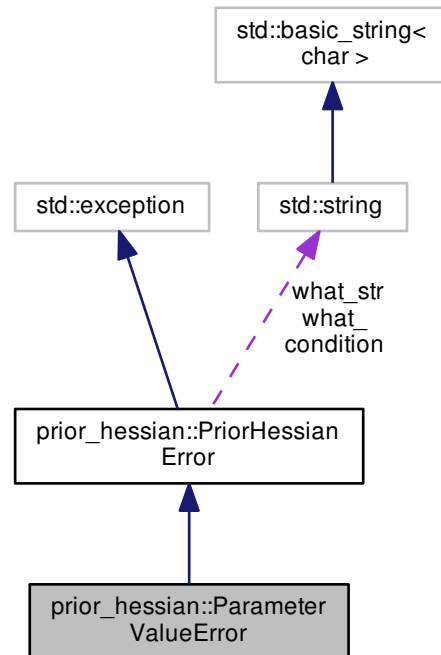
## 7.55 prior\_hessian::ParameterValueError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::ParameterValueError:



Collaboration diagram for prior\_hessian::ParameterValueError:



#### Public Member Functions

- [ParameterValueError](#) (std::string message)
- `const char * what () const noexcept override`

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.55.1 Detailed Description

Definition at line 80 of file PriorHessianError.h.

#### 7.55.2 Constructor & Destructor Documentation

##### 7.55.2.1 prior\_hessian::ParameterValueError::ParameterValueError ( std::string *message* ) [inline]

Definition at line 82 of file PriorHessianError.h.



### 7.55.3 Member Function Documentation

**7.55.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.55.4 Member Data Documentation

**7.55.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.55.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.55.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file PriorHessianError.h.

The documentation for this struct was generated from the following file:

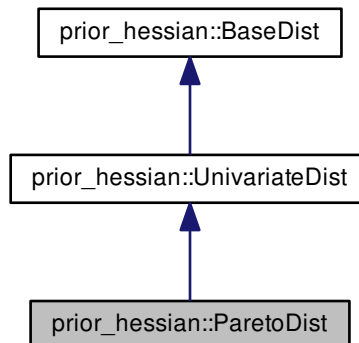
- [PriorHessianError.h](#)

## 7.56 prior\_hessian::ParetoDist Class Reference

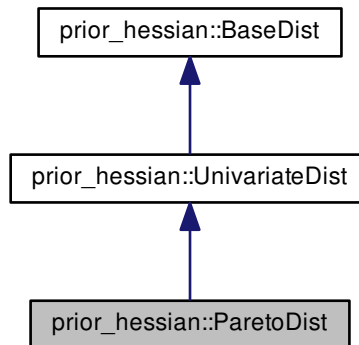
Pareto dist with infinite upper bound.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/ParetoDist.h>
```

Inheritance diagram for prior\_hessian::ParetoDist:



Collaboration diagram for prior\_hessian::ParetoDist:



### Public Types

- using `NparamsVecT` = `arma::Col< double >::fixed< _num_params >`

### Public Member Functions

- `bool in_bounds (double u) const`
- `ParetoDist ()`
- `ParetoDist (double min, double alpha)`
- `template<class Vec , meta::ConstructableIfNotSelfT< Vec, ParetoDist > = true> ParetoDist (const Vec &params)`
- `double get_param (int idx) const`
- `void set_param (int idx, double val)`
- `NparamsVecT params () const`
- `void set_params (double min, double alpha)`
- `template<class Vec > void set_params (const Vec &p)`
- `bool operator== (const ParetoDist &o) const`
- `bool operator!= (const ParetoDist &o) const`
- `double alpha () const`
- `double min () const`
- `void set_min (double val)`
- `void set_alpha (double val)`
- `double lbound () const`
- `void set_lbound (double lbound)`
- `double mean () const`
- `double median () const`
- `double cdf (double x) const`
- `double icdf (double u) const`

- double [pdf](#) (double x) const
- double [llh](#) (double x) const
- double [rllh](#) (double x) const
- double [grad](#) (double x) const
- double [grad2](#) (double x) const
- void [grad\\_grad2\\_accumulate](#) (double x, double &g, double &g2) const
- template<class RngT >  
double [sample](#) (RngT &rng) const
- template<class IterT >  
void [set\\_params\\_iter](#) (IterT &params)

### Static Public Member Functions

- static constexpr [IdxT](#) [num\\_params](#) ()
- static constexpr double [global\\_lbound](#) ()
- static constexpr double [ubound](#) ()
- static const [StringVecT](#) & [param\\_names](#) ()
- static const [NparamsVecT](#) & [param\\_lbound](#) ()
- static const [NparamsVecT](#) & [param\\_ubound](#) ()
- static bool [check\\_params](#) (double [min](#), double [alpha](#))
- template<class Vec >  
static bool [check\\_params](#) (const Vec &[params](#))
- static bool [check\\_lbound](#) (double [min](#))
- template<class IterT >  
static bool [check\\_params\\_iter](#) (IterT &[params](#))
- static constexpr [IdxT](#) [num\\_dim](#) ()

### Static Protected Member Functions

- static void [check\\_bounds](#) (double [lbound](#), double [ubound](#))

#### 7.56.1 Detailed Description

Pareto dist with infinite upper bound.

Definition at line 20 of file ParetoDist.h.

#### 7.56.2 Member Typedef Documentation

##### 7.56.2.1 `using prior_hessian::ParetoDist::NparamsVecT = arma::Col<double>::fixed<_num_params>`

Definition at line 24 of file ParetoDist.h.

## 7.56.3 Constructor &amp; Destructor Documentation

## 7.56.3.1 prior\_hessian::ParetoDist::ParetoDist ( ) [inline]

Definition at line 41 of file ParetoDist.h.

7.56.3.2 prior\_hessian::ParetoDist::ParetoDist ( double *min*, double *alpha* )

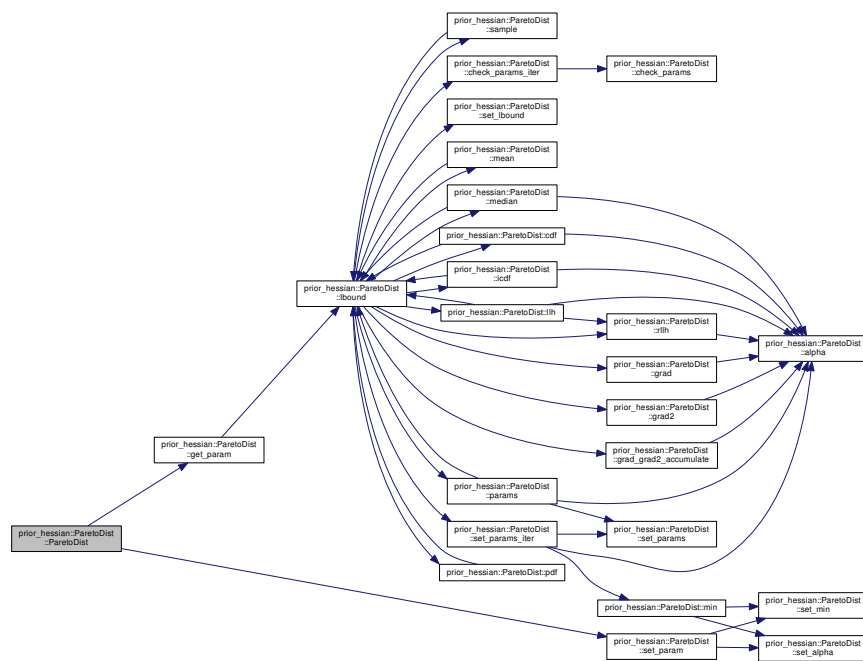
Definition at line 21 of file ParetoDist.cpp.

7.56.3.3 template<class Vec , meta::ConstructableIfNotSelfT< Vec, ParetoDist > = true> prior\_hessian::ParetoDist::ParetoDist ( const Vec & *params* ) [inline], [explicit]

Definition at line 44 of file ParetoDist.h.

References `get_param()`, and `set_param()`.

Here is the call graph for this function:



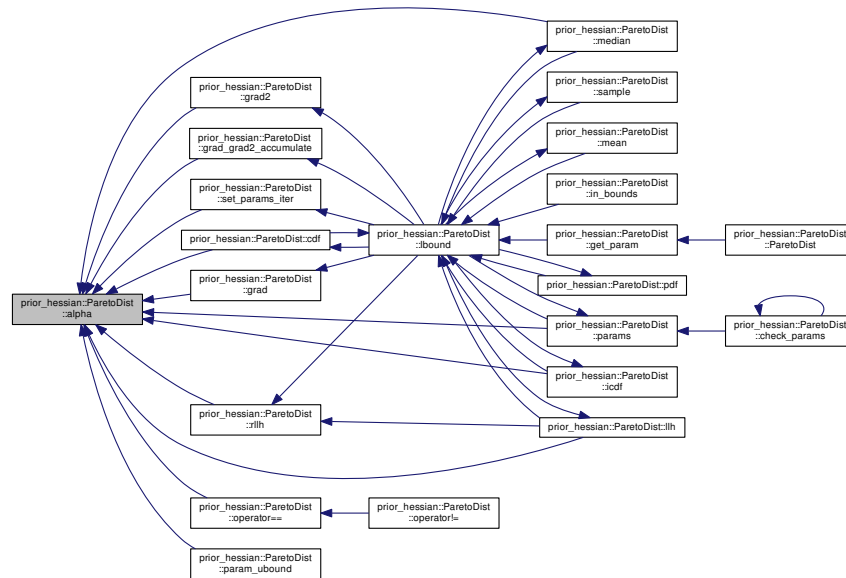
## 7.56.4 Member Function Documentation

## 7.56.4.1 double prior\_hessian::ParetoDist::alpha ( ) const [inline]

Definition at line 55 of file ParetoDist.h.

Referenced by `cdf()`, `grad()`, `grad2()`, `grad_grad2_accumulate()`, `icdf()`, `llh()`, `median()`, `operator==()`, `param_ubound()`, `params()`, `rllh()`, and `set_params_iter()`.

Here is the caller graph for this function:



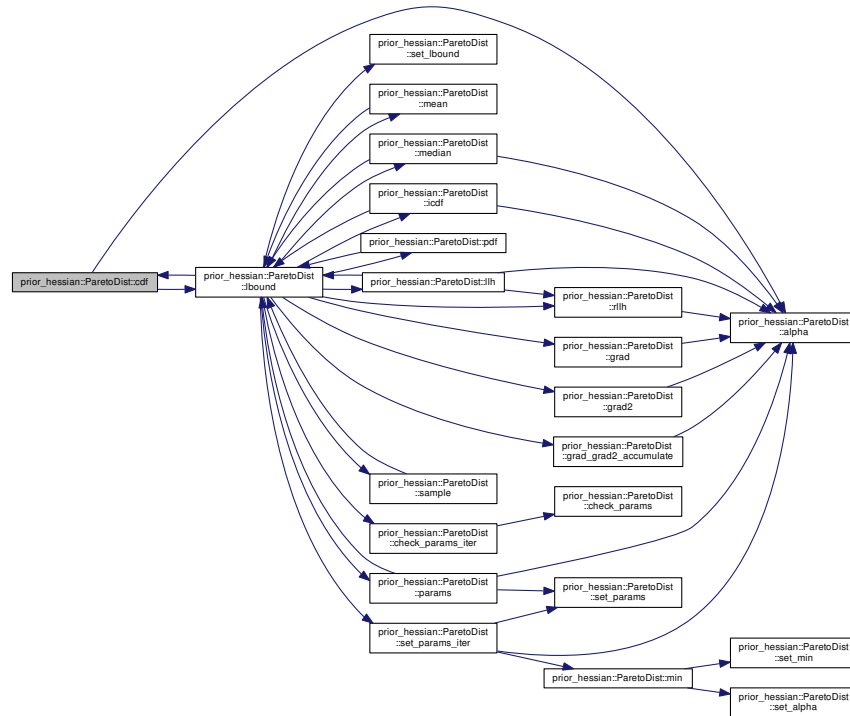
#### 7.56.4.2 double prior\_hessian::ParetoDist::cdf ( double x ) const [inline]

Definition at line 155 of file ParetoDist.h.

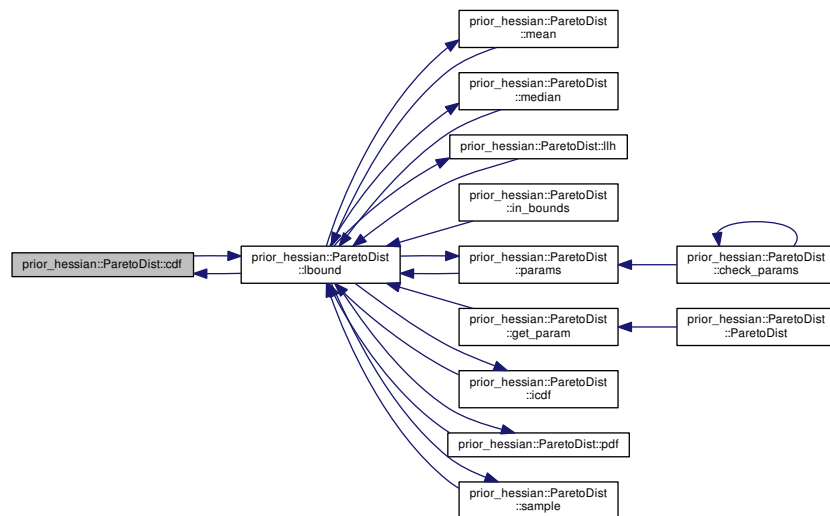
References `alpha()`, and `lbound()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



**7.56.4.3** `void prior_hessian::UnivariateDist::check_bounds ( double lbound, double ubound )` `[static]`, `[protected]`, `[inherited]`

Definition at line 22 of file UnivariateDist.cpp.

Referenced by `prior_hessian::UnivariateDist::UnivariateDist()`.

Here is the caller graph for this function:

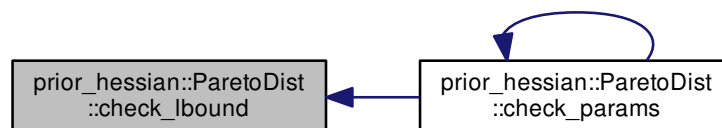


**7.56.4.4** `bool prior_hessian::ParetoDist::check_lbound ( double min )` `[inline]`, `[static]`

Definition at line 149 of file ParetoDist.h.

Referenced by `check_params()`.

Here is the caller graph for this function:



**7.56.4.5** `bool prior_hessian::ParetoDist::check_params ( double min, double alpha )` `[inline]`, `[static]`

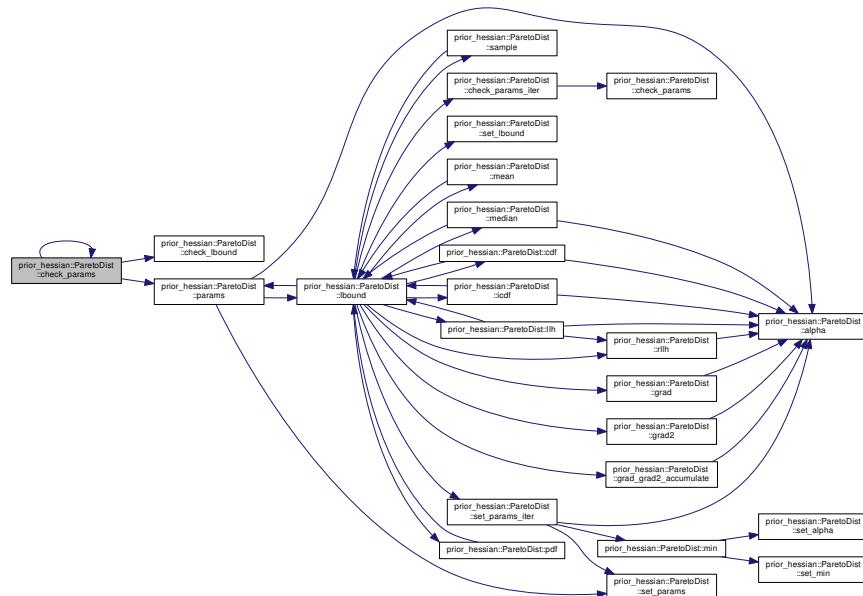
Definition at line 104 of file ParetoDist.h.

Referenced by `check_params_iter()`, and `param_ubound()`.

```

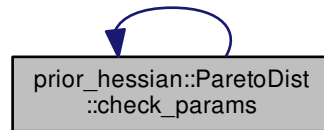
graph LR
    A[prior_hessian:ParetoDist::check_params_iter] --> B[prior_hessian:ParetoDist::ibound]
    C[prior_hessian:ParetoDist::param_ubound] --> B
    B --> D[prior_hessian:ParetoDist::mean]
    B --> E[prior_hessian:ParetoDist::median]
    B --> F[prior_hessian:ParetoDist::ihh]
    B --> G[prior_hessian:ParetoDist::in_bounds]
    B --> H[prior_hessian:ParetoDist::params]
    B --> I[prior_hessian:ParetoDist::get_param]
    B --> J[prior_hessian:ParetoDist::cdf]
    B --> K[prior_hessian:ParetoDist::icdf]
    B --> L[prior_hessian:ParetoDist::pdf]
    B --> M[prior_hessian:ParetoDist::sample]
    N[prior_hessian:ParetoDist::check_params] --> H
    H --> H
    O[prior_hessian:ParetoDist::ParetoDist] --> I
  
```

Here is the call graph for this function:





Here is the caller graph for this function:



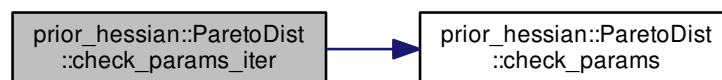
7.56.4.7 `template<class IterT> bool prior_hessian::ParetoDist::check_params_iter ( IterT & params ) [static]`

Definition at line 111 of file ParetoDist.h.

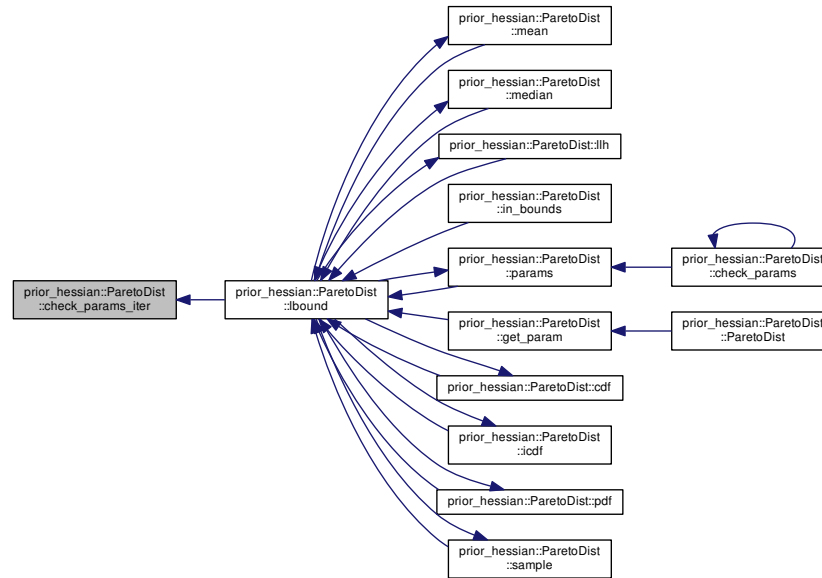
References `check_params()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.56.4.8 `double prior_hessian::ParetoDist::get_param ( int idx ) const` `[inline]`

Definition at line 119 of file ParetoDist.h.

References `lbound()`.

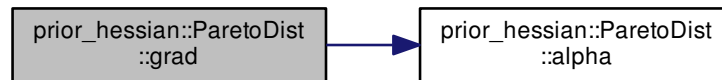
Referenced by `ParetoDist()`.



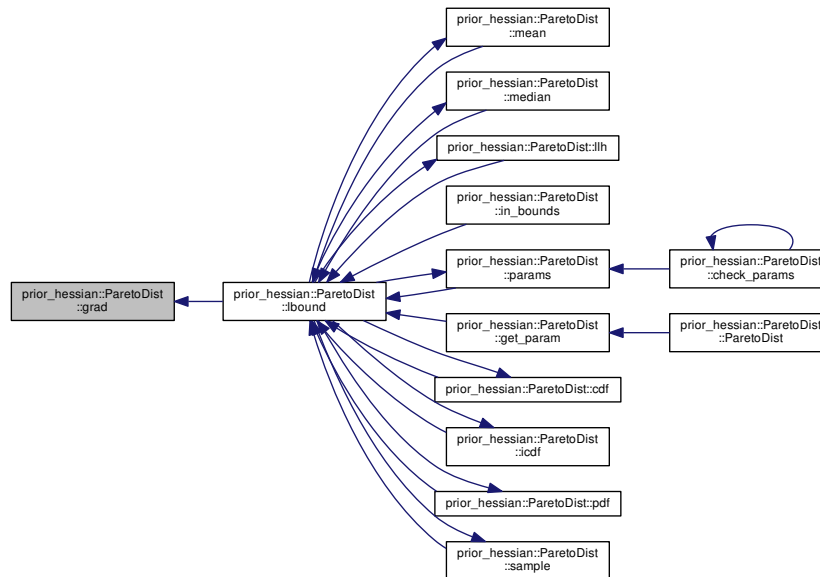
References `alpha()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



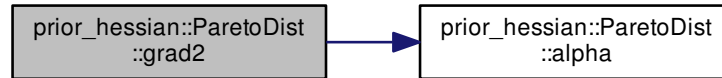
7.56.4.11 `double prior_hessian::ParetoDist::grad2 ( double x ) const [inline]`

Definition at line 185 of file `ParetoDist.h`.

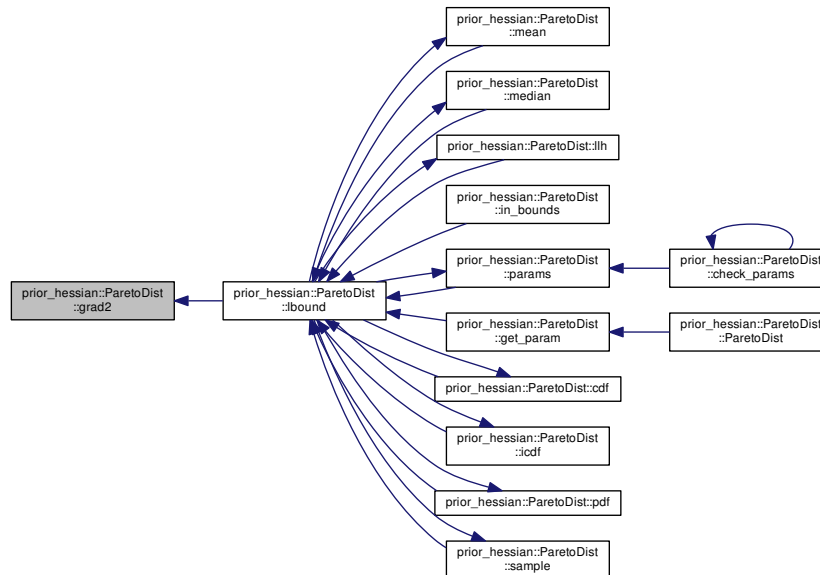
References `alpha()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



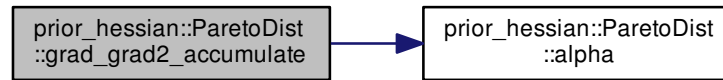
7.56.4.12 `void prior_hessian::ParetoDist::grad_grad2_accumulate ( double x, double & g, double & g2 ) const` `[inline]`

Definition at line 191 of file `ParetoDist.h`.

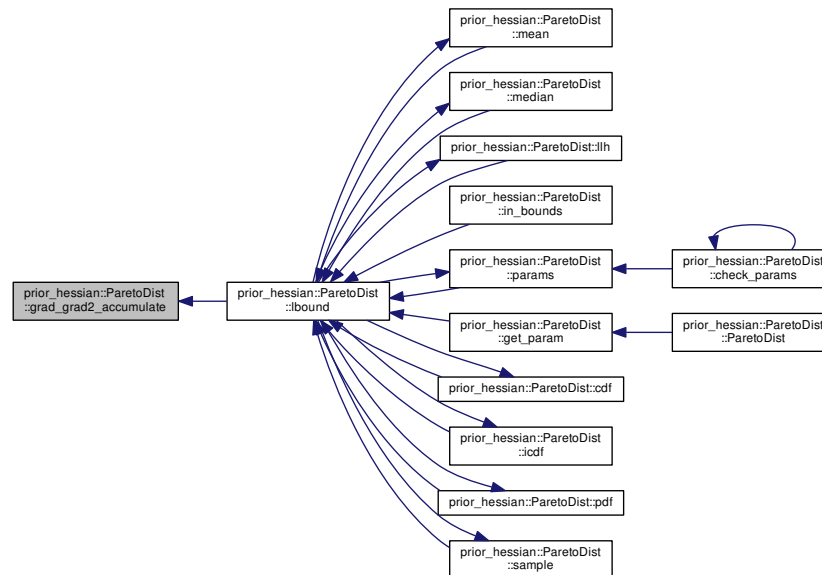
References `alpha()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



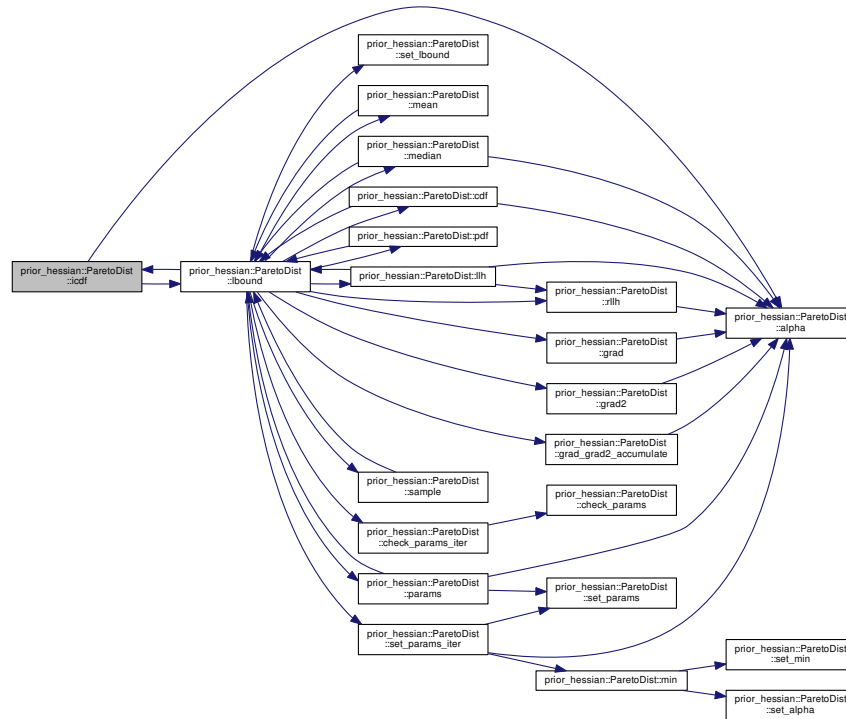
7.56.4.13 `double prior_hessian::ParetoDist::icdf ( double u ) const [inline]`

Definition at line 161 of file `ParetoDist.h`.

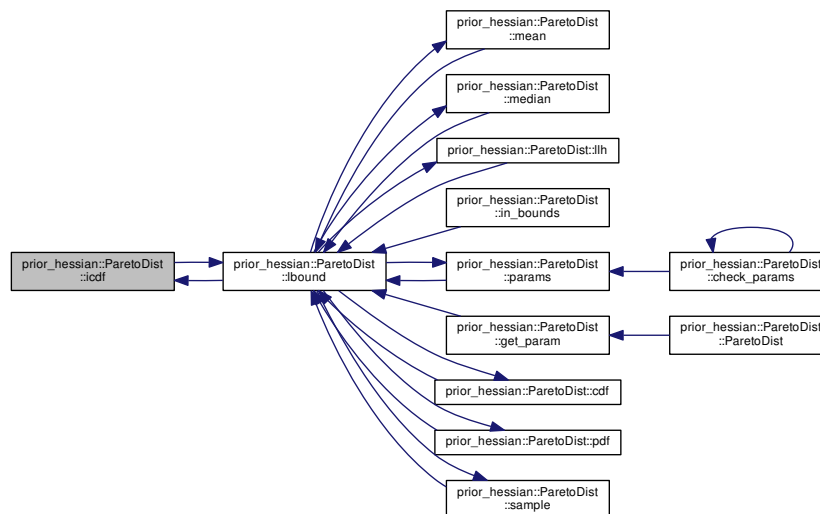
References `alpha()`, and `lbound()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:

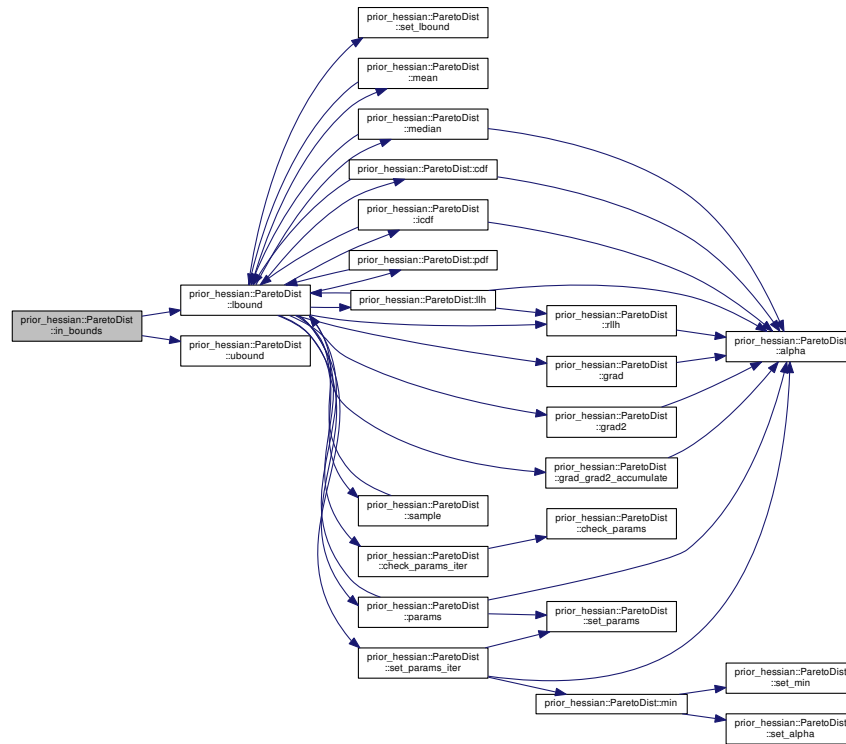


7.56.4.14 bool prior\_hessian::ParetoDist::in\_bounds ( double *u* ) const [inline]

Definition at line 28 of file ParetoDist.h.

References lbound(), and ubound().

Here is the call graph for this function:



## 7.56.4.15 double prior\_hessian::ParetoDist::lbound ( ) const [inline]

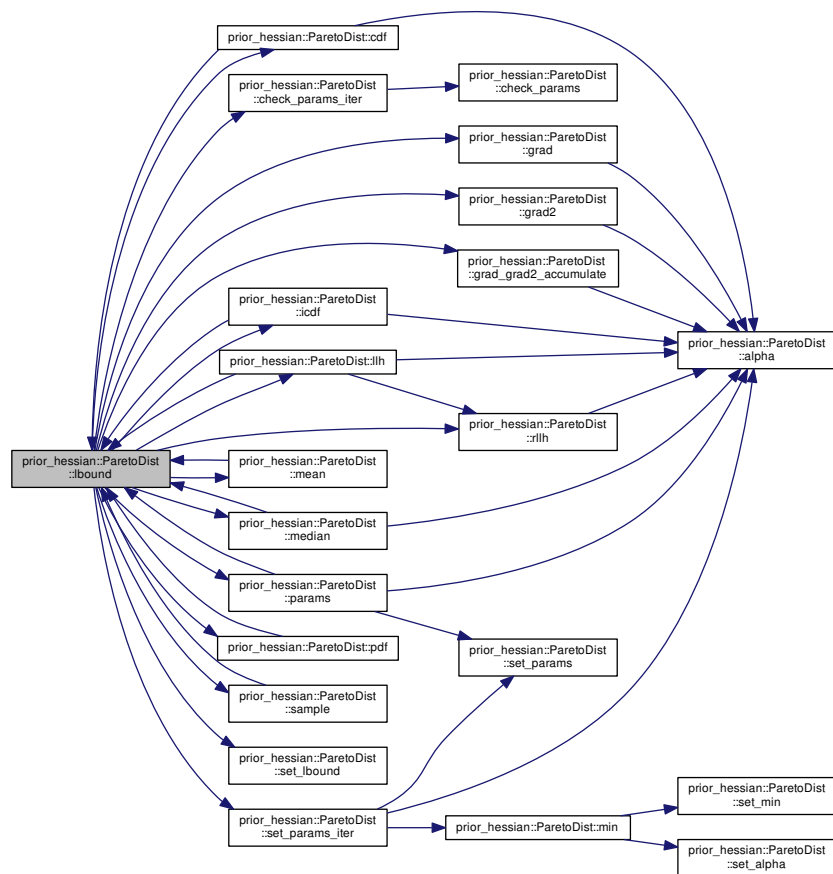
Definition at line 60 of file ParetoDist.h.

References cdf(), check\_params\_iter(), grad(), grad2(), grad\_grad2\_accumulate(), icdf(), llh(), mean(), median(), params(), pdf(), rllh(), sample(), set\_lbound(), and set\_params\_iter().

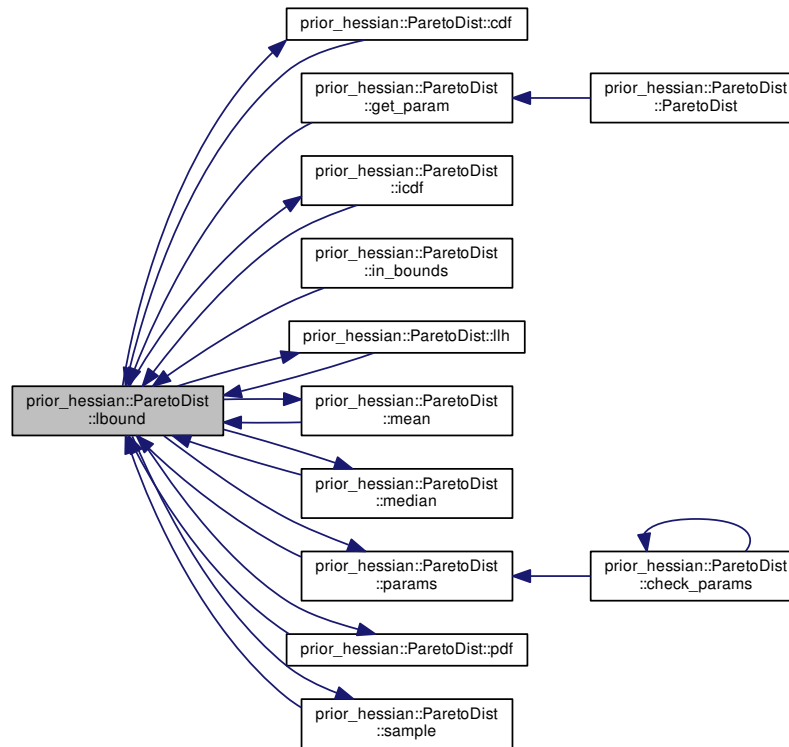
Referenced by cdf(), get\_param(), icdf(), in\_bounds(), llh(), mean(), median(), params(), pdf(), and sample().



Here is the call graph for this function:



Here is the caller graph for this function:



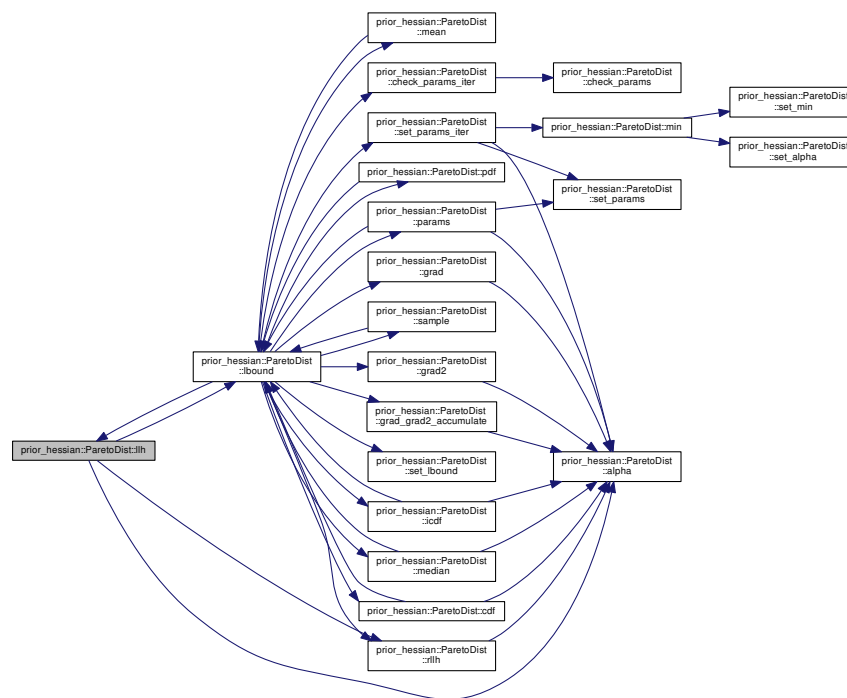
#### 7.56.4.16 double prior\_hessian::ParetoDist::llh ( double x ) const

Definition at line 64 of file ParetoDist.cpp.

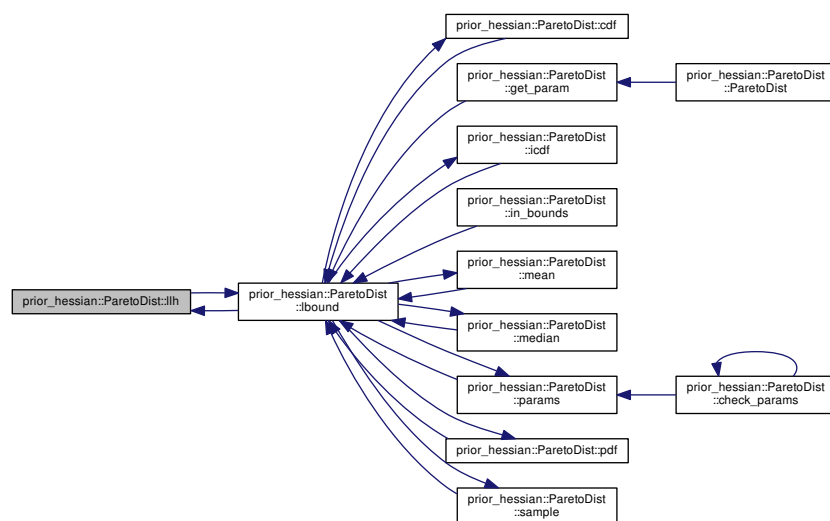
References `alpha()`, `lbound()`, and `rlh()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



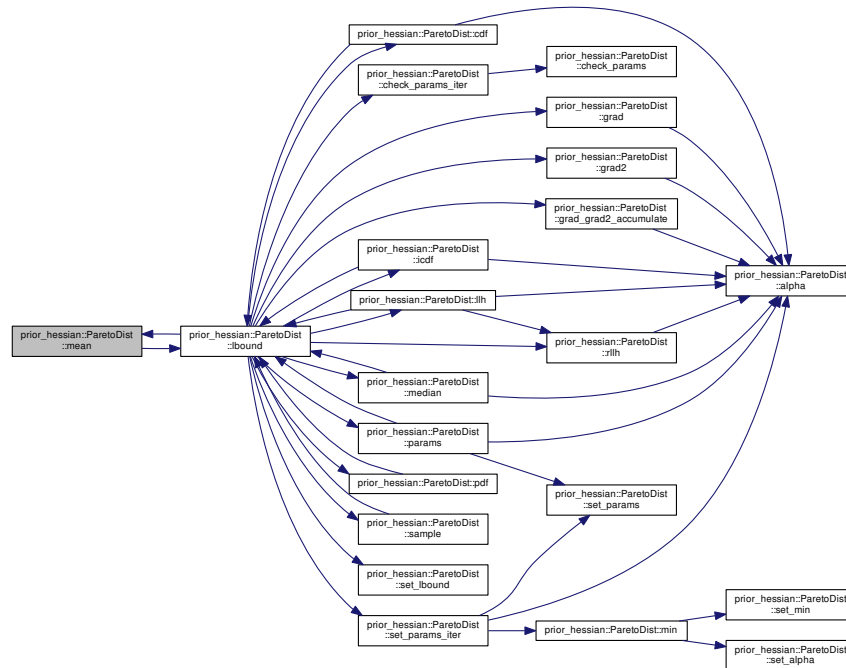
## 7.56.4.17 double prior\_hessian::ParetoDist::mean ( ) const

Definition at line 54 of file ParetoDist.cpp.

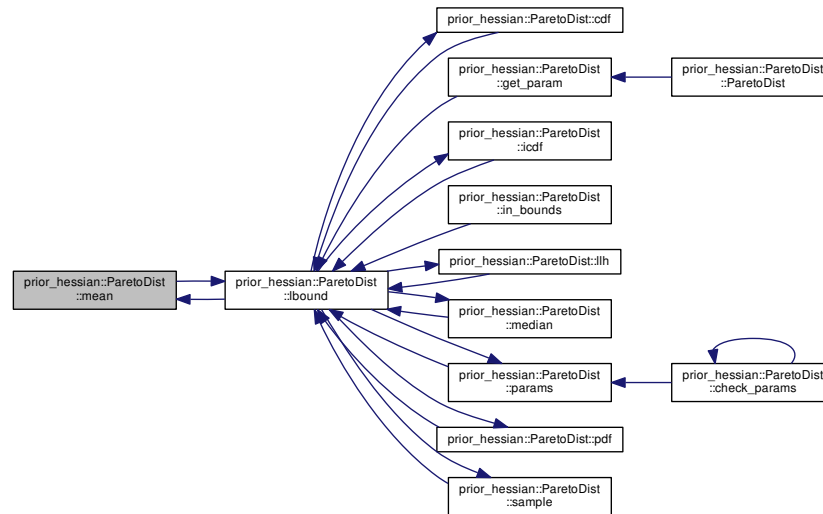
References lbound().

Referenced by lbound().

Here is the call graph for this function:



Here is the caller graph for this function:



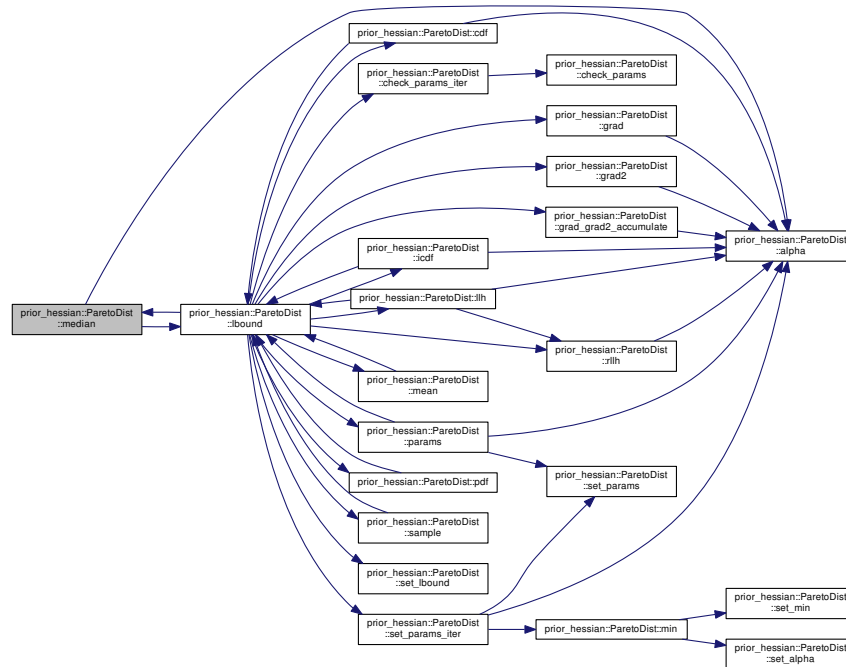
#### 7.56.4.18 double prior\_hessian::ParetoDist::median ( ) const

Definition at line 59 of file ParetoDist.cpp.

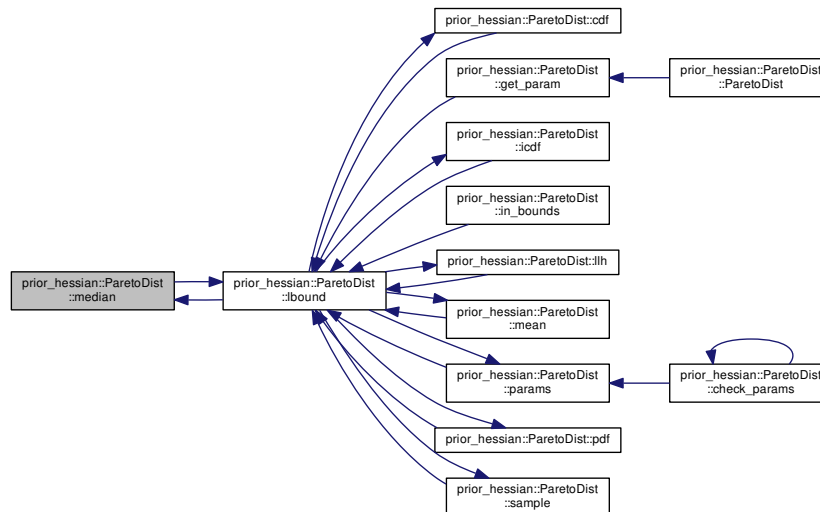
References `alpha()`, and `lbound()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



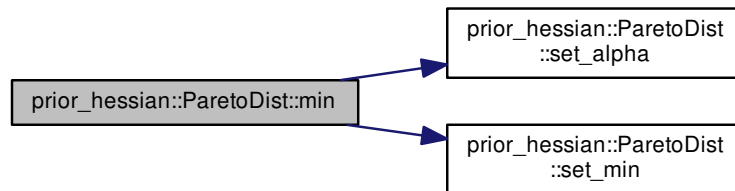
#### 7.56.4.19 double prior\_hessian::ParetoDist::min ( ) const [inline]

Definition at line 56 of file ParetoDist.h.

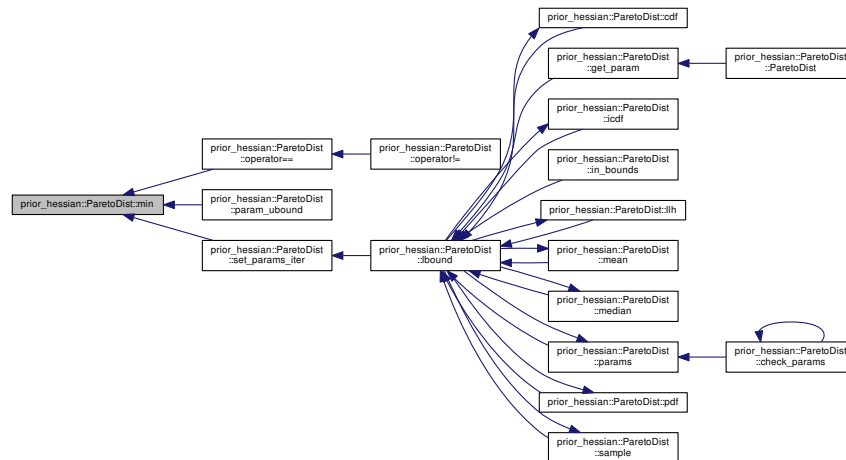
References `set_alpha()`, and `set_min()`.

Referenced by `operator==()`, `param_ubound()`, and `set_params_iter()`.

Here is the call graph for this function:



Here is the caller graph for this function:



**7.56.4.20** `static constexpr IdxT prior_hessian::UnivariateDist::num_dim ( )` `[inline]`, `[static]`, `[inherited]`

Definition at line 17 of file `UnivariateDist.h`.

**7.56.4.21** `static constexpr IdxT prior_hessian::ParetoDist::num_params ( )` `[inline]`, `[static]`

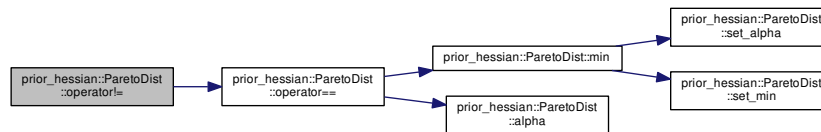
Definition at line 25 of file `ParetoDist.h`.

7.56.4.22 `bool prior_hessian::ParetoDist::operator!=( const ParetoDist & o ) const` `[inline]`

Definition at line 53 of file ParetoDist.h.

References `operator==( )`.

Here is the call graph for this function:



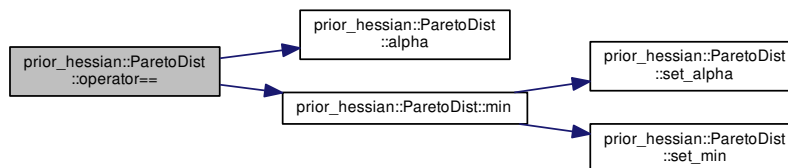
7.56.4.23 `bool prior_hessian::ParetoDist::operator==( const ParetoDist & o ) const` `[inline]`

Definition at line 52 of file ParetoDist.h.

References `alpha()`, and `min()`.

Referenced by `operator!=( )`.

Here is the call graph for this function:



Here is the caller graph for this function:





7.56.4.24 `static const NparamsVecT& prior_hessian::ParetoDist::param_lbound ( ) [inline],[static]`

Definition at line 32 of file ParetoDist.h.

7.56.4.25 `static const StringVecT& prior_hessian::ParetoDist::param_names ( ) [inline],[static]`

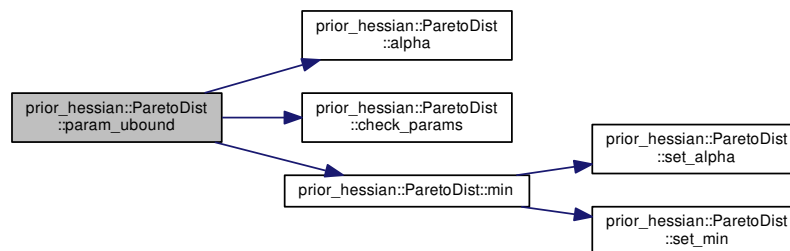
Definition at line 31 of file ParetoDist.h.

7.56.4.26 `static const NparamsVecT& prior_hessian::ParetoDist::param_ubound ( ) [inline],[static]`

Definition at line 33 of file ParetoDist.h.

References `alpha()`, `check_params()`, and `min()`.

Here is the call graph for this function:



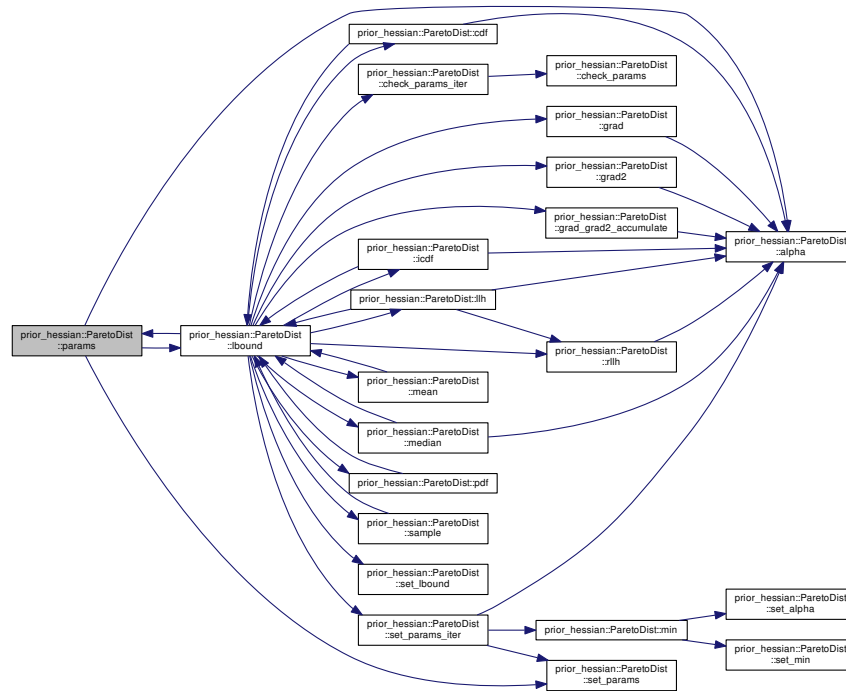
7.56.4.27 `NparamsVecT prior_hessian::ParetoDist::params ( ) const [inline]`

Definition at line 48 of file ParetoDist.h.

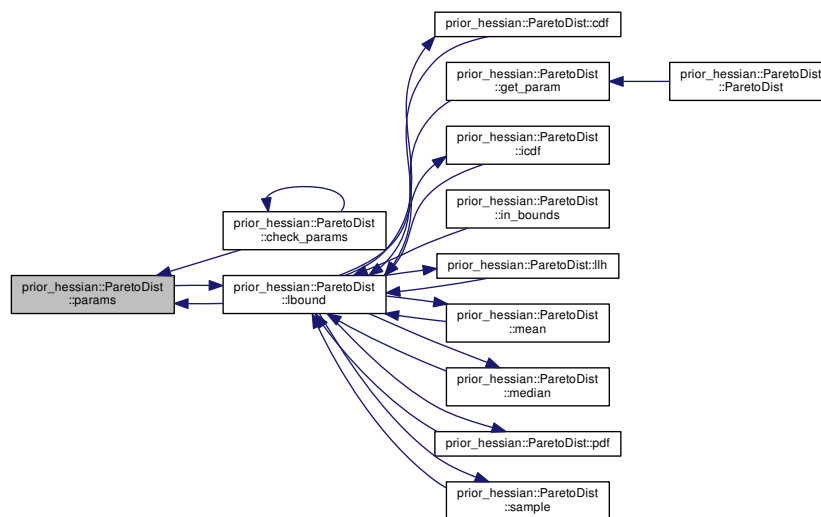
References `alpha()`, `lbound()`, and `set_params()`.

Referenced by `check_params()`, and `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



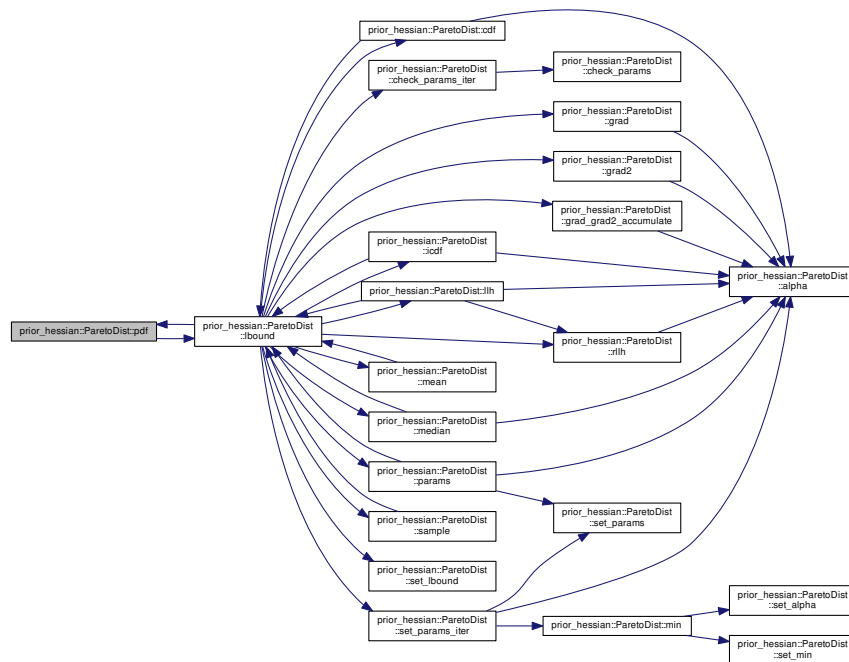
#### 7.56.4.28 double prior\_hessian::ParetoDist::pdf ( double x ) const [inline]

Definition at line 167 of file ParetoDist.h.

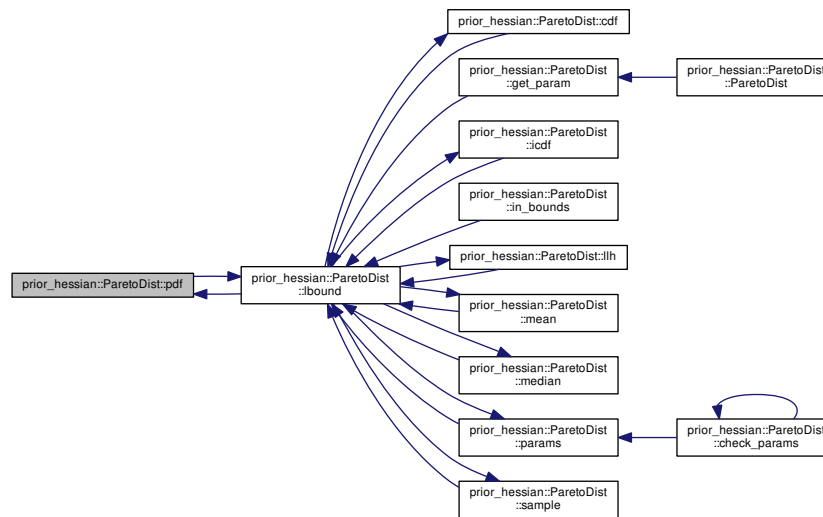
References lbound().

Referenced by lbound().

Here is the call graph for this function:



Here is the caller graph for this function:



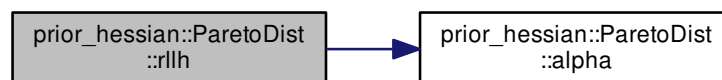
#### 7.56.4.29 double prior\_hessian::ParetoDist::rllh ( double x ) const [inline]

Definition at line 173 of file ParetoDist.h.

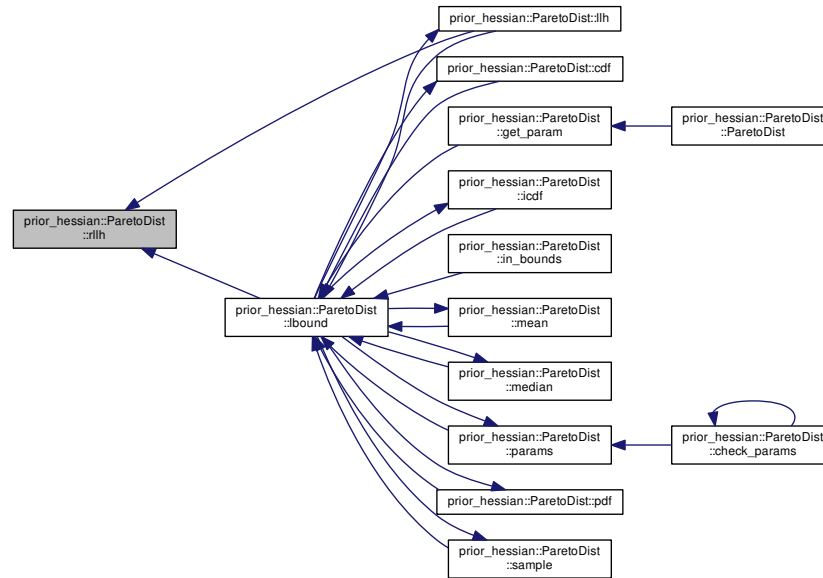
References `alpha()`.

Referenced by `lbound()`, and `llh()`.

Here is the call graph for this function:



Here is the caller graph for this function:



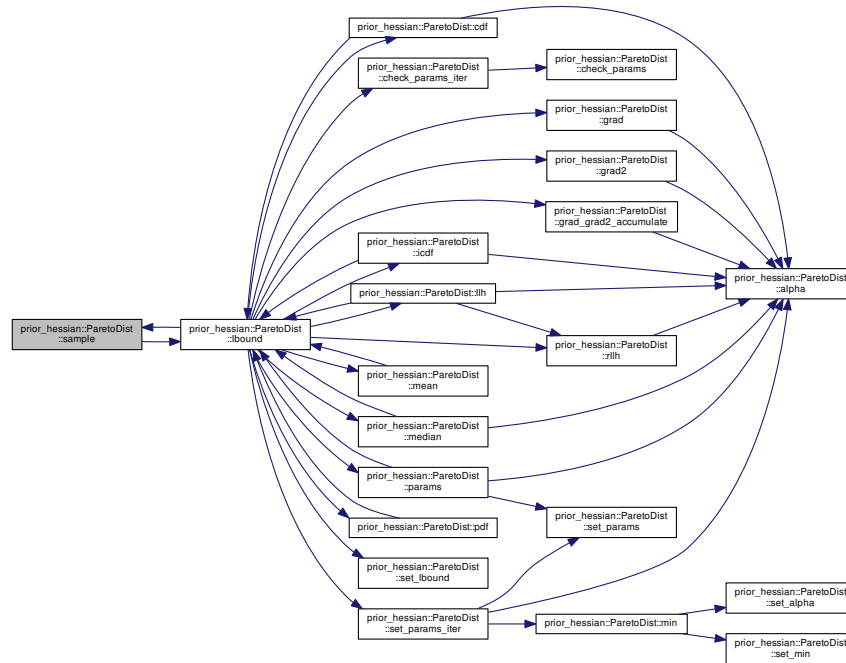
7.56.4.30 `template<class RngT > double prior_hessian::ParetoDist::sample ( RngT & rng ) const`

Definition at line 200 of file ParetoDist.h.

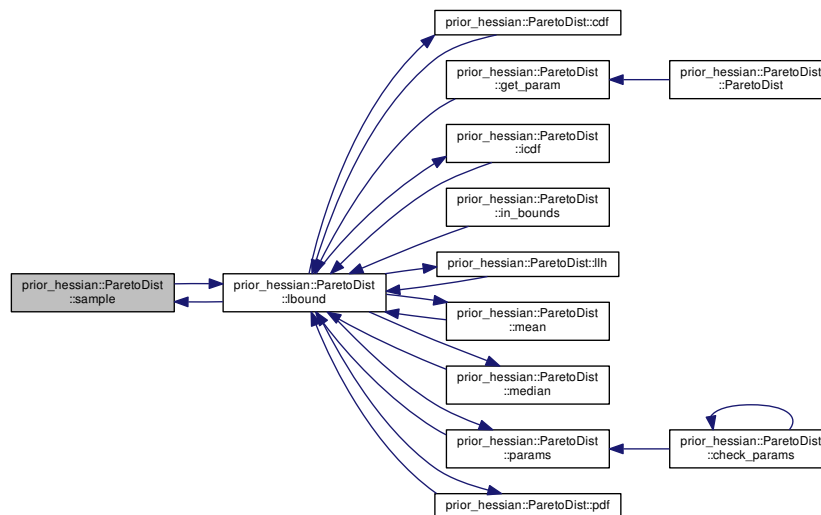
References `lbound()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:

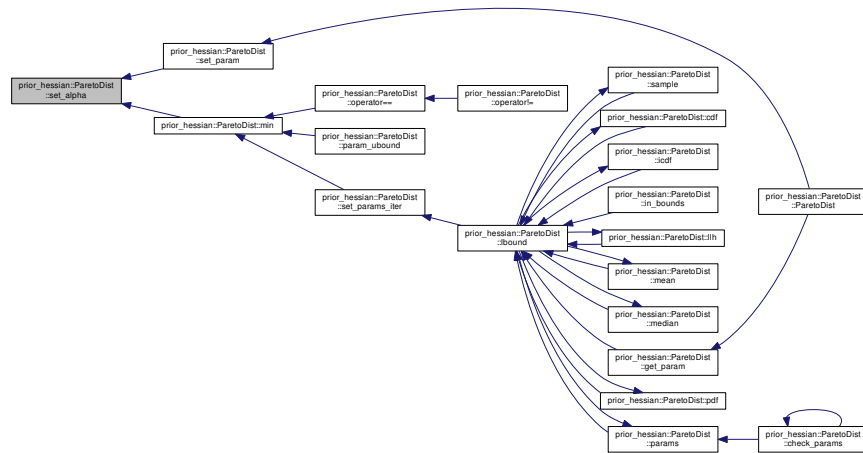


#### 7.56.4.31 void prior\_hessian::ParetoDist::set\_alpha ( double val )

Definition at line 35 of file ParetoDist.cpp.

Referenced by `min()`, and `set_param()`.

Here is the caller graph for this function:

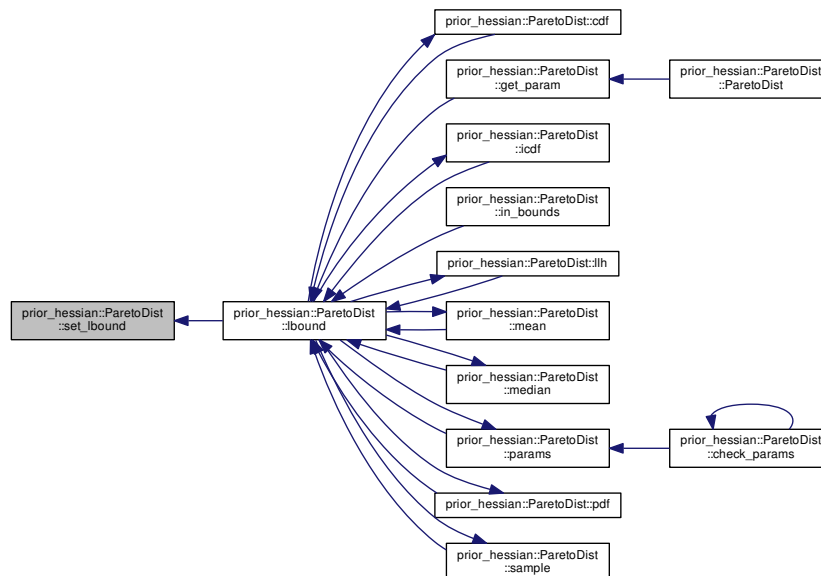


#### 7.56.4.32 void prior\_hessian::ParetoDist::set\_lbound ( double lbound )

Definition at line 48 of file ParetoDist.cpp.

Referenced by `lbound()`.

Here is the caller graph for this function:

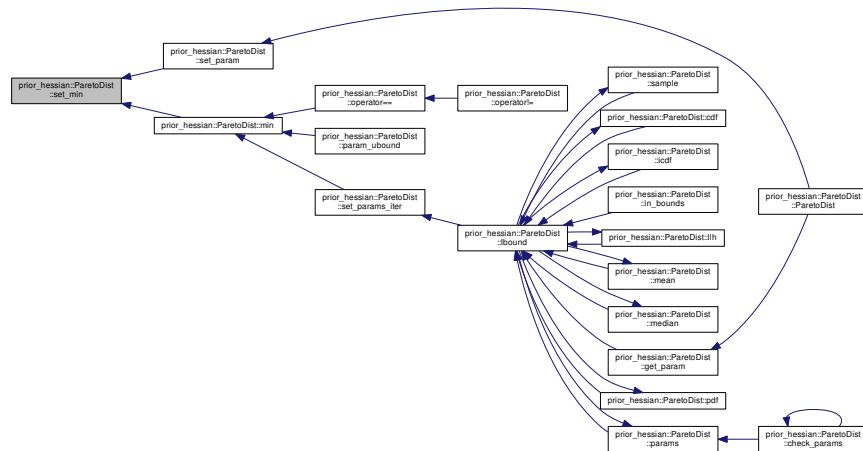


## 7.56.4.33 void prior\_hessian::ParetoDist::set\_min ( double val )

Definition at line 29 of file ParetoDist.cpp.

Referenced by min(), and set\_param().

Here is the caller graph for this function:



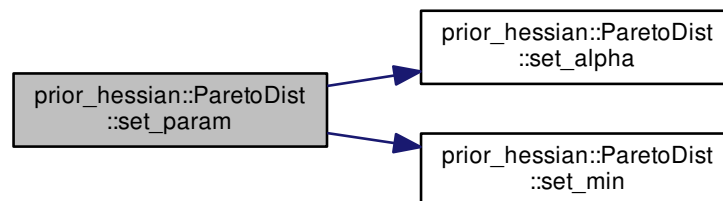
## 7.56.4.34 void prior\_hessian::ParetoDist::set\_param ( int idx, double val ) [inline]

Definition at line 133 of file ParetoDist.h.

References set\_alpha(), and set\_min().

Referenced by ParetoDist().

Here is the call graph for this function:





Here is the caller graph for this function:

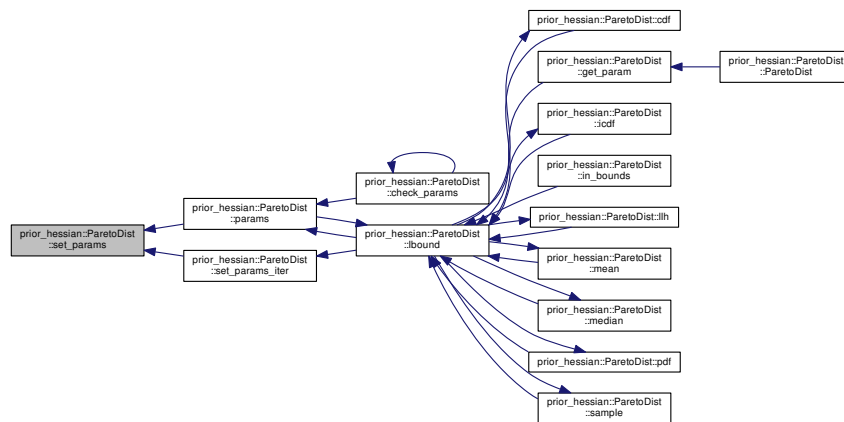


7.56.4.35 `void prior_hessian::ParetoDist::set_params ( double min, double alpha )`

Definition at line 41 of file `ParetoDist.cpp`.

Referenced by `params()`, and `set_params_iter()`.

Here is the caller graph for this function:



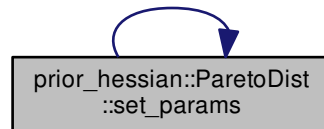
7.56.4.36 `template<class Vec > void prior_hessian::ParetoDist::set_params ( const Vec & p ) [inline]`

Definition at line 51 of file `ParetoDist.h`.

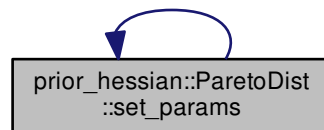
References `set_params()`.

Referenced by `set_params()`.

Here is the call graph for this function:



Here is the caller graph for this function:



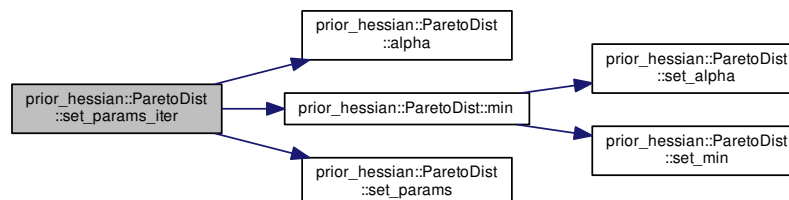
7.56.4.37 `template<class IterT > void prior_hessian::ParetoDist::set_params_iter ( IterT & params )`

Definition at line 208 of file ParetoDist.h.

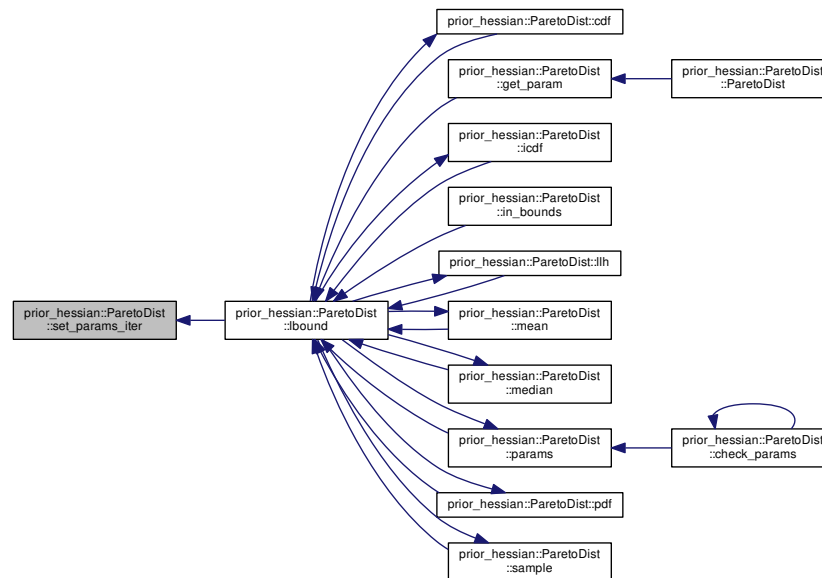
References `alpha()`, `min()`, and `set_params()`.

Referenced by `lbound()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.56.4.38 static constexpr double prior\_hessian::ParetoDist::ubound ( ) [inline], [static]

Definition at line 27 of file ParetoDist.h.

Referenced by in\_bounds().

Here is the caller graph for this function:



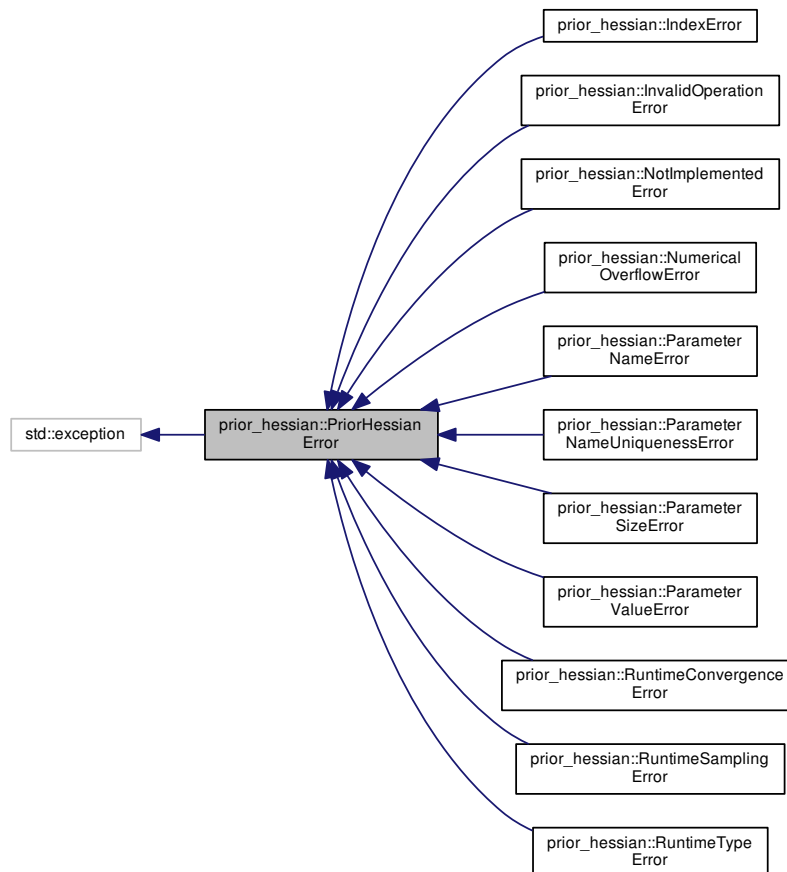
The documentation for this class was generated from the following files:

- [ParetoDist.h](#)
- [ParetoDist.cpp](#)

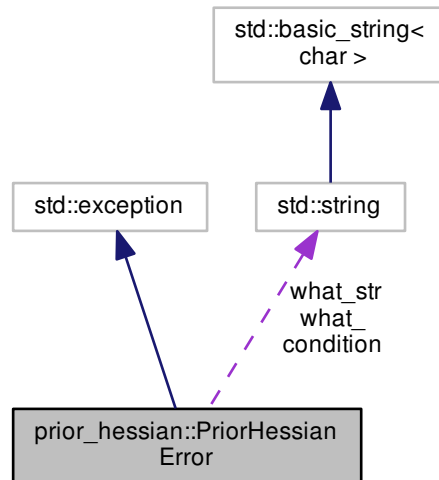
## 7.57 prior\_hessian::PriorHessianError Class Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::PriorHessianError:



Collaboration diagram for `prior_hessian::PriorHessianError`:



#### Public Member Functions

- `PriorHessianError` (`std::string condition`, `std::string what`)
- `const char * what () const noexcept override`

#### Protected Attributes

- `std::string condition`
- `std::string what_str`
- `std::string what_`

#### 7.57.1 Detailed Description

Definition at line 43 of file `PriorHessianError.h`.

#### 7.57.2 Constructor & Destructor Documentation

**7.57.2.1** `prior_hessian::PriorHessianError::PriorHessianError ( std::string condition, std::string what ) [inline]`

Definition at line 50 of file `PriorHessianError.h`.

### 7.57.3 Member Function Documentation

7.57.3.1 `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`

Definition at line 56 of file PriorHessianError.h.

### 7.57.4 Member Data Documentation

7.57.4.1 `std::string prior_hessian::PriorHessianError::condition` `[protected]`

Definition at line 46 of file PriorHessianError.h.

7.57.4.2 `std::string prior_hessian::PriorHessianError::what_` `[protected]`

Definition at line 48 of file PriorHessianError.h.

7.57.4.3 `std::string prior_hessian::PriorHessianError::what_str` `[protected]`

Definition at line 47 of file PriorHessianError.h.

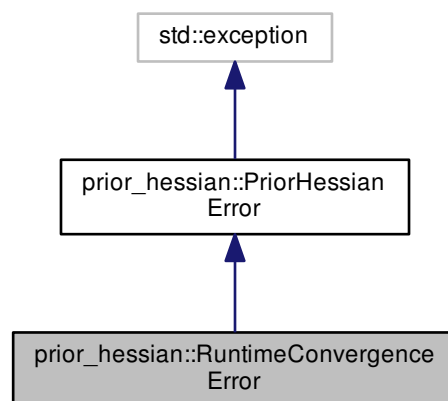
The documentation for this class was generated from the following file:

- [PriorHessianError.h](#)

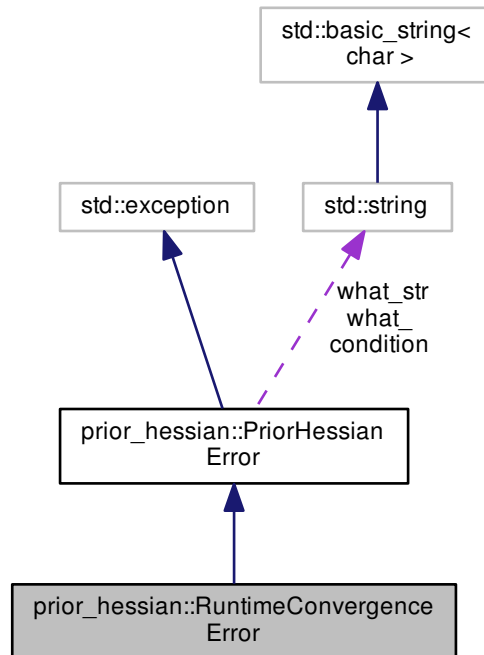
## 7.58 prior\_hessian::RuntimeConvergenceError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::RuntimeConvergenceError:



Collaboration diagram for `prior_hessian::RuntimeConvergenceError`:



#### Public Member Functions

- [RuntimeConvergenceError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.58.1 Detailed Description

Definition at line 94 of file PriorHessianError.h.

#### 7.58.2 Constructor & Destructor Documentation

##### 7.58.2.1 `prior_hessian::RuntimeConvergenceError::RuntimeConvergenceError ( std::string message )` `[inline]`

Definition at line 96 of file PriorHessianError.h.

### 7.58.3 Member Function Documentation

**7.58.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.58.4 Member Data Documentation

**7.58.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.58.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.58.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file PriorHessianError.h.

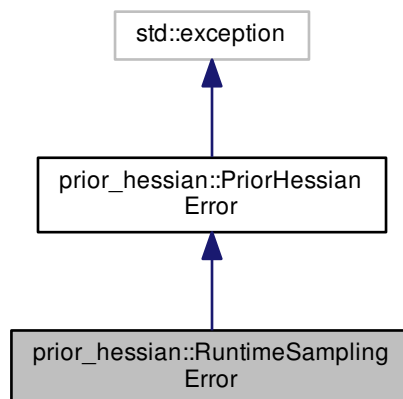
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

## 7.59 prior\_hessian::RuntimeSamplingError Struct Reference

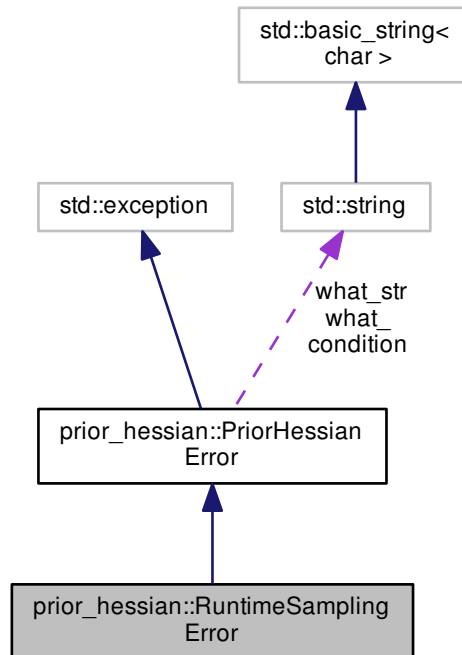
```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::RuntimeSamplingError:





Collaboration diagram for `prior_hessian::RuntimeSamplingError`:



#### Public Member Functions

- [RuntimeSamplingError](#) (std::string message)
- const char \* [what](#) () const noexcept override

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.59.1 Detailed Description

Definition at line 99 of file PriorHessianError.h.

#### 7.59.2 Constructor & Destructor Documentation

7.59.2.1 `prior_hessian::RuntimeSamplingError::RuntimeSamplingError ( std::string message )` `[inline]`

Definition at line 101 of file PriorHessianError.h.

### 7.59.3 Member Function Documentation

**7.59.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.59.4 Member Data Documentation

**7.59.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.59.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.59.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file PriorHessianError.h.

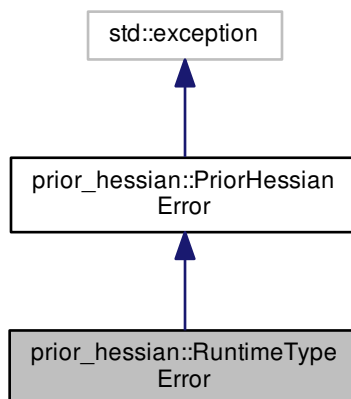
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

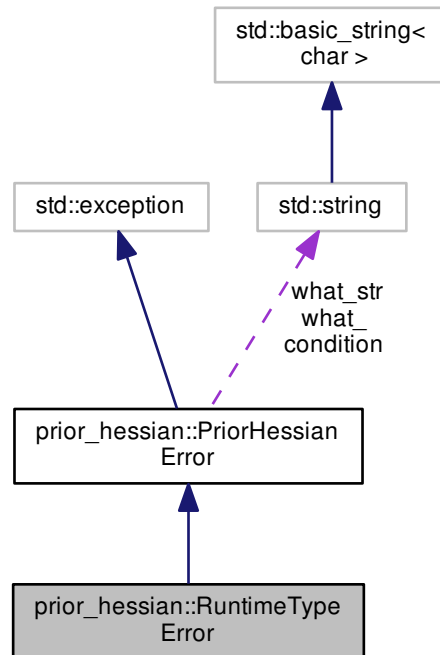
## 7.60 prior\_hessian::RuntimeTypeError Struct Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
PriorHessianError.h>
```

Inheritance diagram for prior\_hessian::RuntimeTypeError:



Collaboration diagram for `prior_hessian::RuntimeTypeError`:



#### Public Member Functions

- [RuntimeTypeError](#) (std::string message)
- `const char * what () const noexcept override`

#### Protected Attributes

- std::string [condition](#)
- std::string [what\\_str](#)
- std::string [what\\_](#)

#### 7.60.1 Detailed Description

Definition at line 105 of file `PriorHessianError.h`.

#### 7.60.2 Constructor & Destructor Documentation

##### 7.60.2.1 `prior_hessian::RuntimeTypeError::RuntimeTypeError ( std::string message ) [inline]`

Definition at line 107 of file `PriorHessianError.h`.

### 7.60.3 Member Function Documentation

**7.60.3.1** `const char* prior_hessian::PriorHessianError::what ( ) const` `[inline]`, `[override]`, `[noexcept]`, `[inherited]`

Definition at line 56 of file PriorHessianError.h.

### 7.60.4 Member Data Documentation

**7.60.4.1** `std::string prior_hessian::PriorHessianError::condition` `[protected]`, `[inherited]`

Definition at line 46 of file PriorHessianError.h.

**7.60.4.2** `std::string prior_hessian::PriorHessianError::what_` `[protected]`, `[inherited]`

Definition at line 48 of file PriorHessianError.h.

**7.60.4.3** `std::string prior_hessian::PriorHessianError::what_str` `[protected]`, `[inherited]`

Definition at line 47 of file PriorHessianError.h.

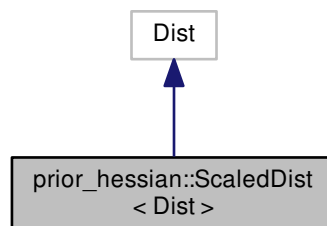
The documentation for this struct was generated from the following file:

- [PriorHessianError.h](#)

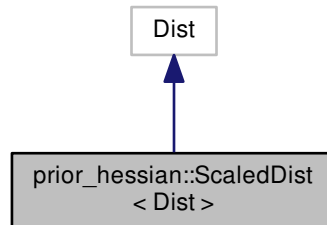
## 7.61 prior\_hessian::ScaledDist< Dist > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
ScaledDist.h>
```

Inheritance diagram for prior\_hessian::ScaledDist< Dist >:



Collaboration diagram for `prior_hessian::ScaledDist< Dist >`:



### Public Member Functions

- `ScaledDist ()`
- `ScaledDist (double lbound, double ubound)`
- `template<typename = meta::EnableIfNotIsSelfT<Dist,ScaledDist>>  
ScaledDist (const Dist &dist)`
- `template<typename = meta::EnableIfNotIsSelfT<Dist,ScaledDist>>  
ScaledDist (Dist &&dist)`
- `ScaledDist (const Dist &dist, double lbound, double ubound)`
- `ScaledDist (Dist &&dist, double lbound, double ubound)`
- `double lbound () const`
- `double ubound () const`
- `bool operator== (const ScaledDist< Dist > &o) const`
- `bool operator!= (const ScaledDist< Dist > &o) const`
- `void set_lbound (double lbound)`
- `void set_ubound (double ubound)`
- `void set_bounds (double lbound, double ubound)`
- `double mean () const`
- `double median () const`
- `double cdf (double x) const`
- `double pdf (double x) const`
- `double icdf (double u) const`
- `double llh (double x) const`
- `template<class RngT >  
double sample (RngT &rng) const`

### Static Public Member Functions

- `static double unscaled_lbound ()`
- `static double unscaled_ubound ()`
- `static double global_lbound ()`
- `static double global_ubound ()`

## Protected Member Functions

- double [convert\\_to\\_unitary\\_coords](#) (double x) const
- double [convert\\_from\\_unitary\\_coords](#) (double u) const

## Protected Attributes

- double [\\_scaled\\_lbound](#)
- double [\\_scaled\\_ubound](#)
- double [scaling\\_ratio](#)
- double [llh\\_scaling\\_const](#)

## 7.61.1 Detailed Description

```
template<class Dist>
class prior_hessian::ScaledDist< Dist >
```

Definition at line 19 of file ScaledDist.h.

## 7.61.2 Constructor &amp; Destructor Documentation

7.61.2.1 `template<class Dist> prior_hessian::ScaledDist< Dist >::ScaledDist ( ) [inline]`

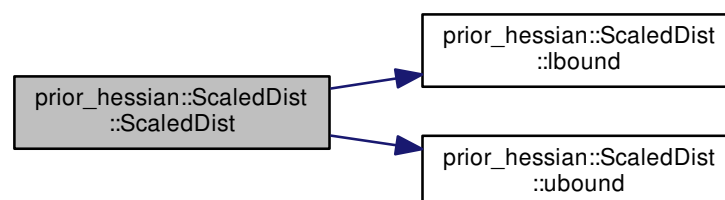
Definition at line 22 of file ScaledDist.h.

7.61.2.2 `template<class Dist> prior_hessian::ScaledDist< Dist >::ScaledDist ( double lbound, double ubound ) [inline]`

Definition at line 23 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::lbound()`, and `prior_hessian::ScaledDist< Dist >::ubound()`.

Here is the call graph for this function:



7.61.2.3 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,ScaledDist>>  
prior_hessian::ScaledDist< Dist >::ScaledDist ( const Dist & dist ) [inline]`

Definition at line 26 of file ScaledDist.h.

7.61.2.4 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,ScaledDist>>  
prior_hessian::ScaledDist< Dist >::ScaledDist ( Dist && dist ) [inline]`

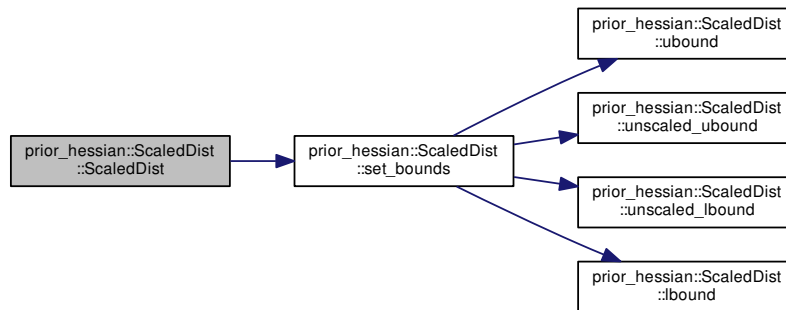
Definition at line 29 of file ScaledDist.h.

7.61.2.5 `template<class Dist> prior_hessian::ScaledDist< Dist >::ScaledDist ( const Dist & dist, double lbound, double  
ubound ) [inline]`

Definition at line 31 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::set_bounds()`.

Here is the call graph for this function:

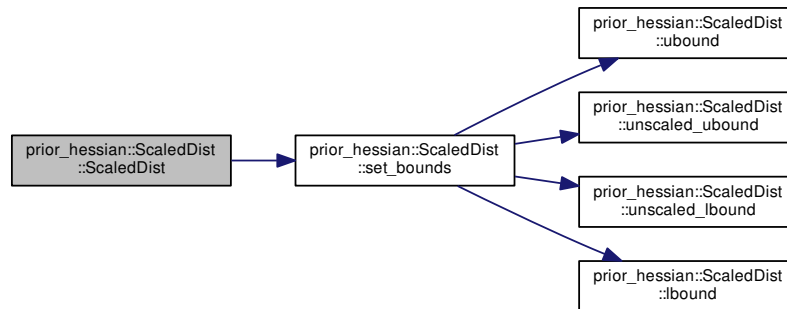


7.61.2.6 `template<class Dist> prior_hessian::ScaledDist< Dist >::ScaledDist ( Dist && dist, double lbound, double  
ubound ) [inline]`

Definition at line 32 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::set_bounds()`.

Here is the call graph for this function:



### 7.61.3 Member Function Documentation

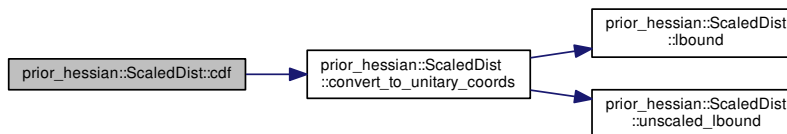
#### 7.61.3.1 `template<class Dist > double prior_hessian::ScaledDist< Dist >::cdf ( double x ) const`

Definition at line 112 of file ScaledDist.h.

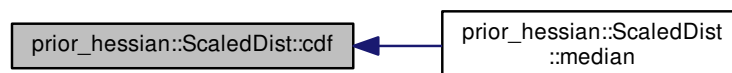
References `prior_hessian::ScaledDist< Dist >::convert_to_unitary_coords()`.

Referenced by `prior_hessian::ScaledDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:





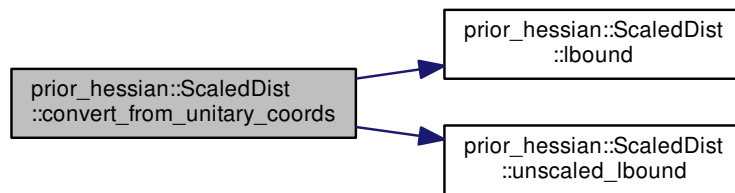
**7.61.3.2** `template<class Dist > double prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords ( double u ) const`  
`[protected]`

Definition at line 143 of file ScaledDist.h.

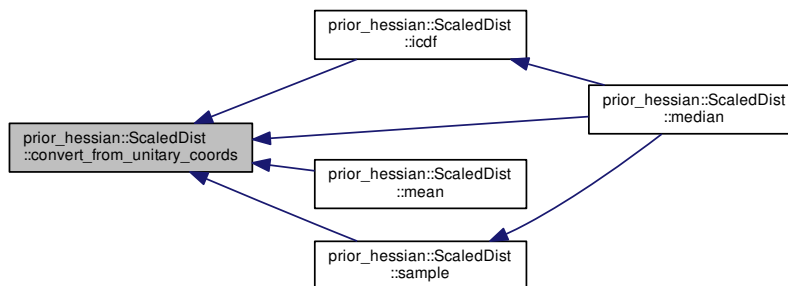
References `prior_hessian::ScaledDist< Dist >::lbound()`, `prior_hessian::ScaledDist< Dist >::scaling_ratio`, and `prior_hessian::ScaledDist< Dist >::unscaled_lbound()`.

Referenced by `prior_hessian::ScaledDist< Dist >::icdf()`, `prior_hessian::ScaledDist< Dist >::mean()`, `prior_hessian::ScaledDist< Dist >::median()`, and `prior_hessian::ScaledDist< Dist >::sample()`.

Here is the call graph for this function:



Here is the caller graph for this function:



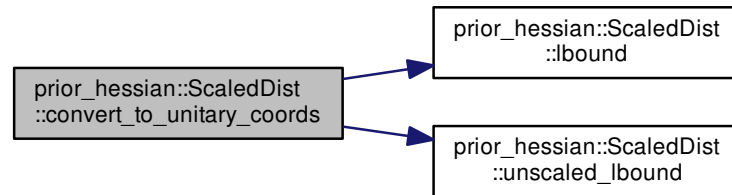
**7.61.3.3** `template<class Dist > double prior_hessian::ScaledDist< Dist >::convert_to_unitary_coords ( double x ) const`  
`[protected]`

Definition at line 137 of file ScaledDist.h.

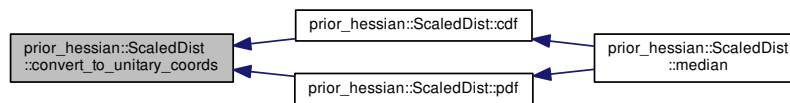
References `prior_hessian::ScaledDist< Dist >::lbound()`, `prior_hessian::ScaledDist< Dist >::scaling_ratio`, and `prior_hessian::ScaledDist< Dist >::unscaled_lbound()`.

Referenced by prior\_hessian::ScaledDist< Dist >::cdf(), and prior\_hessian::ScaledDist< Dist >::pdf().

Here is the call graph for this function:



Here is the caller graph for this function:



**7.61.3.4** `template<class Dist> static double prior_hessian::ScaledDist< Dist >::global_lbound ( ) [inline], [static]`

Definition at line 38 of file ScaledDist.h.

**7.61.3.5** `template<class Dist> static double prior_hessian::ScaledDist< Dist >::global_ubound ( ) [inline], [static]`

Definition at line 39 of file ScaledDist.h.

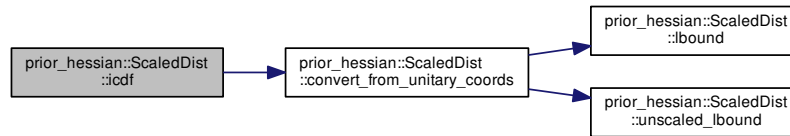
**7.61.3.6** `template<class Dist > double prior_hessian::ScaledDist< Dist >::icdf ( double u ) const`

Definition at line 118 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`.

Referenced by `prior_hessian::ScaledDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



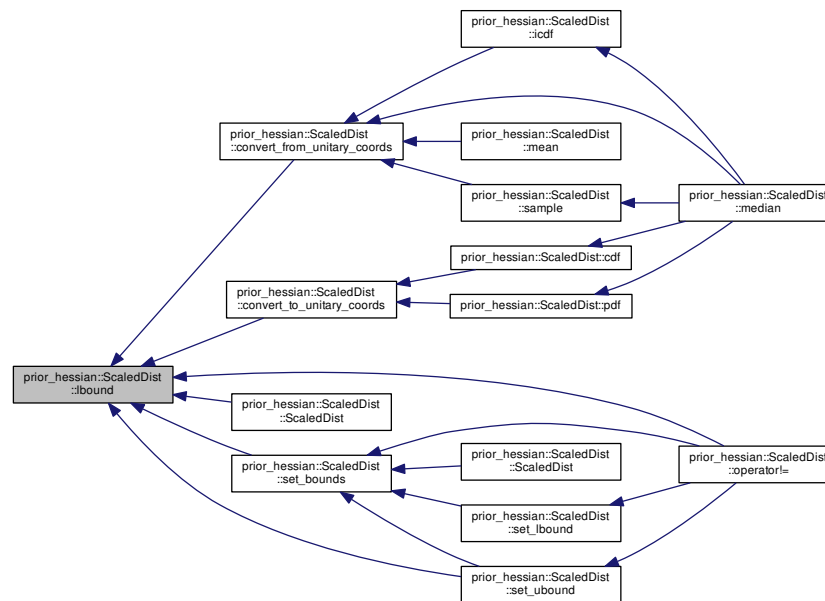
**7.61.3.7** `template<class Dist> double prior_hessian::ScaledDist< Dist >::lbound ( ) const [inline]`

Definition at line 34 of file `ScaledDist.h`.

References `prior_hessian::ScaledDist< Dist >::_scaled_lbound`.

Referenced by `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`, `prior_hessian::ScaledDist< Dist >::convert_to_unitary_coords()`, `prior_hessian::ScaledDist< Dist >::operator!=()`, `prior_hessian::ScaledDist< Dist >::ScaledDist()`, `prior_hessian::ScaledDist< Dist >::set_bounds()`, and `prior_hessian::ScaledDist< Dist >::set_ubound()`.

Here is the caller graph for this function:



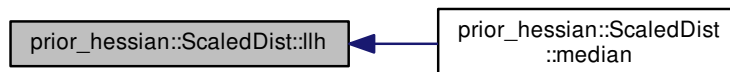
#### 7.61.3.8 template<class Dist > double prior\_hessian::ScaledDist< Dist >::llh ( double x ) const

Definition at line 106 of file ScaledDist.h.

References prior\_hessian::ScaledDist< Dist >::llh\_scaling\_const.

Referenced by prior\_hessian::ScaledDist< Dist >::median().

Here is the caller graph for this function:

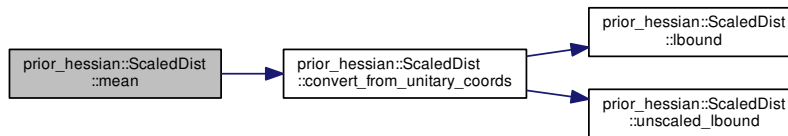


### 7.61.3.9 `template<class Dist> double prior_hessian::ScaledDist< Dist >::mean ( ) const [inline]`

Definition at line 53 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`.

Here is the call graph for this function:

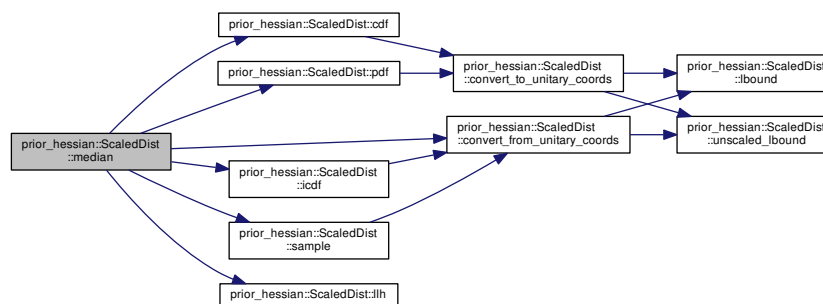


### 7.61.3.10 `template<class Dist> double prior_hessian::ScaledDist< Dist >::median ( ) const [inline]`

Definition at line 54 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::cdf()`, `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`, `prior_hessian::ScaledDist< Dist >::icdf()`, `prior_hessian::ScaledDist< Dist >::llh()`, `prior_hessian::ScaledDist< Dist >::pdf()`, and `prior_hessian::ScaledDist< Dist >::sample()`.

Here is the call graph for this function:

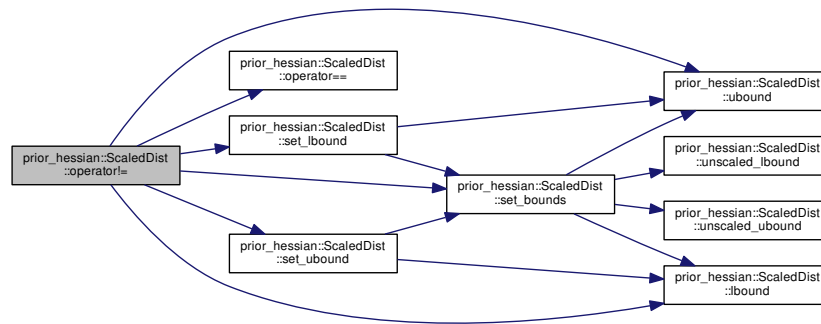


### 7.61.3.11 `template<class Dist> bool prior_hessian::ScaledDist< Dist >::operator!= ( const ScaledDist< Dist > & o ) const [inline]`

Definition at line 47 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::lbound()`, `prior_hessian::ScaledDist< Dist >::operator==()`, `prior_hessian::ScaledDist< Dist >::set_bounds()`, `prior_hessian::ScaledDist< Dist >::set_lbound()`, `prior_hessian::ScaledDist< Dist >::set_ubound()`, and `prior_hessian::ScaledDist< Dist >::ubound()`.

Here is the call graph for this function:



**7.61.3.12** `template<class Dist> bool prior_hessian::ScaledDist< Dist >::operator==( const ScaledDist< Dist > & o ) const [inline]`

Definition at line 41 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::_scaled_lbound`, and `prior_hessian::ScaledDist< Dist >::_scaled_ubound`.

Referenced by `prior_hessian::ScaledDist< Dist >::operator!=( )`.

Here is the caller graph for this function:



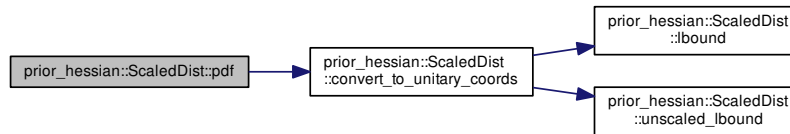
**7.61.3.13** `template<class Dist> double prior_hessian::ScaledDist< Dist >::pdf ( double x ) const`

Definition at line 124 of file ScaledDist.h.

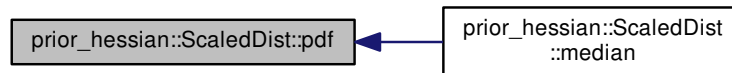
References `prior_hessian::ScaledDist< Dist >::convert_to_unitary_coords()`, and `prior_hessian::ScaledDist< Dist >::_scaling_ratio`.

Referenced by `prior_hessian::ScaledDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



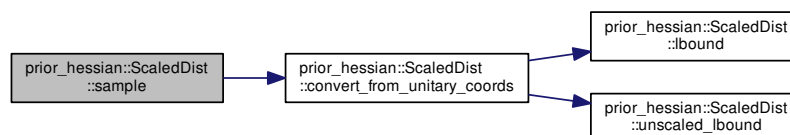
7.61.3.14 `template<class Dist > template<class RngT > double prior_hessian::ScaledDist< Dist >::sample ( RngT & rng ) const`

Definition at line 131 of file `ScaledDist.h`.

References `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`.

Referenced by `prior_hessian::ScaledDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



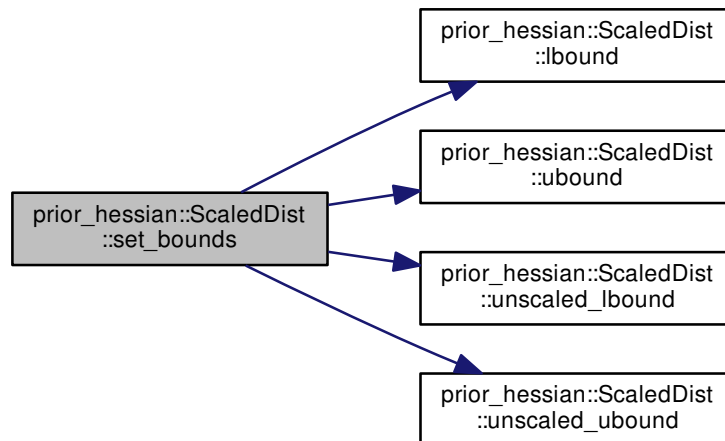
#### 7.61.3.15 `template<class Dist > void prior_hessian::ScaledDist< Dist >::set_bounds ( double lbound, double ubound )`

Definition at line 76 of file `ScaledDist.h`.

References `prior_hessian::ScaledDist< Dist >::_scaled_lbound`, `prior_hessian::ScaledDist< Dist >::_scaled_ubound`, `prior_hessian::ScaledDist< Dist >::lbound()`, `prior_hessian::ScaledDist< Dist >::llh_scaling_const`, `prior_hessian::ScaledDist< Dist >::scaling_ratio`, `prior_hessian::ScaledDist< Dist >::ubound()`, `prior_hessian::ScaledDist< Dist >::unscaled_lbound()`, and `prior_hessian::ScaledDist< Dist >::unscaled_ubound()`.

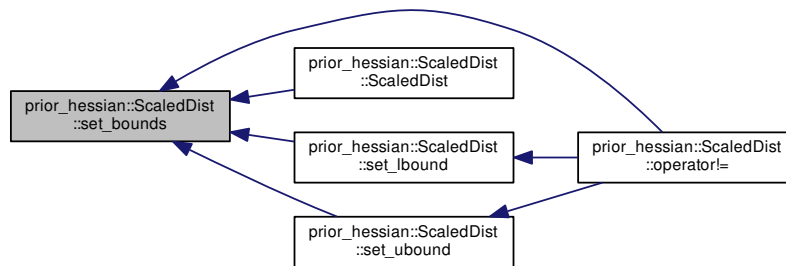
Referenced by `prior_hessian::ScaledDist< Dist >::operator!=()`, `prior_hessian::ScaledDist< Dist >::ScaledDist()`, `prior_hessian::ScaledDist< Dist >::set_lbound()`, and `prior_hessian::ScaledDist< Dist >::set_ubound()`.

Here is the call graph for this function:





Here is the caller graph for this function:



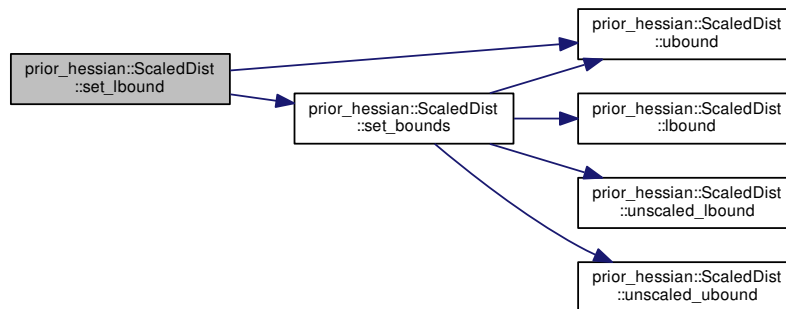
#### 7.61.3.16 `template<class Dist > void prior_hessian::ScaledDist< Dist >::set_lbound ( double lbound )`

Definition at line 98 of file `ScaledDist.h`.

References `prior_hessian::ScaledDist< Dist >::set_bounds()`, and `prior_hessian::ScaledDist< Dist >::ubound()`.

Referenced by `prior_hessian::ScaledDist< Dist >::operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



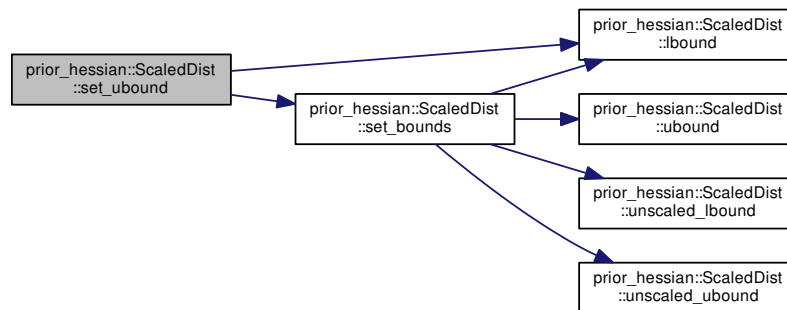
7.61.3.17 `template<class Dist > void prior_hessian::ScaledDist< Dist >::set_ubound ( double ubound )`

Definition at line 102 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::lbound()`, and `prior_hessian::ScaledDist< Dist >::set_bounds()`.

Referenced by `prior_hessian::ScaledDist< Dist >::operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



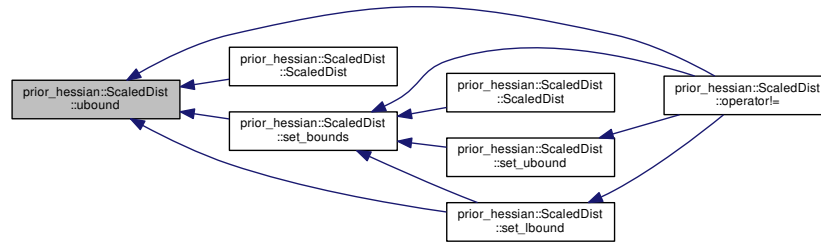
7.61.3.18 `template<class Dist> double prior_hessian::ScaledDist< Dist >::ubound ( ) const` `[inline]`

Definition at line 35 of file ScaledDist.h.

References `prior_hessian::ScaledDist< Dist >::_scaled_ubound`.

Referenced by `prior_hessian::ScaledDist< Dist >::operator!=()`, `prior_hessian::ScaledDist< Dist >::ScaledDist()`, `prior_hessian::ScaledDist< Dist >::set_bounds()`, and `prior_hessian::ScaledDist< Dist >::set_lbound()`.

Here is the caller graph for this function:

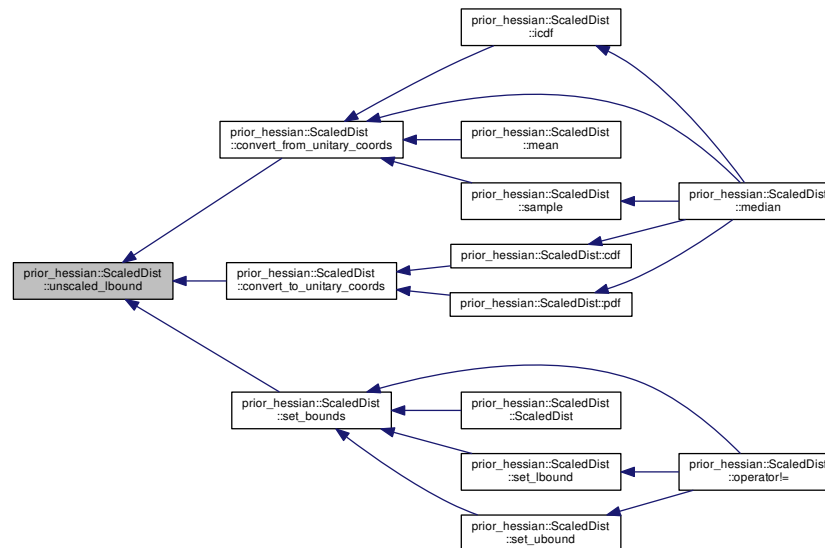


**7.61.3.19** `template<class Dist> static double prior_hessian::ScaledDist< Dist >::unscaled_lbound ( ) [inline], [static]`

Definition at line 36 of file ScaledDist.h.

Referenced by `prior_hessian::ScaledDist< Dist >::convert_from_unitary_coords()`, `prior_hessian::ScaledDist< Dist >::convert_to_unitary_coords()`, and `prior_hessian::ScaledDist< Dist >::set_bounds()`.

Here is the caller graph for this function:

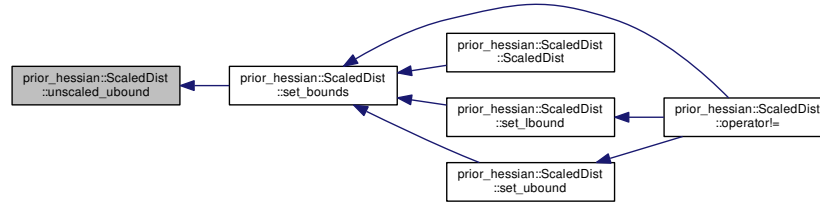


**7.61.3.20** `template<class Dist> static double prior_hessian::ScaledDist< Dist >::unscaled_ubound ( ) [inline], [static]`

Definition at line 37 of file ScaledDist.h.

Referenced by prior\_hessian::ScaledDist< Dist >::set\_bounds().

Here is the caller graph for this function:



#### 7.61.4 Member Data Documentation

##### 7.61.4.1 template<class Dist> double prior\_hessian::ScaledDist< Dist >::\_scaled\_lbound [protected]

Definition at line 64 of file ScaledDist.h.

Referenced by prior\_hessian::ScaledDist< Dist >::lbound(), prior\_hessian::ScaledDist< Dist >::operator==(), and prior\_hessian::ScaledDist< Dist >::set\_bounds().

##### 7.61.4.2 template<class Dist> double prior\_hessian::ScaledDist< Dist >::\_scaled\_ubound [protected]

Definition at line 65 of file ScaledDist.h.

Referenced by prior\_hessian::ScaledDist< Dist >::operator==(), prior\_hessian::ScaledDist< Dist >::set\_bounds(), and prior\_hessian::ScaledDist< Dist >::ubound().

##### 7.61.4.3 template<class Dist> double prior\_hessian::ScaledDist< Dist >::llh\_scaling\_const [protected]

Definition at line 68 of file ScaledDist.h.

Referenced by prior\_hessian::ScaledDist< Dist >::llh(), and prior\_hessian::ScaledDist< Dist >::set\_bounds().

##### 7.61.4.4 template<class Dist> double prior\_hessian::ScaledDist< Dist >::scaling\_ratio [protected]

Definition at line 67 of file ScaledDist.h.

Referenced by prior\_hessian::ScaledDist< Dist >::convert\_from\_unitary\_coords(), prior\_hessian::ScaledDist< Dist >::convert\_to\_unitary\_coords(), prior\_hessian::ScaledDist< Dist >::pdf(), and prior\_hessian::ScaledDist< Dist >::set\_bounds().

The documentation for this class was generated from the following file:

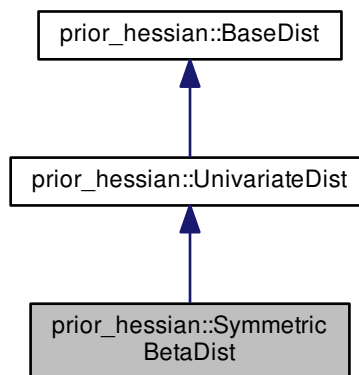
- [ScaledDist.h](#)

## 7.62 prior\_hessian::SymmetricBetaDist Class Reference

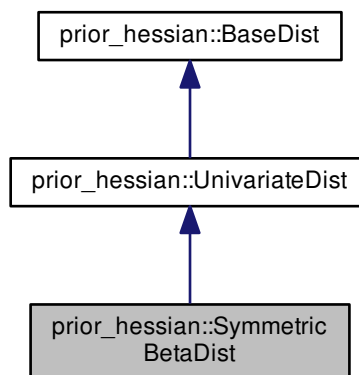
Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
SymmetricBetaDist.h>
```

Inheritance diagram for prior\_hessian::SymmetricBetaDist:



Collaboration diagram for prior\_hessian::SymmetricBetaDist:



## Public Types

- using [NparamsVecT](#) = arma::Col< double >::fixed< \_num\_params >

## Public Member Functions

- [SymmetricBetaDist](#) ()
- [SymmetricBetaDist](#) (double [beta](#))
- template<class Vec , meta::ConstructableIfNotSelfT< Vec, SymmetricBetaDist > = true>  
[SymmetricBetaDist](#) (const Vec &[params](#))
- double [beta](#) () const
- void [set\\_beta](#) (double val)
- double [get\\_param](#) (int idx) const
- void [set\\_param](#) (int idx, double val)
- [NparamsVecT](#) [params](#) () const
- void [set\\_params](#) (double [beta](#))
- template<class Vec >  
void [set\\_params](#) (const Vec &p)
- bool [operator==](#) (const [SymmetricBetaDist](#) &o) const
- bool [operator!=](#) (const [SymmetricBetaDist](#) &o) const
- double [mean](#) () const
- double [median](#) () const
- double [cdf](#) (double x) const
- double [icdf](#) (double u) const
- double [pdf](#) (double x) const
- double [llh](#) (double x) const
- double [rllh](#) (double x) const
- double [grad](#) (double x) const
- double [grad2](#) (double x) const
- void [grad\\_grad2\\_accumulate](#) (double x, double &g, double &g2) const
- template<class RngT >  
double [sample](#) (RngT &rng) const
- template<class IterT >  
void [set\\_params\\_iter](#) (IterT &[params](#))

## Static Public Member Functions

- static constexpr [IdxT](#) [num\\_params](#) ()
- static constexpr double [lbound](#) ()
- static constexpr double [ubound](#) ()
- static bool [in\\_bounds](#) (double u)
- static const [StringVecT](#) & [param\\_names](#) ()
- static const [VecT](#) & [param\\_lbound](#) ()
- static const [VecT](#) & [param\\_ubound](#) ()
- static bool [check\\_params](#) (double [beta](#))
- template<class Vec >  
static bool [check\\_params](#) (Vec &p)
- template<class IterT >  
static bool [check\\_params\\_iter](#) (IterT &[params](#))
- static constexpr [IdxT](#) [num\\_dim](#) ()

## Static Protected Member Functions

- static void `check_bounds` (double `lbound`, double `ubound`)

### 7.62.1 Detailed Description

Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.

Definition at line 22 of file `SymmetricBetaDist.h`.

### 7.62.2 Member Typedef Documentation

7.62.2.1 `using prior_hessian::SymmetricBetaDist::NparamsVecT = arma::Col<double>::fixed<_num_params>`

Definition at line 26 of file `SymmetricBetaDist.h`.

### 7.62.3 Constructor & Destructor Documentation

7.62.3.1 `prior_hessian::SymmetricBetaDist::SymmetricBetaDist ( ) [inline]`

Definition at line 42 of file `SymmetricBetaDist.h`.

7.62.3.2 `prior_hessian::SymmetricBetaDist::SymmetricBetaDist ( double beta ) [explicit]`

Definition at line 23 of file `SymmetricBetaDist.cpp`.

7.62.3.3 `template<class Vec , meta::ConstructableIfNotSelfT< Vec, SymmetricBetaDist > = true>  
prior_hessian::SymmetricBetaDist::SymmetricBetaDist ( const Vec & params ) [inline],[explicit]`

Definition at line 45 of file `SymmetricBetaDist.h`.

## 7.62.4 Member Function Documentation

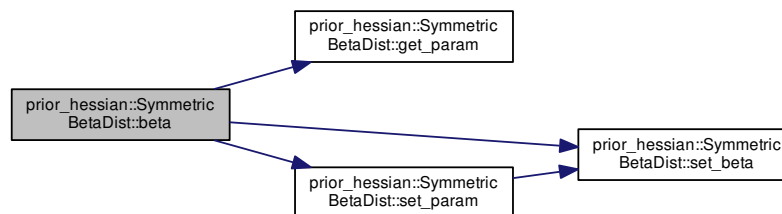
## 7.62.4.1 double prior\_hessian::SymmetricBetaDist::beta ( ) const [inline]

Definition at line 47 of file SymmetricBetaDist.h.

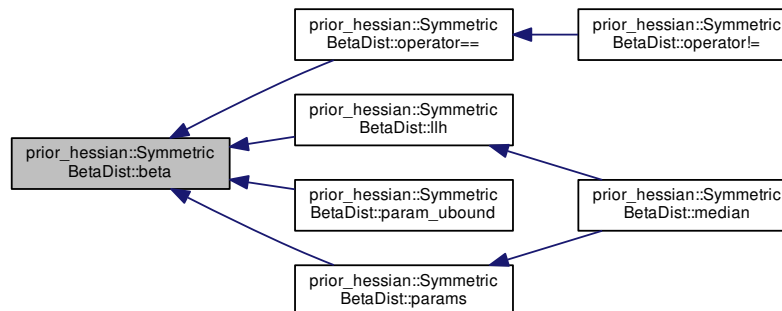
References `get_param()`, `set_beta()`, and `set_param()`.

Referenced by `llh()`, `operator==()`, `param_ubound()`, and `params()`.

Here is the call graph for this function:



Here is the caller graph for this function:



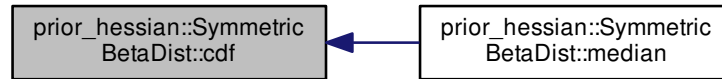
## 7.62.4.2 double prior\_hessian::SymmetricBetaDist::cdf ( double x ) const

Definition at line 36 of file SymmetricBetaDist.cpp.

Referenced by `median()`.



Here is the caller graph for this function:



**7.62.4.3** `void prior_hessian::UnivariateDist::check_bounds ( double lbound, double ubound )` `[static]`, `[protected]`, `[inherited]`

Definition at line 22 of file `UnivariateDist.cpp`.

Referenced by `prior_hessian::UnivariateDist::UnivariateDist()`.

Here is the caller graph for this function:

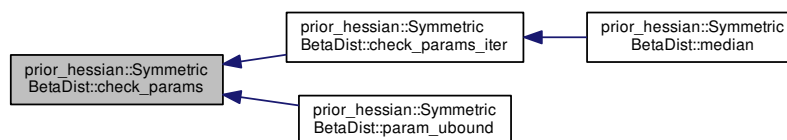


**7.62.4.4** `bool prior_hessian::SymmetricBetaDist::check_params ( double beta )` `[inline]`, `[static]`

Definition at line 101 of file `SymmetricBetaDist.h`.

Referenced by `check_params_iter()`, and `param_ubound()`.

Here is the caller graph for this function:



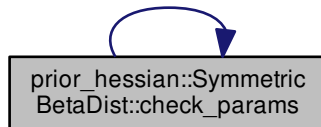
7.62.4.5 `template<class Vec > static bool prior_hessian::SymmetricBetaDist::check_params ( Vec & p ) [inline],  
[static]`

Definition at line 40 of file SymmetricBetaDist.h.

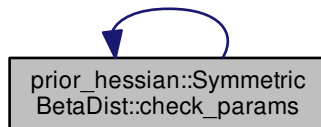
References `check_params()`.

Referenced by `check_params()`.

Here is the call graph for this function:



Here is the caller graph for this function:



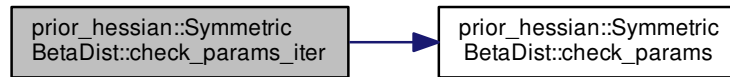
7.62.4.6 `template<class IterT > bool prior_hessian::SymmetricBetaDist::check_params_iter ( IterT & params ) [static]`

Definition at line 167 of file SymmetricBetaDist.h.

References `check_params()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

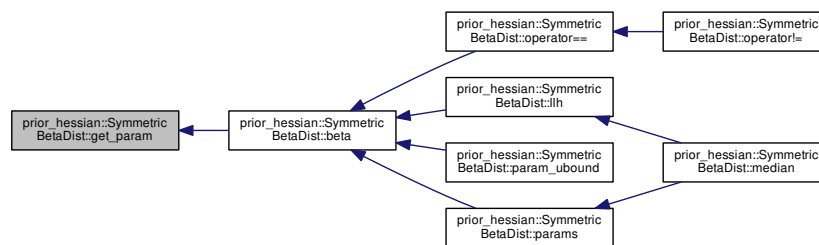


7.62.4.7 `double prior_hessian::SymmetricBetaDist::get_param ( int idx ) const [inline]`

Definition at line 107 of file `SymmetricBetaDist.h`.

Referenced by `beta()`.

Here is the caller graph for this function:



7.62.4.8 `double prior_hessian::SymmetricBetaDist::grad ( double x ) const` `[inline]`

Definition at line 137 of file SymmetricBetaDist.h.

Referenced by median().

Here is the caller graph for this function:



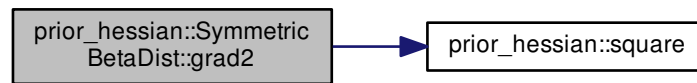
7.62.4.9 `double prior_hessian::SymmetricBetaDist::grad2 ( double x ) const` `[inline]`

Definition at line 143 of file SymmetricBetaDist.h.

References `prior_hessian::square()`.

Referenced by median().

Here is the call graph for this function:



Here is the caller graph for this function:



**7.62.4.10** `void prior_hessian::SymmetricBetaDist::grad_grad2_accumulate ( double x, double & g, double & g2 ) const`  
`[inline]`

Definition at line 149 of file SymmetricBetaDist.h.

Referenced by median().

Here is the caller graph for this function:



**7.62.4.11** `double prior_hessian::SymmetricBetaDist::icdf ( double u ) const`

Definition at line 43 of file SymmetricBetaDist.cpp.

Referenced by median(), and sample().

Here is the caller graph for this function:

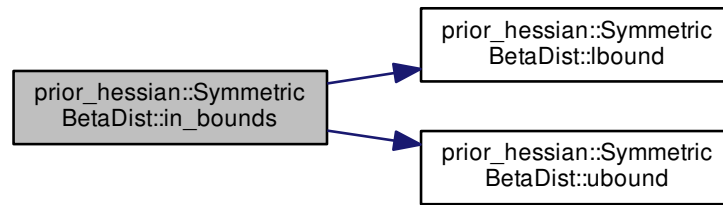


**7.62.4.12** `static bool prior_hessian::SymmetricBetaDist::in_bounds ( double u )` `[inline], [static]`

Definition at line 32 of file SymmetricBetaDist.h.

References `lbound()`, and `ubound()`.

Here is the call graph for this function:



#### 7.62.4.13 `static constexpr double prior_hessian::SymmetricBetaDist::lbound ( ) [inline], [static]`

Definition at line 30 of file `SymmetricBetaDist.h`.

Referenced by `in_bounds()`.

Here is the caller graph for this function:



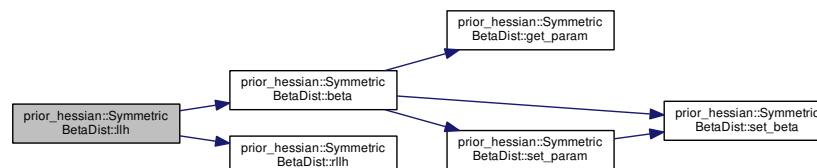
#### 7.62.4.14 `double prior_hessian::SymmetricBetaDist::llh ( double x ) const`

Definition at line 55 of file `SymmetricBetaDist.cpp`.

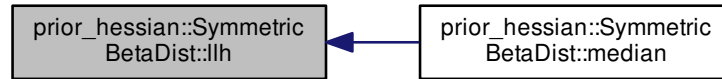
References `beta()`, and `rlh()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.62.4.15 `double prior_hessian::SymmetricBetaDist::mean ( ) const [inline]`

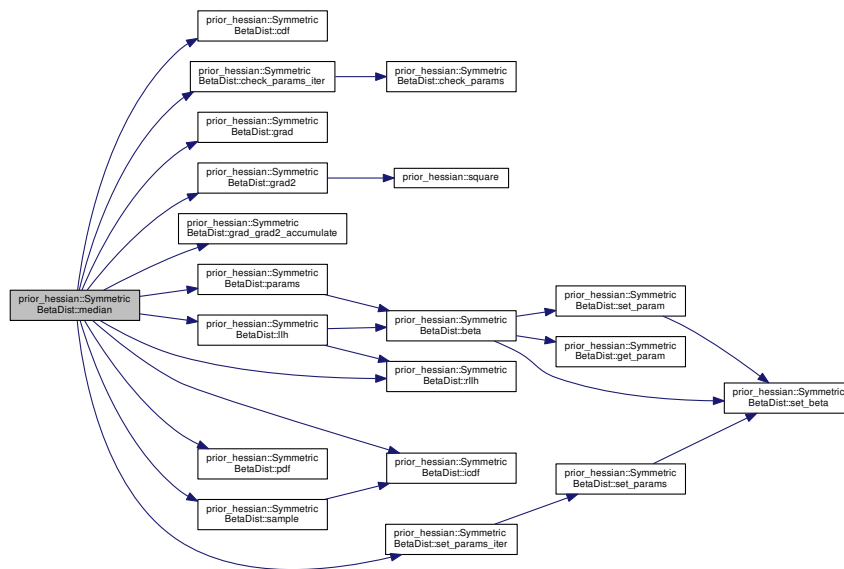
Definition at line 60 of file `SymmetricBetaDist.h`.

7.62.4.16 `double prior_hessian::SymmetricBetaDist::median ( ) const [inline]`

Definition at line 61 of file `SymmetricBetaDist.h`.

References `cdf()`, `check_params_iter()`, `grad()`, `grad2()`, `grad_grad2_accumulate()`, `icdf()`, `llh()`, `params()`, `pdf()`, `rllh()`, `sample()`, and `set_params_iter()`.

Here is the call graph for this function:



7.62.4.17 `static constexpr IdxT prior_hessian::UnivariateDist::num_dim ( ) [inline],[static],[inherited]`

Definition at line 17 of file `UnivariateDist.h`.

7.62.4.18 `static constexpr IdxT prior_hessian::SymmetricBetaDist::num_params ( )` `[inline]`, `[static]`

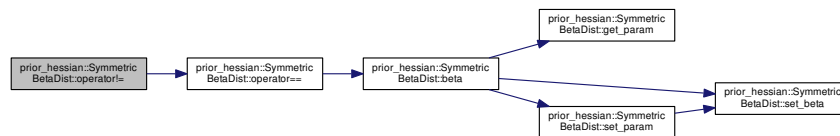
Definition at line 29 of file SymmetricBetaDist.h.

7.62.4.19 `bool prior_hessian::SymmetricBetaDist::operator!=( const SymmetricBetaDist & o ) const` `[inline]`

Definition at line 58 of file SymmetricBetaDist.h.

References `operator==( )`.

Here is the call graph for this function:



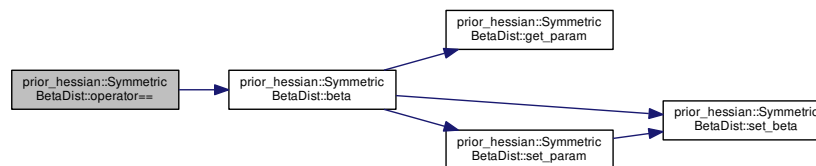
7.62.4.20 `bool prior_hessian::SymmetricBetaDist::operator==( const SymmetricBetaDist & o ) const` `[inline]`

Definition at line 57 of file SymmetricBetaDist.h.

References `beta( )`.

Referenced by `operator!=( )`.

Here is the call graph for this function:



Here is the caller graph for this function:





7.62.4.21 `static const VecT& prior_hessian::SymmetricBetaDist::param_lbound ( ) [inline],[static]`

Definition at line 35 of file SymmetricBetaDist.h.

7.62.4.22 `static const StringVecT& prior_hessian::SymmetricBetaDist::param_names ( ) [inline],[static]`

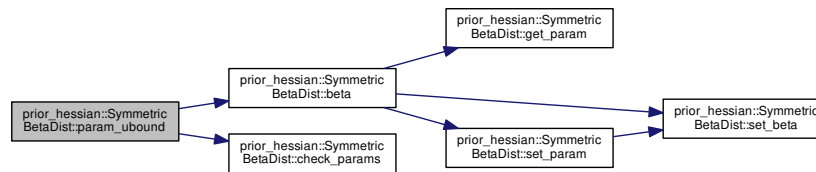
Definition at line 34 of file SymmetricBetaDist.h.

7.62.4.23 `static const VecT& prior_hessian::SymmetricBetaDist::param_ubound ( ) [inline],[static]`

Definition at line 36 of file SymmetricBetaDist.h.

References `beta()`, and `check_params()`.

Here is the call graph for this function:



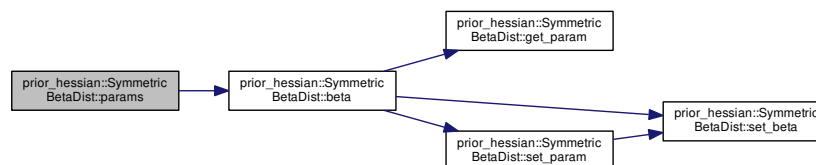
7.62.4.24 `NparamsVecT prior_hessian::SymmetricBetaDist::params ( ) const [inline]`

Definition at line 52 of file SymmetricBetaDist.h.

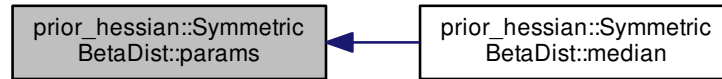
References `beta()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

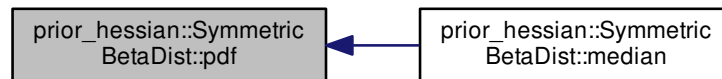


#### 7.62.4.25 `double prior_hessian::SymmetricBetaDist::pdf ( double x ) const`

Definition at line 50 of file `SymmetricBetaDist.cpp`.

Referenced by `median()`.

Here is the caller graph for this function:

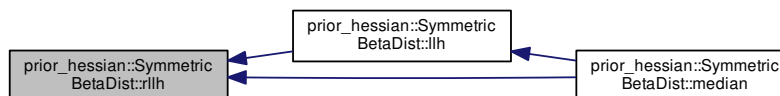


#### 7.62.4.26 `double prior_hessian::SymmetricBetaDist::rllh ( double x ) const` `[inline]`

Definition at line 131 of file `SymmetricBetaDist.h`.

Referenced by `llh()`, and `median()`.

Here is the caller graph for this function:



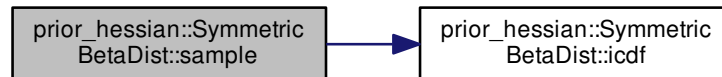
7.62.4.27 `template<class RngT > double prior_hessian::SymmetricBetaDist::sample ( RngT & rng ) const`

Definition at line 159 of file SymmetricBetaDist.h.

References `icdf()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:

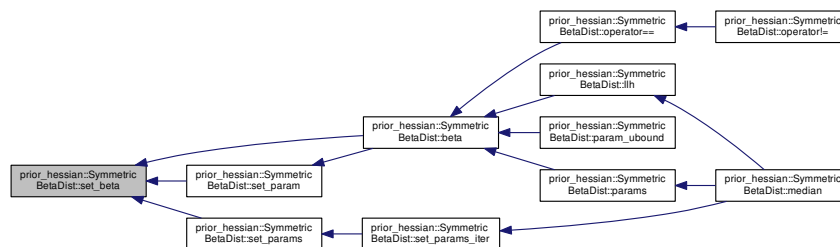


7.62.4.28 `void prior_hessian::SymmetricBetaDist::set_beta ( double val )`

Definition at line 30 of file SymmetricBetaDist.cpp.

Referenced by `beta()`, `set_param()`, and `set_params()`.

Here is the caller graph for this function:



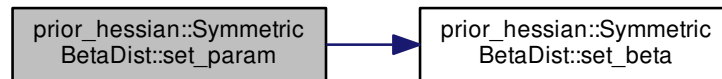
7.62.4.29 void prior\_hessian::SymmetricBetaDist::set\_param ( int *idx*, double *val* ) [inline]

Definition at line 119 of file SymmetricBetaDist.h.

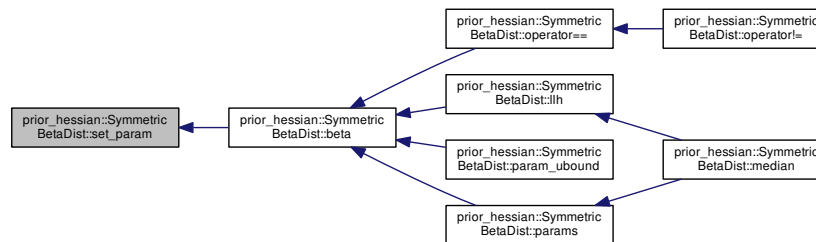
References set\_beta().

Referenced by beta().

Here is the call graph for this function:



Here is the caller graph for this function:



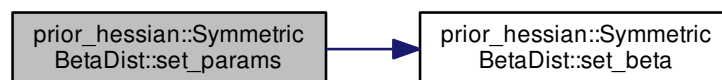
7.62.4.30 void prior\_hessian::SymmetricBetaDist::set\_params ( double *beta* ) [inline]

Definition at line 53 of file SymmetricBetaDist.h.

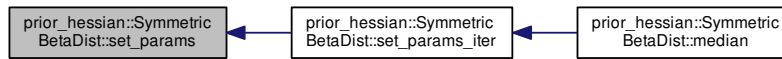
References set\_beta().

Referenced by set\_params\_iter().

Here is the call graph for this function:



Here is the caller graph for this function:

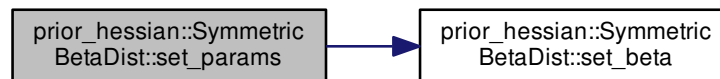


7.62.4.31 `template<class Vec > void prior_hessian::SymmetricBetaDist::set_params ( const Vec & p ) [inline]`

Definition at line 56 of file SymmetricBetaDist.h.

References `set_beta()`.

Here is the call graph for this function:



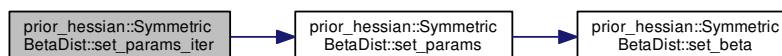
7.62.4.32 `template<class IterT > void prior_hessian::SymmetricBetaDist::set_params_iter ( IterT & params )`

Definition at line 173 of file SymmetricBetaDist.h.

References `set_params()`.

Referenced by `median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.62.4.33 `static constexpr double prior_hessian::SymmetricBetaDist::ubound ( ) [inline],[static]`

Definition at line 31 of file `SymmetricBetaDist.h`.

Referenced by `in_bounds()`.

Here is the caller graph for this function:



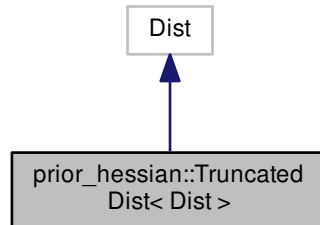
The documentation for this class was generated from the following files:

- [SymmetricBetaDist.h](#)
- [SymmetricBetaDist.cpp](#)

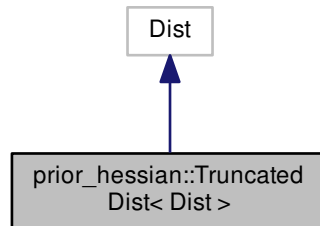
## 7.63 prior\_hessian::TruncatedDist< Dist > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/↵  
TruncatedDist.h>
```

Inheritance diagram for `prior_hessian::TruncatedDist< Dist >`:



Collaboration diagram for `prior_hessian::TruncatedDist< Dist >`:



## Public Member Functions

- [TruncatedDist](#) ()
- [TruncatedDist](#) (double [lbound](#), double [ubound](#))
- `template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedDist>>`  
[TruncatedDist](#) (const Dist &dist)
- `template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedDist>>`  
[TruncatedDist](#) (Dist &&dist)
- [TruncatedDist](#) (const Dist &dist, double [lbound](#), double [ubound](#))
- [TruncatedDist](#) (Dist &&dist, double [lbound](#), double [ubound](#))
- double [lbound](#) () const
- double [ubound](#) () const
- bool [truncated](#) () const
- bool [operator==](#) (const [TruncatedDist](#)< Dist > &o) const
- bool [operator!=](#) (const [TruncatedDist](#)< Dist > &o) const
- void [set\\_bounds](#) (double [lbound](#), double [ubound](#))

- void [set\\_lbound](#) (double [lbound](#))
- void [set\\_ubound](#) (double [ubound](#))
- double [mean](#) () const
- double [median](#) () const
- double [cdf](#) (double x) const
- double [pdf](#) (double x) const
- double [icdf](#) (double u) const
- double [llh](#) (double x) const
- template<class RngT >  
double [sample](#) (RngT &rng) const

#### Static Public Member Functions

- static constexpr [IdxT num\\_params](#) ()
- static double [global\\_lbound](#) ()
- static double [global\\_ubound](#) ()

#### Static Public Attributes

- static constexpr const double [min\\_bounds\\_pdf\\_integral](#) = 1.0e-8

#### Protected Attributes

- double [\\_truncated\\_lbound](#)
- double [\\_truncated\\_ubound](#)
- bool [\\_truncated](#) = false
- double [lbound\\_cdf](#)
- double [bounds\\_pdf\\_integral](#)
- double [llh\\_truncation\\_const](#)

#### 7.63.1 Detailed Description

```
template<class Dist>
class prior_hessian::TruncatedDist< Dist >
```

Definition at line 22 of file TruncatedDist.h.

#### 7.63.2 Constructor & Destructor Documentation

7.63.2.1 `template<class Dist> prior_hessian::TruncatedDist< Dist >::TruncatedDist ( ) [inline]`

Definition at line 30 of file TruncatedDist.h.

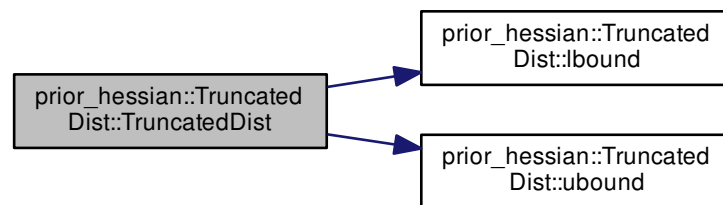


7.63.2.2 `template<class Dist> prior_hessian::TruncatedDist< Dist >::TruncatedDist ( double lbound, double ubound )`  
`[inline]`

Definition at line 31 of file `TruncatedDist.h`.

References `prior_hessian::TruncatedDist< Dist >::lbound()`, and `prior_hessian::TruncatedDist< Dist >::ubound()`.

Here is the call graph for this function:



7.63.2.3 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedDist>>`  
`prior_hessian::TruncatedDist< Dist >::TruncatedDist ( const Dist & dist )` `[inline]`

Definition at line 34 of file `TruncatedDist.h`.

7.63.2.4 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedDist>>`  
`prior_hessian::TruncatedDist< Dist >::TruncatedDist ( Dist && dist )` `[inline]`

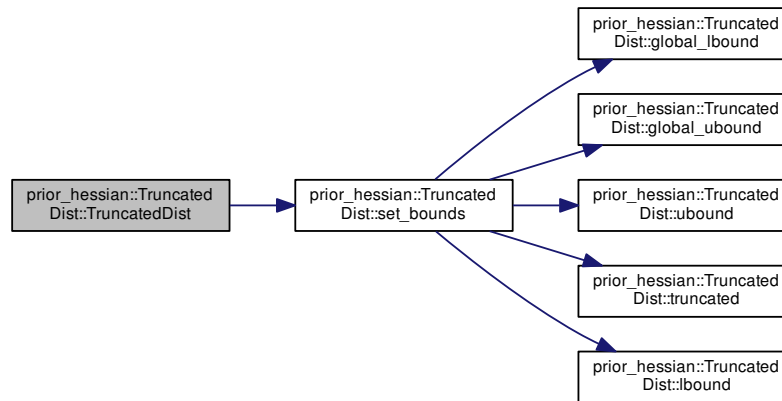
Definition at line 37 of file `TruncatedDist.h`.

7.63.2.5 `template<class Dist> prior_hessian::TruncatedDist< Dist >::TruncatedDist ( const Dist & dist, double lbound,`  
`double ubound )` `[inline]`

Definition at line 39 of file `TruncatedDist.h`.

References `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

Here is the call graph for this function:

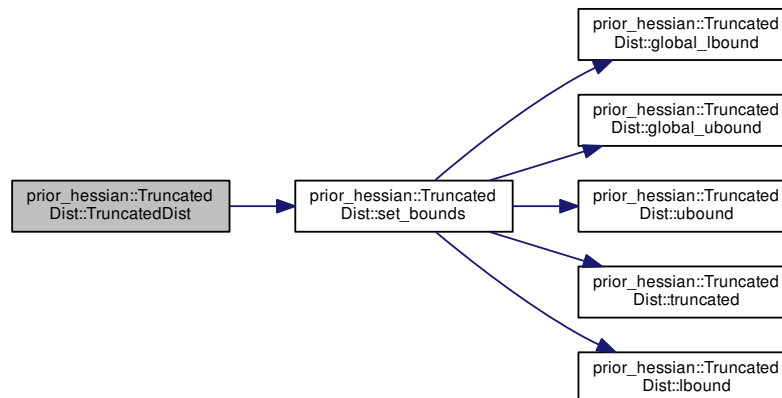


7.63.2.6 `template<class Dist> prior_hessian::TruncatedDist< Dist >::TruncatedDist ( Dist && dist, double lbound, double ubound ) [inline]`

Definition at line 43 of file `TruncatedDist.h`.

References `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

Here is the call graph for this function:



### 7.63.3 Member Function Documentation

#### 7.63.3.1 `template<class Dist > double prior_hessian::TruncatedDist< Dist >::cdf ( double x ) const`

Definition at line 135 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::bounds_pdf_integral`, and `prior_hessian::TruncatedDist< Dist >::lbound_cdf`.

Referenced by `prior_hessian::TruncatedDist< Dist >::median()`.

Here is the caller graph for this function:



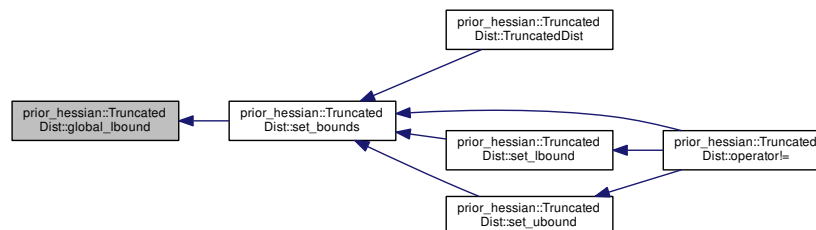
#### 7.63.3.2 `template<class Dist> static double prior_hessian::TruncatedDist< Dist >::global_lbound ( ) [inline], [static]`

minimum allowable delta in cdf for a valid truncation

Definition at line 27 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

Here is the caller graph for this function:

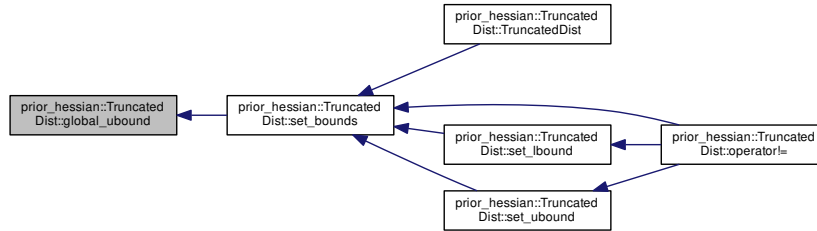


7.63.3.3 `template<class Dist> static double prior_hessian::TruncatedDist< Dist >::global_umbound ( ) [inline], [static]`

Definition at line 28 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

Here is the caller graph for this function:



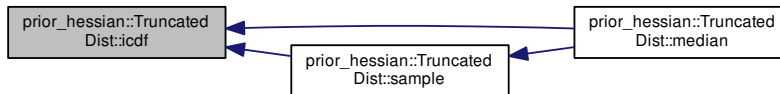
7.63.3.4 `template<class Dist> double prior_hessian::TruncatedDist< Dist >::icdf ( double u ) const`

Definition at line 141 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::bounds_pdf_integral`, and `prior_hessian::TruncatedDist< Dist >::lbound_cdf`.

Referenced by `prior_hessian::TruncatedDist< Dist >::median()`, and `prior_hessian::TruncatedDist< Dist >::sample()`.

Here is the caller graph for this function:



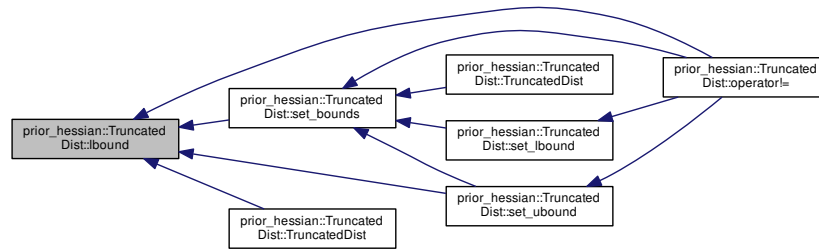
7.63.3.5 `template<class Dist> double prior_hessian::TruncatedDist< Dist >::lbound ( ) const [inline]`

Definition at line 47 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::_truncated_lbound`.

Referenced by `prior_hessian::TruncatedDist< Dist >::operator!=()`, `prior_hessian::TruncatedDist< Dist >::set_bounds()`, `prior_hessian::TruncatedDist< Dist >::set_umbound()`, and `prior_hessian::TruncatedDist< Dist >::TruncatedDist()`.

Here is the caller graph for this function:



### 7.63.3.6 `template<class Dist> double prior_hessian::TruncatedDist< Dist>::llh ( double x ) const`

Definition at line 153 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist>::llh_truncation_const`.

Referenced by `prior_hessian::TruncatedDist< Dist>::median()`.

Here is the caller graph for this function:



### 7.63.3.7 `template<class Dist> double prior_hessian::TruncatedDist< Dist>::mean ( ) const` `[inline]`

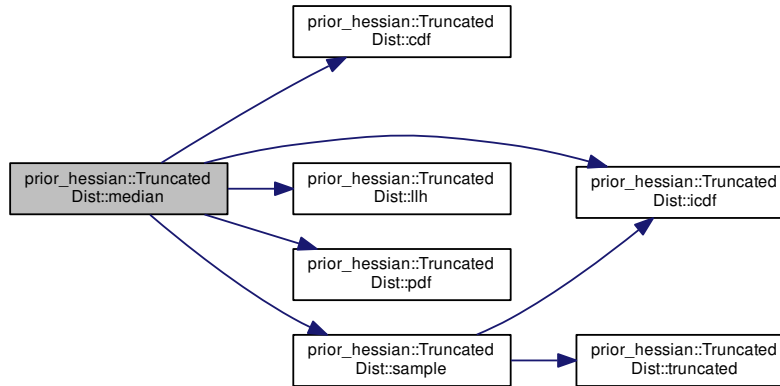
Definition at line 62 of file TruncatedDist.h.

### 7.63.3.8 `template<class Dist> double prior_hessian::TruncatedDist< Dist>::median ( ) const` `[inline]`

Definition at line 63 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist>::bounds_pdf_integral`, `prior_hessian::TruncatedDist< Dist>::cdf()`, `prior_hessian::TruncatedDist< Dist>::icdf()`, `prior_hessian::TruncatedDist< Dist>::lbound_cdf`, `prior_hessian::TruncatedDist< Dist>::llh()`, `prior_hessian::TruncatedDist< Dist>::pdf()`, and `prior_hessian::TruncatedDist< Dist>::sample()`.

Here is the call graph for this function:



**7.63.3.9** `template<class Dist> static constexpr IdxT prior_hessian::TruncatedDist< Dist >::num_params ( )`  
`[inline], [static]`

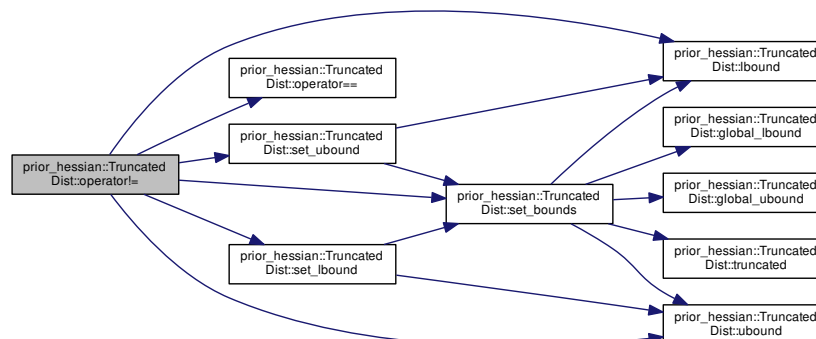
Definition at line 25 of file TruncatedDist.h.

**7.63.3.10** `template<class Dist> bool prior_hessian::TruncatedDist< Dist >::operator!=( const TruncatedDist< Dist > & o ) const` `[inline]`

Definition at line 56 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::lbound()`, `prior_hessian::TruncatedDist< Dist >::operator==( )`, `prior_hessian::TruncatedDist< Dist >::set_bounds()`, `prior_hessian::TruncatedDist< Dist >::set_lbound()`, `prior_hessian::TruncatedDist< Dist >::set_ubound()`, and `prior_hessian::TruncatedDist< Dist >::ubound()`.

Here is the call graph for this function:



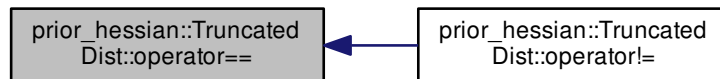
7.63.3.11 `template<class Dist> bool prior_hessian::TruncatedDist< Dist >::operator==( const TruncatedDist< Dist > & o ) const [inline]`

Definition at line 50 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::_truncated_lbound`, and `prior_hessian::TruncatedDist< Dist >::_truncated_ubound`.

Referenced by `prior_hessian::TruncatedDist< Dist >::operator!=( )`.

Here is the caller graph for this function:



7.63.3.12 `template<class Dist > double prior_hessian::TruncatedDist< Dist >::pdf ( double x ) const`

Definition at line 147 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::bounds_pdf_integral`.

Referenced by `prior_hessian::TruncatedDist< Dist >::median()`.

Here is the caller graph for this function:



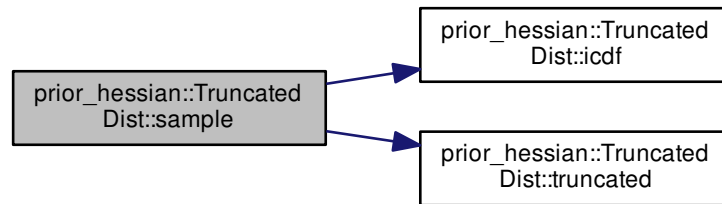
7.63.3.13 `template<class Dist > template<class RngT > double prior_hessian::TruncatedDist< Dist >::sample ( RngT & rng ) const`

Definition at line 166 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::icdf()`, and `prior_hessian::TruncatedDist< Dist >::truncated()`.

Referenced by `prior_hessian::TruncatedDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.63.3.14 `template<class Dist > void prior_hessian::TruncatedDist< Dist >::set_bounds ( double lbound, double ubound )`

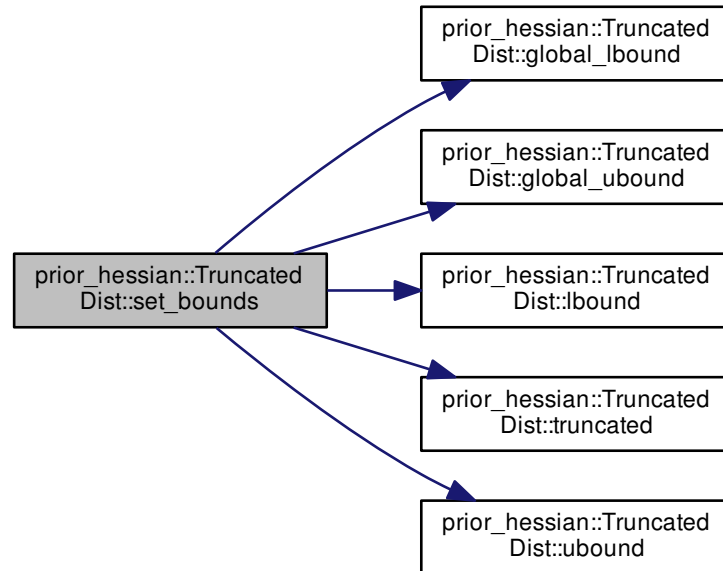
Definition at line 82 of file TruncatedDist.h.

References `prior_hessian::TruncatedDist< Dist >::_truncated`, `prior_hessian::TruncatedDist< Dist >::_truncated_lbound`, `prior_hessian::TruncatedDist< Dist >::_truncated_ubound`, `prior_hessian::TruncatedDist< Dist >::bounds_pdf_integral`, `prior_hessian::TruncatedDist< Dist >::global_lbound()`, `prior_hessian::TruncatedDist< Dist >::global_ubound()`, `prior_hessian::TruncatedDist< Dist >::lbound()`, `prior_hessian::TruncatedDist< Dist >::lbound_cdf`, `prior_hessian::TruncatedDist< Dist >::llh_truncation_const`, `prior_hessian::TruncatedDist< Dist >::min_bounds_pdf_integral`, `prior_hessian::TruncatedDist< Dist >::truncated()`, and `prior_hessian::TruncatedDist< Dist >::ubound()`.

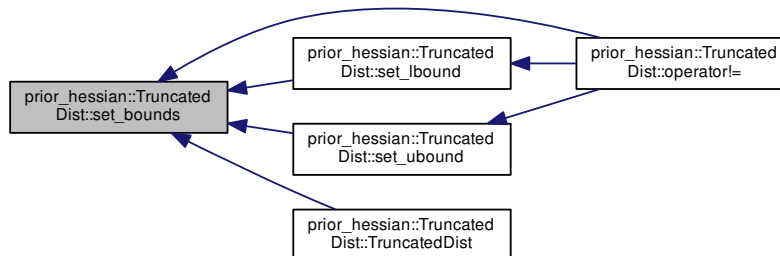
Referenced by `prior_hessian::TruncatedDist< Dist >::operator!=()`, `prior_hessian::TruncatedDist< Dist >::set_lbound()`, `prior_hessian::TruncatedDist< Dist >::set_ubound()`, and `prior_hessian::TruncatedDist< Dist >::TruncatedDist()`.



Here is the call graph for this function:



Here is the caller graph for this function:



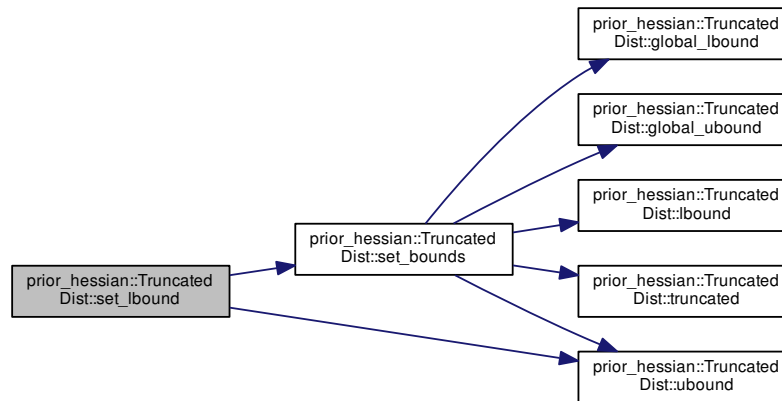
**7.63.3.15** `template<class Dist > void prior_hessian::TruncatedDist< Dist >::set_lbound ( double lbound )`

Definition at line 123 of file `TruncatedDist.h`.

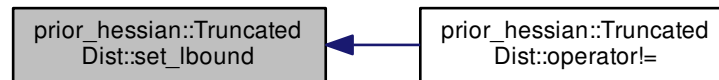
References `prior_hessian::TruncatedDist< Dist >::set_bounds()`, and `prior_hessian::TruncatedDist< Dist >::ubound()`.

Referenced by `prior_hessian::TruncatedDist< Dist >::operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



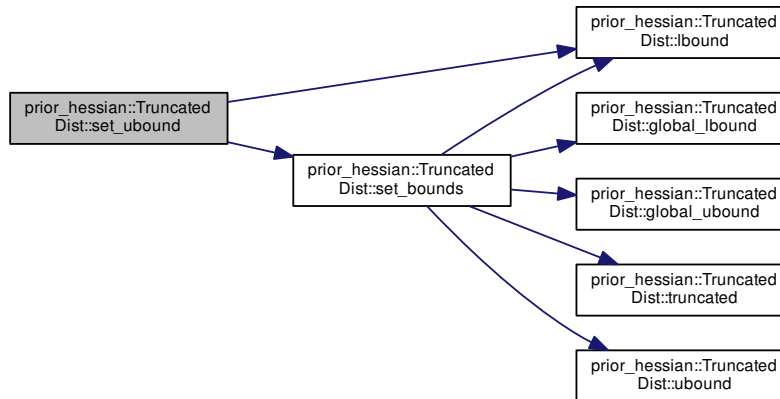
7.63.3.16 `template<class Dist > void prior_hessian::TruncatedDist< Dist >::set_ubound ( double ubound )`

Definition at line 129 of file `TruncatedDist.h`.

References `prior_hessian::TruncatedDist< Dist >::lbound()`, and `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

Referenced by `prior_hessian::TruncatedDist< Dist >::operator!=()`.

Here is the call graph for this function:



Here is the caller graph for this function:



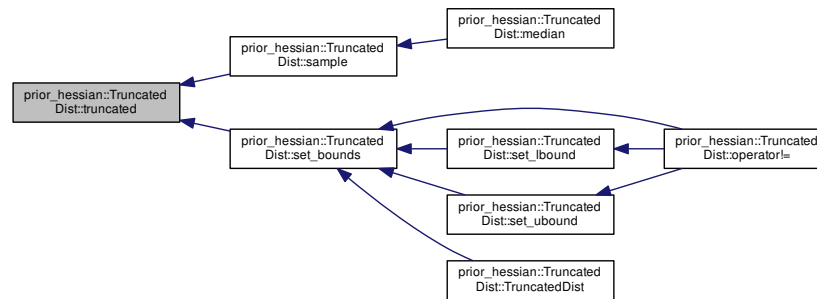
7.63.3.17 `template<class Dist> bool prior_hessian::TruncatedDist< Dist >::truncated ( ) const [inline]`

Definition at line 49 of file `TruncatedDist.h`.

References `prior_hessian::TruncatedDist< Dist >::_truncated`.

Referenced by `prior_hessian::TruncatedDist< Dist >::sample()`, and `prior_hessian::TruncatedDist< Dist >::set_↵ bounds()`.

Here is the caller graph for this function:



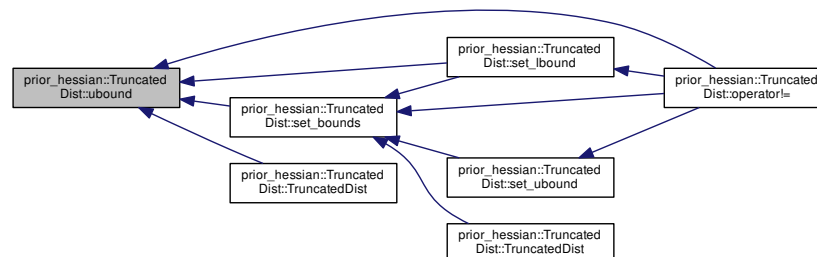
#### 7.63.3.18 template<class Dist> double prior\_hessian::TruncatedDist< Dist >::ubound ( ) const [inline]

Definition at line 48 of file TruncatedDist.h.

References prior\_hessian::TruncatedDist< Dist >::\_truncated\_ubound.

Referenced by prior\_hessian::TruncatedDist< Dist >::operator!=( ), prior\_hessian::TruncatedDist< Dist >::set\_bounds( ), prior\_hessian::TruncatedDist< Dist >::set\_lbound( ), and prior\_hessian::TruncatedDist< Dist >::TruncatedDist( ).

Here is the caller graph for this function:



#### 7.63.4 Member Data Documentation

##### 7.63.4.1 template<class Dist> bool prior\_hessian::TruncatedDist< Dist >::\_truncated = false [protected]

Definition at line 74 of file TruncatedDist.h.

Referenced by prior\_hessian::TruncatedDist< Dist >::set\_bounds( ), and prior\_hessian::TruncatedDist< Dist >::truncated( ).

**7.63.4.2** `template<class Dist> double prior_hessian::TruncatedDist< Dist >::_truncated_lbound` `[protected]`

Definition at line 72 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::lbound()`, `prior_hessian::TruncatedDist< Dist >::operator==()`, and `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

**7.63.4.3** `template<class Dist> double prior_hessian::TruncatedDist< Dist >::_truncated_ubound` `[protected]`

Definition at line 73 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::operator==()`, `prior_hessian::TruncatedDist< Dist >::set_bounds()`, and `prior_hessian::TruncatedDist< Dist >::ubound()`.

**7.63.4.4** `template<class Dist> double prior_hessian::TruncatedDist< Dist >::bounds_pdf_integral` `[protected]`

Definition at line 77 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::cdf()`, `prior_hessian::TruncatedDist< Dist >::icdf()`, `prior_hessian::TruncatedDist< Dist >::median()`, `prior_hessian::TruncatedDist< Dist >::pdf()`, and `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

**7.63.4.5** `template<class Dist> double prior_hessian::TruncatedDist< Dist >::lbound_cdf` `[protected]`

Definition at line 76 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::cdf()`, `prior_hessian::TruncatedDist< Dist >::icdf()`, `prior_hessian::TruncatedDist< Dist >::median()`, and `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

**7.63.4.6** `template<class Dist> double prior_hessian::TruncatedDist< Dist >::llh_truncation_const` `[protected]`

Definition at line 78 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::llh()`, and `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

**7.63.4.7** `template<class Dist> constexpr const double prior_hessian::TruncatedDist< Dist >::min_bounds_pdf_integral = 1.0e-8` `[static]`

Definition at line 26 of file TruncatedDist.h.

Referenced by `prior_hessian::TruncatedDist< Dist >::set_bounds()`.

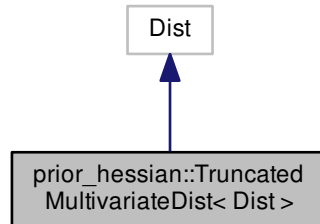
The documentation for this class was generated from the following file:

- [TruncatedDist.h](#)

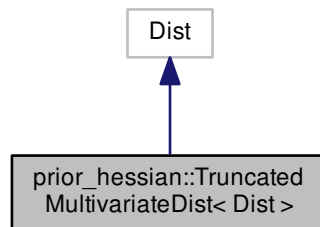
## 7.64 prior\_hessian::TruncatedMultivariateDist&lt; Dist &gt; Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
TruncatedMultivariateDist.h>
```

Inheritance diagram for prior\_hessian::TruncatedMultivariateDist< Dist >:



Collaboration diagram for prior\_hessian::TruncatedMultivariateDist< Dist >:



#### Public Member Functions

- [TruncatedMultivariateDist](#) ()
- [template<class Vec > TruncatedMultivariateDist](#) (Vec &&lbound, Vec &&ubound)
- [template<typename = meta::EnableIfNotIsSelfT<Dist, TruncatedMultivariateDist>> TruncatedMultivariateDist](#) (const Dist &dist)
- [template<typename = meta::EnableIfNotIsSelfT<Dist, TruncatedMultivariateDist>> TruncatedMultivariateDist](#) (Dist &&dist)
- [template<class Vec > TruncatedMultivariateDist](#) (const Dist &dist, Vec &&lbound, Vec &&ubound)

- `template<class Vec >`  
`TruncatedMultivariateDist` (`Dist &&dist`, `Vec &&lbound`, `Vec &&ubound`)
- `const NdimVecT & lbound () const`
- `const NdimVecT & ubound () const`
- `template<class Vec >`  
`bool in_bounds` (`const Vec &u`) `const`
- `bool truncated () const`
- `bool operator==` (`const TruncatedMultivariateDist< Dist > &o`) `const`
- `bool operator!=` (`const TruncatedMultivariateDist< Dist > &o`) `const`
- `template<class Vec , class Vec2 >`  
`void set_bounds` (`const Vec &lbound`, `const Vec2 &ubound`)
- `template<class Vec >`  
`void set_lbound` (`const Vec &lbound`)
- `template<class Vec >`  
`void set_ubound` (`const Vec &ubound`)
- `double mean () const`
- `template<class Vec >`  
`double cdf` (`const Vec &x`) `const`
- `template<class Vec >`  
`double pdf` (`const Vec &x`) `const`
- `template<class Vec >`  
`double llh` (`const Vec &x`) `const`
- `template<class RngT >`  
`NdimVecT sample` (`RngT &rng`) `const`

#### Static Public Member Functions

- `static const NdimVecT & global_lbound ()`
- `static const NdimVecT & global_ubound ()`

#### Static Public Attributes

- `static constexpr const double min_bounds_pdf_integral = 1.0e-8`

#### Protected Member Functions

- `double compute_truncated_pdf_integral` (`const NdimVecT &lbound`, `const NdimVecT &ubound`, `double lbound←_cdf`) `const`

#### Protected Attributes

- `NdimVecT _truncated_lbound`
- `NdimVecT _truncated_ubound`
- `bool _truncated = false`
- `double lbound_cdf`
- `double bounds_pdf_integral`
- `double llh_truncation_const`

## 7.64.1 Detailed Description

```
template<class Dist>
class prior_hessian::TruncatedMultivariateDist< Dist >
```

Definition at line 60 of file `TruncatedMultivariateDist.h`.

## 7.64.2 Constructor &amp; Destructor Documentation

7.64.2.1 `template<class Dist> prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( )`  
`[inline]`

minimum allowabale integral of pdf for a valid truncation

Definition at line 66 of file `TruncatedMultivariateDist.h`.

7.64.2.2 `template<class Dist> template<class Vec > prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( Vec && lbound, Vec && ubound )` `[inline]`

Definition at line 69 of file `TruncatedMultivariateDist.h`.

7.64.2.3 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedMultivariateDist>> prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( const Dist & dist )`  
`[inline]`

Definition at line 73 of file `TruncatedMultivariateDist.h`.

7.64.2.4 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist,TruncatedMultivariateDist>> prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( Dist && dist )` `[inline]`

Definition at line 76 of file `TruncatedMultivariateDist.h`.

7.64.2.5 `template<class Dist> template<class Vec > prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( const Dist & dist, Vec && lbound, Vec && ubound )` `[inline]`

Definition at line 79 of file `TruncatedMultivariateDist.h`.

7.64.2.6 `template<class Dist> template<class Vec > prior_hessian::TruncatedMultivariateDist< Dist >::TruncatedMultivariateDist ( Dist && dist, Vec && lbound, Vec && ubound )` `[inline]`

Definition at line 86 of file `TruncatedMultivariateDist.h`.

## 7.64.3 Member Function Documentation

7.64.3.1 `template<class Dist> template<class Vec > double prior_hessian::TruncatedMultivariateDist< Dist >::cdf ( const Vec & x ) const`

Definition at line 242 of file `TruncatedMultivariateDist.h`.



**7.64.3.2** `template<class Dist> double prior_hessian::TruncatedMultivariateDist< Dist>::compute_truncated_pdf_integral ( const NdimVecT & lbound, const NdimVecT & ubound, double lbound_cdf ) const` [protected]

Definition at line 147 of file TruncatedMultivariateDist.h.

**7.64.3.3** `template<class Dist> static const NdimVecT& prior_hessian::TruncatedMultivariateDist< Dist>::global_lbound ( )` [inline],[static]

Definition at line 96 of file TruncatedMultivariateDist.h.

**7.64.3.4** `template<class Dist> static const NdimVecT& prior_hessian::TruncatedMultivariateDist< Dist>::global_ubound ( )` [inline],[static]

Definition at line 97 of file TruncatedMultivariateDist.h.

**7.64.3.5** `template<class Dist> template<class Vec> bool prior_hessian::TruncatedMultivariateDist< Dist>::in_bounds ( const Vec & u ) const` [inline]

Definition at line 95 of file TruncatedMultivariateDist.h.

**7.64.3.6** `template<class Dist> const NdimVecT& prior_hessian::TruncatedMultivariateDist< Dist>::lbound ( ) const` [inline]

Definition at line 92 of file TruncatedMultivariateDist.h.

**7.64.3.7** `template<class Dist> template<class Vec> double prior_hessian::TruncatedMultivariateDist< Dist>::llh ( const Vec & x ) const`

Definition at line 257 of file TruncatedMultivariateDist.h.

**7.64.3.8** `template<class Dist> double prior_hessian::TruncatedMultivariateDist< Dist>::mean ( ) const` [inline]

Definition at line 114 of file TruncatedMultivariateDist.h.

References `prior_hessian::mcmc::MCMCData< Ndim>::sample`.

**7.64.3.9** `template<class Dist> bool prior_hessian::TruncatedMultivariateDist< Dist>::operator!= ( const TruncatedMultivariateDist< Dist> & o ) const` [inline]

Definition at line 105 of file TruncatedMultivariateDist.h.

**7.64.3.10** `template<class Dist> bool prior_hessian::TruncatedMultivariateDist< Dist>::operator== ( const TruncatedMultivariateDist< Dist> & o ) const` [inline]

Definition at line 99 of file TruncatedMultivariateDist.h.

References `prior_hessian::TruncatedMultivariateDist< Dist>::_truncated_lbound`, and `prior_hessian::TruncatedMultivariateDist< Dist>::_truncated_ubound`.

7.64.3.11 `template<class Dist > template<class Vec > double prior_hessian::TruncatedMultivariateDist< Dist >::pdf ( const Vec & x ) const`

Definition at line 250 of file TruncatedMultivariateDist.h.

7.64.3.12 `template<class Dist > template<class RngT > TruncatedMultivariateDist< Dist >::NdimVecT prior_hessian::TruncatedMultivariateDist< Dist >::sample ( RngT & rng ) const`

Definition at line 265 of file TruncatedMultivariateDist.h.

References `prior_hessian::mcmc::MCMCData< Ndim >::rllh`, and `prior_hessian::mcmc::MCMCData< Ndim >::sample`.

7.64.3.13 `template<class Dist > template<class Vec , class Vec2 > void prior_hessian::TruncatedMultivariateDist< Dist >::set_bounds ( const Vec & lbound, const Vec2 & ubound )`

Definition at line 186 of file TruncatedMultivariateDist.h.

7.64.3.14 `template<class Dist > template<class Vec > void prior_hessian::TruncatedMultivariateDist< Dist >::set_lbound ( const Vec & lbound )`

Definition at line 228 of file TruncatedMultivariateDist.h.

7.64.3.15 `template<class Dist > template<class Vec > void prior_hessian::TruncatedMultivariateDist< Dist >::set_ubound ( const Vec & ubound )`

Definition at line 235 of file TruncatedMultivariateDist.h.

7.64.3.16 `template<class Dist> bool prior_hessian::TruncatedMultivariateDist< Dist >::truncated ( ) const [inline]`

Definition at line 98 of file TruncatedMultivariateDist.h.

7.64.3.17 `template<class Dist> const NdimVecT& prior_hessian::TruncatedMultivariateDist< Dist >::ubound ( ) const [inline]`

Definition at line 93 of file TruncatedMultivariateDist.h.

#### 7.64.4 Member Data Documentation

7.64.4.1 `template<class Dist> bool prior_hessian::TruncatedMultivariateDist< Dist >::_truncated = false [protected]`

Definition at line 128 of file TruncatedMultivariateDist.h.

**7.64.4.2** `template<class Dist> NdimVecT prior_hessian::TruncatedMultivariateDist< Dist >::_truncated_lbound`  
`[protected]`

Definition at line 126 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::TruncatedMultivariateDist< Dist >::operator==( )`.

**7.64.4.3** `template<class Dist> NdimVecT prior_hessian::TruncatedMultivariateDist< Dist >::_truncated_ubound`  
`[protected]`

Definition at line 127 of file TruncatedMultivariateDist.h.

Referenced by `prior_hessian::TruncatedMultivariateDist< Dist >::operator==( )`.

**7.64.4.4** `template<class Dist> double prior_hessian::TruncatedMultivariateDist< Dist >::bounds_pdf_integral`  
`[protected]`

Definition at line 132 of file TruncatedMultivariateDist.h.

**7.64.4.5** `template<class Dist> double prior_hessian::TruncatedMultivariateDist< Dist >::lbound_cdf` `[protected]`

Definition at line 131 of file TruncatedMultivariateDist.h.

**7.64.4.6** `template<class Dist> double prior_hessian::TruncatedMultivariateDist< Dist >::llh_truncation_const`  
`[protected]`

Definition at line 133 of file TruncatedMultivariateDist.h.

**7.64.4.7** `template<class Dist> constexpr const double prior_hessian::TruncatedMultivariateDist< Dist`  
`>::min_bounds_pdf_integral = 1.0e-8` `[static]`

Definition at line 64 of file TruncatedMultivariateDist.h.

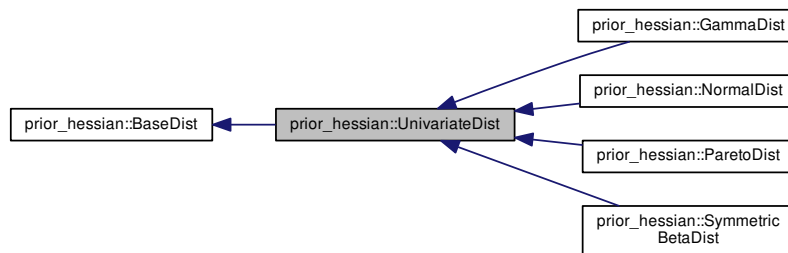
The documentation for this class was generated from the following file:

- [TruncatedMultivariateDist.h](#)

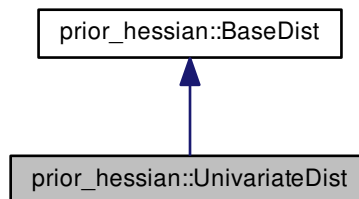
## 7.65 prior\_hessian::UnivariateDist Class Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←
UnivariateDist.h>
```

Inheritance diagram for prior\_hessian::UnivariateDist:



Collaboration diagram for prior\_hessian::UnivariateDist:



## Public Member Functions

- [UnivariateDist](#) ()

## Static Public Member Functions

- static constexpr [IdxT](#) num\_dim ()

## Static Protected Member Functions

- static void [check\\_bounds](#) (double lbound, double ubound)

### 7.65.1 Detailed Description

Definition at line 15 of file UnivariateDist.h.

### 7.65.2 Constructor & Destructor Documentation

#### 7.65.2.1 `prior_hessian::UnivariateDist::UnivariateDist ( )` `[inline]`

Definition at line 19 of file UnivariateDist.h.

References `check_bounds()`.

Here is the call graph for this function:



### 7.65.3 Member Function Documentation

#### 7.65.3.1 `void prior_hessian::UnivariateDist::check_bounds ( double lbound, double ubound )` `[static]`, `[protected]`

Definition at line 22 of file UnivariateDist.cpp.

Referenced by `UnivariateDist()`.

Here is the caller graph for this function:



7.65.3.2 static constexpr IdxT prior\_hessian::UnivariateDist::num\_dim ( ) [inline],[static]

Definition at line 17 of file UnivariateDist.h.

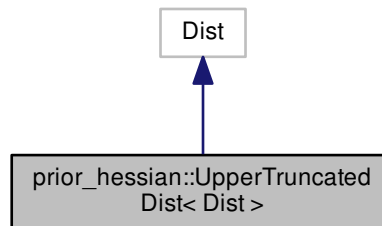
The documentation for this class was generated from the following files:

- [UnivariateDist.h](#)
- [UnivariateDist.cpp](#)

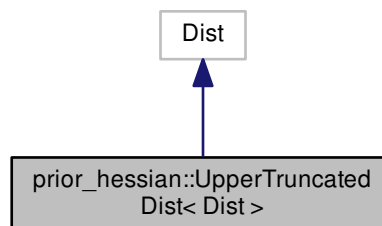
## 7.66 prior\_hessian::UpperTruncatedDist< Dist > Class Template Reference

```
#include </home/travis/build/markjolah/PriorHessian/include/PriorHessian/←  
UpperTruncatedDist.h>
```

Inheritance diagram for prior\_hessian::UpperTruncatedDist< Dist >:



Collaboration diagram for prior\_hessian::UpperTruncatedDist< Dist >:



## Public Member Functions

- [UpperTruncatedDist](#) ()
- [UpperTruncatedDist](#) (double [ubound](#))
- `template<typename = meta::EnableIfNotIsSelfT<Dist,UpperTruncatedDist>>`  
[UpperTruncatedDist](#) (const Dist &dist)
- `template<typename = meta::EnableIfNotIsSelfT<Dist,UpperTruncatedDist>>`  
[UpperTruncatedDist](#) (Dist &&dist)
- [UpperTruncatedDist](#) (const Dist &dist, double [ubound](#))
- [UpperTruncatedDist](#) (Dist &&dist, double [ubound](#))
- double [ubound](#) () const
- bool [truncated](#) () const
- bool [operator==](#) (const [UpperTruncatedDist](#)< Dist > &o) const
- bool [operator!=](#) (const [UpperTruncatedDist](#)< Dist > &o) const
- void [set\\_bounds](#) (double lbound, double [ubound](#))
- void [set\\_lbound](#) (double [ubound](#))
- void [set\\_ubound](#) (double [ubound](#))
- double [mean](#) () const
- double [median](#) () const
- double [cdf](#) (double x) const
- double [pdf](#) (double x) const
- double [icdf](#) (double u) const
- double [llh](#) (double x) const
- `template<class RngT >`  
double [sample](#) (RngT &rng) const

## Static Public Member Functions

- static double [global\\_ubound](#) ()

### 7.66.1 Detailed Description

```
template<class Dist>
class prior_hessian::UpperTruncatedDist< Dist >
```

Definition at line 22 of file UpperTruncatedDist.h.

### 7.66.2 Constructor & Destructor Documentation

7.66.2.1 `template<class Dist> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( )` `[inline]`

Definition at line 25 of file UpperTruncatedDist.h.

7.66.2.2 `template<class Dist> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( double ubound ) [inline], [explicit]`

Definition at line 26 of file UpperTruncatedDist.h.

References `prior_hessian::UpperTruncatedDist< Dist >::ubound()`.

Here is the call graph for this function:



7.66.2.3 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist, UpperTruncatedDist>> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( const Dist & dist ) [inline]`

Definition at line 29 of file UpperTruncatedDist.h.

7.66.2.4 `template<class Dist> template<typename = meta::EnableIfNotIsSelfT<Dist, UpperTruncatedDist>> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( Dist && dist ) [inline]`

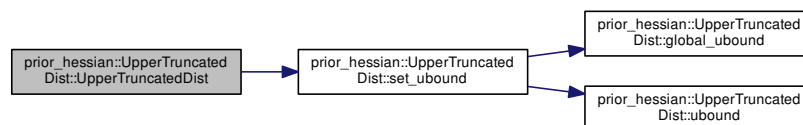
Definition at line 32 of file UpperTruncatedDist.h.

7.66.2.5 `template<class Dist> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( const Dist & dist, double ubound ) [inline]`

Definition at line 34 of file UpperTruncatedDist.h.

References `prior_hessian::UpperTruncatedDist< Dist >::set_ubound()`.

Here is the call graph for this function:



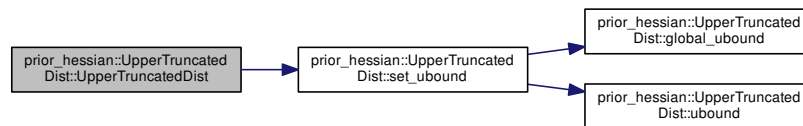


7.66.2.6 `template<class Dist> prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist ( Dist && dist, double ubound ) [inline]`

Definition at line 35 of file UpperTruncatedDist.h.

References `prior_hessian::UpperTruncatedDist< Dist >::set_ubound()`.

Here is the call graph for this function:



### 7.66.3 Member Function Documentation

7.66.3.1 `template<class Dist > double prior_hessian::UpperTruncatedDist< Dist >::cdf ( double x ) const`

Definition at line 141 of file UpperTruncatedDist.h.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::median()`.

Here is the caller graph for this function:

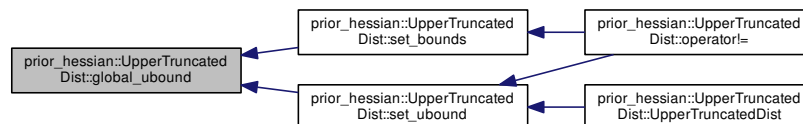


7.66.3.2 `template<class Dist> static double prior_hessian::UpperTruncatedDist< Dist >::global_ubound ( ) [inline],[static]`

Definition at line 38 of file UpperTruncatedDist.h.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::set_bounds()`, and `prior_hessian::UpperTruncatedDist< Dist >::set_ubound()`.

Here is the caller graph for this function:



### 7.66.3.3 `template<class Dist > double prior_hessian::UpperTruncatedDist< Dist >::icdf ( double u ) const`

Definition at line 147 of file UpperTruncatedDist.h.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::median()`, and `prior_hessian::UpperTruncatedDist< Dist >::sample()`.

Here is the caller graph for this function:



### 7.66.3.4 `template<class Dist > double prior_hessian::UpperTruncatedDist< Dist >::llh ( double x ) const`

Definition at line 159 of file UpperTruncatedDist.h.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::median()`.

Here is the caller graph for this function:



### 7.66.3.5 `template<class Dist> double prior_hessian::UpperTruncatedDist< Dist >::mean ( ) const [inline]`

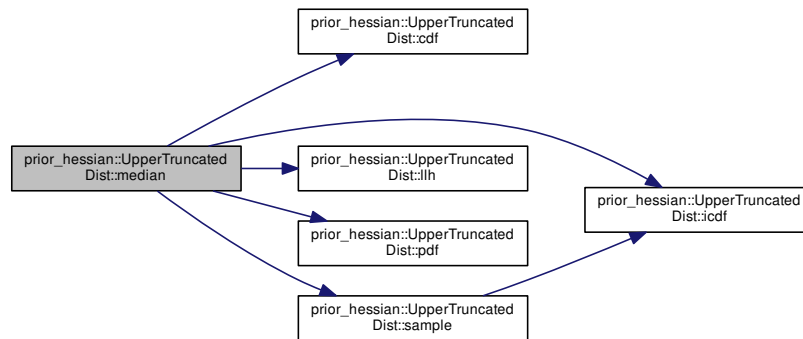
Definition at line 52 of file UpperTruncatedDist.h.

### 7.66.3.6 `template<class Dist> double prior_hessian::UpperTruncatedDist< Dist >::median ( ) const [inline]`

Definition at line 53 of file UpperTruncatedDist.h.

References `prior_hessian::UpperTruncatedDist< Dist >::cdf()`, `prior_hessian::UpperTruncatedDist< Dist >::icdf()`, `prior_hessian::UpperTruncatedDist< Dist >::llh()`, `prior_hessian::UpperTruncatedDist< Dist >::pdf()`, and `prior_hessian::UpperTruncatedDist< Dist >::sample()`.

Here is the call graph for this function:

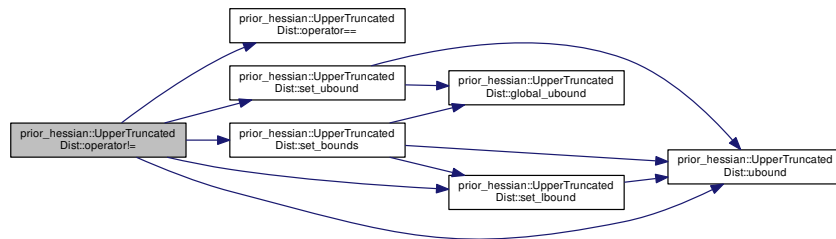


**7.66.3.7** `template<class Dist> bool prior_hessian::UpperTruncatedDist< Dist >::operator!= ( const UpperTruncatedDist< Dist > & o ) const [inline]`

Definition at line 46 of file UpperTruncatedDist.h.

References `prior_hessian::UpperTruncatedDist< Dist >::operator==()`, `prior_hessian::UpperTruncatedDist< Dist >::set_bounds()`, `prior_hessian::UpperTruncatedDist< Dist >::set_lbound()`, `prior_hessian::UpperTruncatedDist< Dist >::set_ubound()`, and `prior_hessian::UpperTruncatedDist< Dist >::ubound()`.

Here is the call graph for this function:

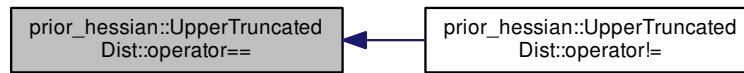


**7.66.3.8** `template<class Dist> bool prior_hessian::UpperTruncatedDist< Dist >::operator== ( const UpperTruncatedDist< Dist > & o ) const [inline]`

Definition at line 40 of file UpperTruncatedDist.h.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::operator!=()`.

Here is the caller graph for this function:



7.66.3.9 `template<class Dist > double prior_hessian::UpperTruncatedDist< Dist >::pdf ( double x ) const`

Definition at line 153 of file `UpperTruncatedDist.h`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::median()`.

Here is the caller graph for this function:



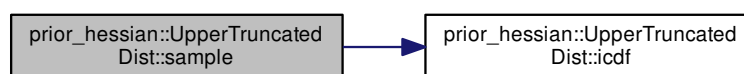
7.66.3.10 `template<class Dist > template<class RngT > double prior_hessian::UpperTruncatedDist< Dist >::sample ( RngT & rng ) const`

Definition at line 166 of file `UpperTruncatedDist.h`.

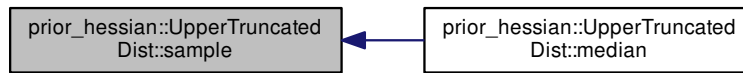
References `prior_hessian::UpperTruncatedDist< Dist >::icdf()`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::median()`.

Here is the call graph for this function:



Here is the caller graph for this function:



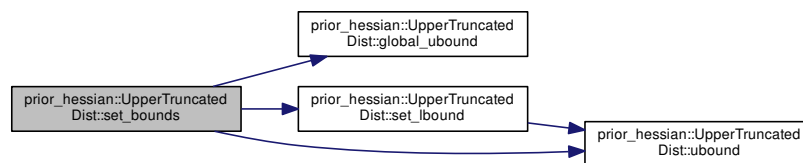
7.66.3.11 `template<class Dist > void prior_hessian::UpperTruncatedDist< Dist >::set_bounds ( double lbound, double ubound )`

Definition at line 73 of file `UpperTruncatedDist.h`.

References `prior_hessian::UpperTruncatedDist< Dist >::global_ubound()`, `prior_hessian::UpperTruncatedDist< Dist >::set_lbound()`, and `prior_hessian::UpperTruncatedDist< Dist >::ubound()`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::operator!==( )`.

Here is the call graph for this function:



Here is the caller graph for this function:



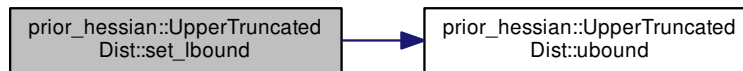
7.66.3.12 `template<class Dist > void prior_hessian::UpperTruncatedDist< Dist >::set_lbound ( double ubound )`

Definition at line 95 of file UpperTruncatedDist.h.

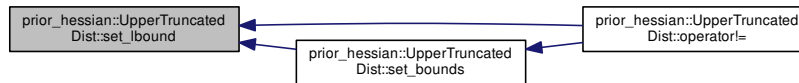
References `prior_hessian::UpperTruncatedDist< Dist >::ubound()`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::operator!=()`, and `prior_hessian::UpperTruncatedDist< Dist >::set_bounds()`.

Here is the call graph for this function:



Here is the caller graph for this function:

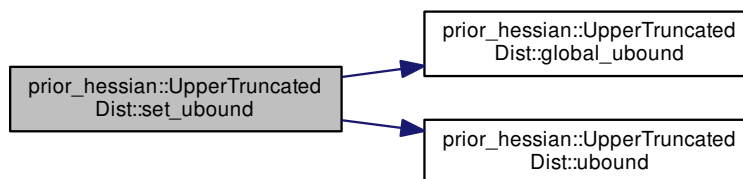
7.66.3.13 `template<class Dist > void prior_hessian::UpperTruncatedDist< Dist >::set_ubound ( double ubound )`

Definition at line 111 of file UpperTruncatedDist.h.

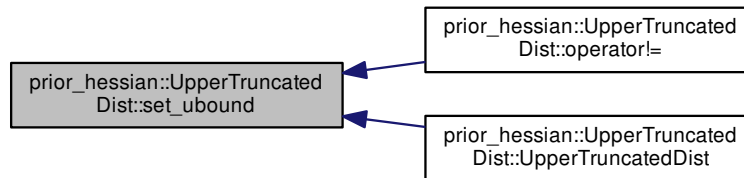
References `prior_hessian::UpperTruncatedDist< Dist >::global_ubound()`, and `prior_hessian::UpperTruncatedDist< Dist >::ubound()`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::operator!=()`, and `prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist()`.

Here is the call graph for this function:



Here is the caller graph for this function:



7.66.3.14 `template<class Dist> bool prior_hessian::UpperTruncatedDist< Dist >::truncated ( ) const [inline]`

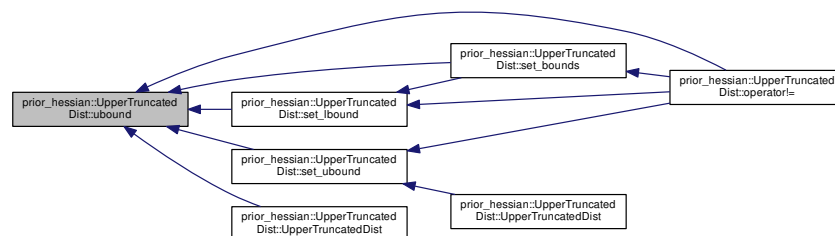
Definition at line 39 of file `UpperTruncatedDist.h`.

7.66.3.15 `template<class Dist> double prior_hessian::UpperTruncatedDist< Dist >::ubound ( ) const [inline]`

Definition at line 37 of file `UpperTruncatedDist.h`.

Referenced by `prior_hessian::UpperTruncatedDist< Dist >::operator!=()`, `prior_hessian::UpperTruncatedDist< Dist >::set_bounds()`, `prior_hessian::UpperTruncatedDist< Dist >::set_lbound()`, `prior_hessian::UpperTruncatedDist< Dist >::set_ubound()`, and `prior_hessian::UpperTruncatedDist< Dist >::UpperTruncatedDist()`.

Here is the caller graph for this function:



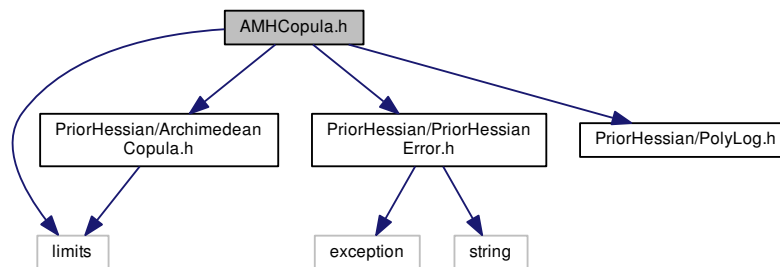
The documentation for this class was generated from the following file:

- [UpperTruncatedDist.h](#)

## 8 File Documentation

### 8.1 AMHCopula.h File Reference

```
#include <limits>
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/ArchimedeanCopula.h"
#include "PriorHessian/PolyLog.h"
Include dependency graph for AMHCopula.h:
```



#### Classes

- class [prior\\_hessian::AMHCopula](#)< Ndim >

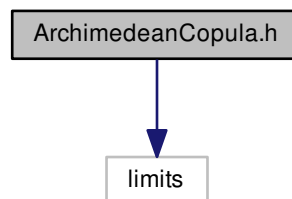
#### Namespaces

- [prior\\_hessian](#)

### 8.2 ArchimedeanCopula.h File Reference

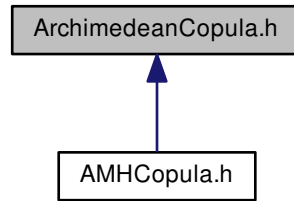
CopulaDist base class.

```
#include <limits>
Include dependency graph for ArchimedeanCopula.h:
```





This graph shows which files directly or indirectly include this file:



#### Classes

- class [prior\\_hessian::ArchimedeanCopula](#)
- struct [prior\\_hessian::ArchimedeanCopula::D\\_GenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::D2\\_GenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::D\\_IGenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::D2\\_IGenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::DTheta\\_GenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::D2Theta\\_GenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::DTheta\\_IGenTerms](#)
- struct [prior\\_hessian::ArchimedeanCopula::D2Theta\\_IGenTerms](#)

#### Namespaces

- [prior\\_hessian](#)

#### 8.2.1 Detailed Description

CopulaDist base class.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

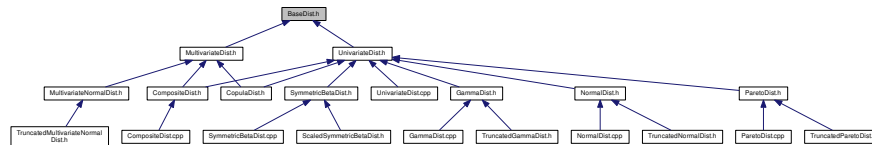
#### Date

2017 - 2018

## 8.3 BaseDist.h File Reference

The Base classes for UnivariateDist and MultivariateDist.

This graph shows which files directly or indirectly include this file:



### Classes

- class [prior\\_hessian::BaseDist](#)

### Namespaces

- [prior\\_hessian](#)

#### 8.3.1 Detailed Description

The Base classes for UnivariateDist and MultivariateDist.

### Author

Mark J. Olah (mjo@cs.unm DOT edu)

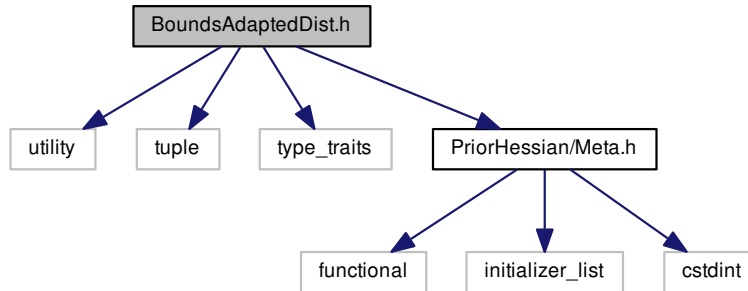
### Date

2017 -2018

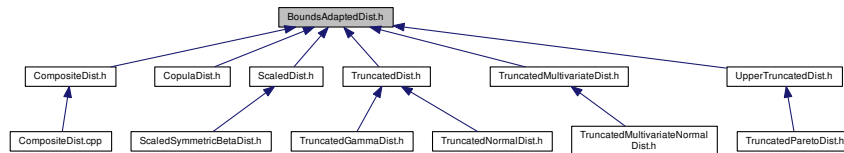
## 8.4 BoundsAdaptedDist.h File Reference

Functions and type-traits to enable easy wrapping of distributions in bounds-modifiable adapters.

```
#include <utility>
#include <tuple>
#include <type_traits>
#include "PriorHessian/Meta.h"
Include dependency graph for BoundsAdaptedDist.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class `prior_hessian::detail::dist_adaptor_traits< Dist >`
- struct `prior_hessian::meta::all_dists_are_bounded< DistTs >`

## Namespaces

- `prior_hessian`
- `prior_hessian::detail`
- `prior_hessian::meta`

*Class templates to utilize sequencing behaviour of `std::initializer_list` expressions.*

## Typedefs

- `template<class DistT >`  
`using prior_hessian::detail::DistTraitsT = detail::dist_adaptor_traits< std::decay_t< DistT >>`
- `template<class DistT >`  
`using prior_hessian::BoundsAdaptedDistT = typename detail::dist_adaptor_traits< std::decay_t< DistT >>::bounds_adapted_dist`
- `template<class... DistTs>`  
`using prior_hessian::meta::ConstructableIfAllDistsAreBoundedT = std::enable_if< all_dists_are_bounded< DistTs... >::value, bool >`
- `template<class... DistTs>`  
`using prior_hessian::meta::ConstructableIfNotAllDistsAreBoundedT = std::enable_if<!all_dists_are_bounded< DistTs... >::value, bool >`

## Functions

- `template<class... Ts, std::size_t... I>`  
`std::tuple< BoundsAdaptedDistT< Ts >... > prior_hessian::detail::make_adapted_bounded_dist_tuple (std::tuple< Ts... > &&dists, std::index_sequence< I... >)`
- `template<class... Ts, std::size_t... I>`  
`std::tuple< BoundsAdaptedDistT< Ts >... > prior_hessian::detail::make_adapted_bounded_dist_tuple (const std::tuple< Ts... > &dists, std::index_sequence< I... >)`
- `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>>`  
`std::enable_if_t< detail::DistTraitsT< Dist >::adaptable_bounds, Dist > prior_hessian::make_adapted_bounded_dist (Dist &&dist)`
- `template<class Dist , typename = meta::EnableIfIsNotTupleT<Dist>>`  
`std::enable_if_t< !detail::DistTraitsT< Dist >::adaptable_bounds, BoundsAdaptedDistT< Dist > > prior_hessian::make_adapted_bounded_dist (Dist &&dist)`
- `template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>>`  
`std::enable_if_t< detail::DistTraitsT< Dist >::adaptable_bounds, Dist > prior_hessian::make_adapted_bounded_dist (Dist &&dist, Vec &&lbound, Vec &&ubound)`
- `template<class Dist , class Vec , typename = meta::EnableIfIsNotTupleT<Dist>>`  
`std::enable_if_t< !detail::DistTraitsT< Dist >::adaptable_bounds, BoundsAdaptedDistT< Dist > > prior_hessian::make_adapted_bounded_dist (Dist &&dist, Vec &&lbound, Vec &&ubound)`
- `template<class... Ts>`  
`std::tuple< BoundsAdaptedDistT< Ts >... > prior_hessian::make_adapted_bounded_dist_tuple (Ts &&...ts)`
- `template<class... Ts>`  
`std::tuple< BoundsAdaptedDistT< Ts >... > prior_hessian::make_adapted_bounded_dist_tuple (std::tuple< Ts... > &&dists)`
- `template<class... Ts>`  
`std::tuple< BoundsAdaptedDistT< Ts >... > prior_hessian::make_adapted_bounded_dist_tuple (const std::tuple< Ts... > &dists)`

## 8.4.1 Detailed Description

Functions and type-traits to enable easy wrapping of distributions in bounds-modifiable adapters.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

2018 The bounds-adapted version of a distribution is a distribution that has been wrapped by an adapter-class that modifies the distribution so that the bounds can be set to finite values.

The main types of adapters are

- TruncatedDist:
  - Has `global_ubound` and `global_lbound` which may both be infinite (e.g., with the `NormalDist`)
  - Adapts distributions: `NormalDist`, `GammaDist`
- UpperTruncatedDist: Adapts distributions which already have an inherit lower-bound as a parameter
  - Adapts distributions: `ParatoDist`
- ScaledDist:
  - Adapts distributions with finite domain like the Beta distribution by scaling them to arbitrary finite bounds
  - Adapts distributions: `BetaDist`, `SymmetricBetaDist`

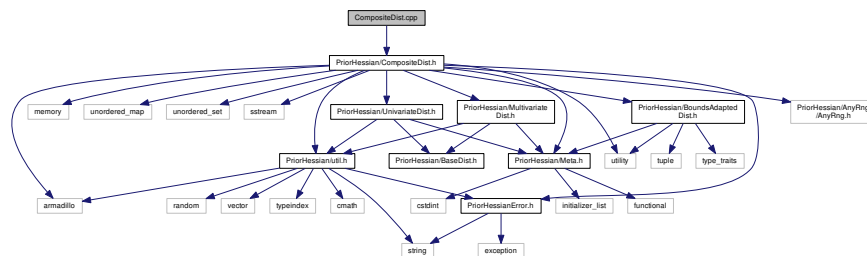
Functions: `make_adapted_bounded_dist`

- Make a bounds-adapted version of given distribution `make_adapted_bounded_dist_tuple` -
- Make a tuple of bounds-adapted version of given distributions

## 8.5 CompositeDist.cpp File Reference

CompositeDist and associated classes and nested classes.

```
#include "PriorHessian/CompositeDist.h"
Include dependency graph for CompositeDist.cpp:
```



## Namespaces

- [prior\\_hessian](#)

## Functions

- `std::ostream & prior_hessian::operator<< (std::ostream &out, const CompositeDist &comp_dist)`

## 8.5.1 Detailed Description

CompositeDist and associated classes and nested classes.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

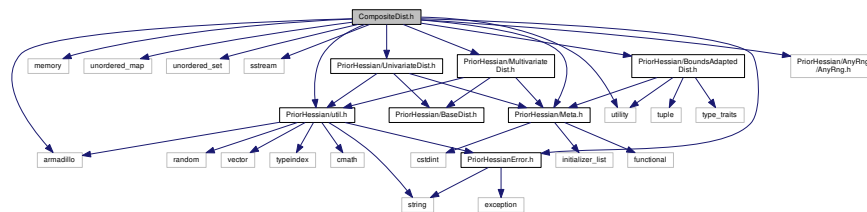
2017-2019

## 8.6 CompositeDist.h File Reference

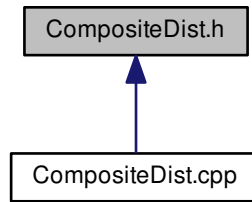
The Frank copula computations.

```
#include <utility>
#include <memory>
#include <unordered_map>
#include <unordered_set>
#include <sstream>
#include <armadillo>
#include "PriorHessian/Meta.h"
#include "PriorHessian/util.h"
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/UnivariateDist.h"
#include "PriorHessian/MultivariateDist.h"
#include "PriorHessian/BoundsAdaptedDist.h"
#include "PriorHessian/AnyRng/AnyRng.h"
```

Include dependency graph for CompositeDist.h:



This graph shows which files directly or indirectly include this file:



## Classes

- class [prior\\_hessian::CompositeDist](#)  
*A probability distribution made of independent component distributions composing groups of 1 or more variables.*
- class [prior\\_hessian::CompositeDist::ComponentDistAdaptor< DistT, Enable >](#)
- class [prior\\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, Univariate↵ Dist > >](#)
- class [prior\\_hessian::CompositeDist::ComponentDistAdaptor< Dist, meta::EnableIfSubclassT< Dist, Multivariate↵ Dist > >](#)

## Namespaces

- [prior\\_hessian](#)

## Functions

- `std::ostream & prior\_hessian::operator<< (std::ostream &out, const CompositeDist &comp_dist)`

### 8.6.1 Detailed Description

The Frank copula computations.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

10-2017

## 8.6.2 Class Documentation

## 8.6.2.1 class prior\_hessian::CompositeDist::ComponentDistAdaptor

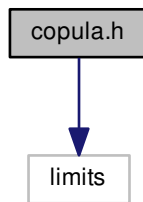
```
template<class DistT, typename Enable = void>
class prior_hessian::CompositeDist::ComponentDistAdaptor< DistT, Enable >
```

Definition at line 64 of file CompositeDist.h.

## 8.7 copula.h File Reference

```
#include <limits>
```

Include dependency graph for copula.h:

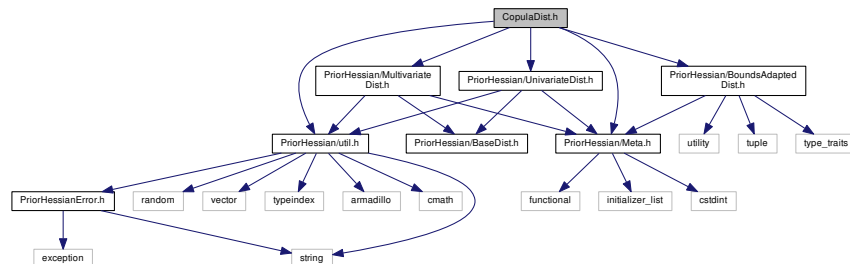


## 8.8 CopulaDist.h File Reference

CopulaDist base class.

```
#include "PriorHessian/util.h"
#include "PriorHessian/Meta.h"
#include "PriorHessian/UnivariateDist.h"
#include "PriorHessian/MultivariateDist.h"
#include "PriorHessian/BoundsAdaptedDist.h"
```

Include dependency graph for CopulaDist.h:





**Classes**

- class [prior\\_hessian::CopulaDistImpl::CopulaDist< CopulaTemplate, MarginalDistTs >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< CopulaDistImpl::CopulaDist< CopulaTemplate, DistTs... > >](#)

**Namespaces**

- [prior\\_hessian](#)
- [prior\\_hessian::CopulaDistImpl](#)
- [prior\\_hessian::detail](#)

**Typedefs**

- template<template< int > class CopulaTemplate, class... MarginalDistTs>  
using [prior\\_hessian::CopulaDist](#) = CopulaDistImpl::CopulaDist< CopulaTemplate, BoundsAdaptedDistT< MarginalDistTs >... >

**Functions**

- template<template< int > class CopulaTemplate, class... MarginalDistTs>  
CopulaDist< CopulaTemplate, MarginalDistTs... > [prior\\_hessian::make\\_copula\\_dist](#) (CopulaTemplate< sizeof...(MarginalDistTs)> &&copula, MarginalDistTs &&...dists)

**8.8.1 Detailed Description**

CopulaDist base class.

**Author**

Mark J. Olah (mjo@cs.unm DOT edu)

**Date**

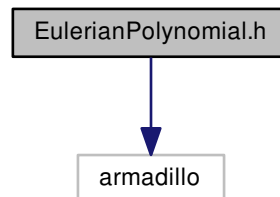
2017-2019

**8.9 EulerianPolynomial.h File Reference**

EulerianPolynomial computation .

```
#include <armadillo>
```

Include dependency graph for EulerianPolynomial.h:



## Classes

- struct [prior\\_hessian::eulerian\\_number< N, M >](#)
- struct [prior\\_hessian::eulerian\\_number< 0, M >](#)

## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

## Functions

- `template<long N, long... I>`  
`VecT prior\_hessian::detail::eulerian\_polynomial ()`
- `template<long N>`  
`VecT prior\_hessian::eulerian\_polynomial ()`

### 8.9.1 Detailed Description

EulerianPolynomial computation .

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

#### Date

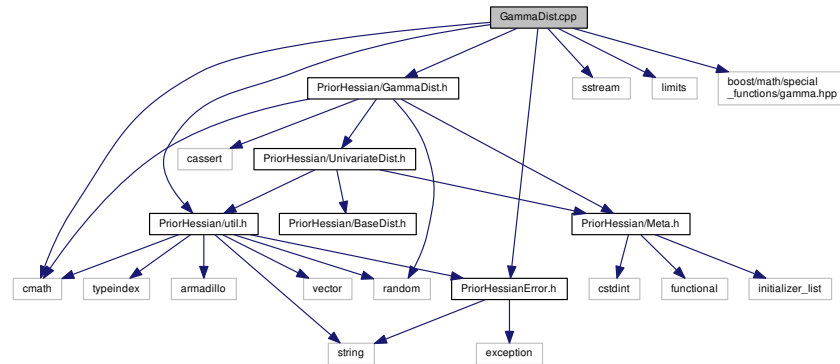
2017 - 2018

## 8.10 GammaDist.cpp File Reference

GammaDist class defintion.

```
#include "PriorHessian/GammaDist.h"
#include "PriorHessian/util.h"
#include "PriorHessian/PriorHessianError.h"
#include <cmath>
#include <sstream>
#include <limits>
#include <boost/math/special_functions/gamma.hpp>
```

Include dependency graph for GammaDist.cpp:



## Namespaces

- [prior\\_hessian](#)

### 8.10.1 Detailed Description

GammaDist class definition.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

#### Date

2017-2018

## 8.11 GammaDist.h File Reference

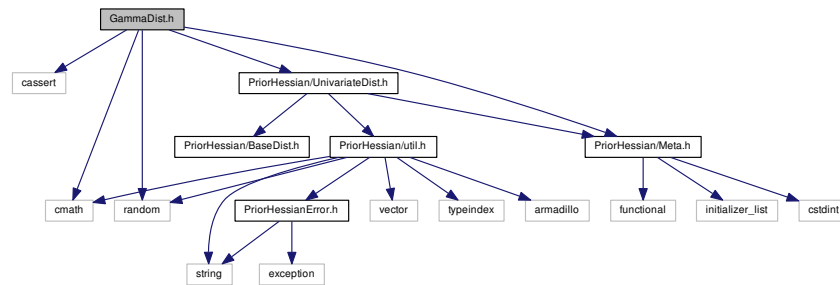
GammaDist class declaration and templated methods.

```

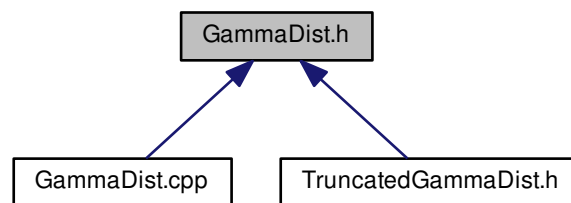
#include <cassert>
#include <cmath>
#include <random>
#include "PriorHessian/Meta.h"
#include "PriorHessian/UnivariateDist.h"

```

Include dependency graph for GammaDist.h:



This graph shows which files directly or indirectly include this file:



## Classes

- class [prior\\_hessian::GammaDist](#)  
Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.

## Namespaces

- [prior\\_hessian](#)

### 8.11.1 Detailed Description

GammaDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

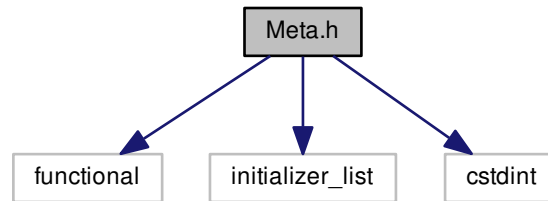
2017-2019

## 8.12 Meta.h File Reference

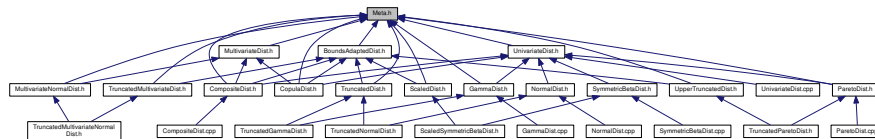
Enables the use of variadic templates in interesting ways.

```
#include <functional>
#include <initializer_list>
#include <cstdint>
```

Include dependency graph for Meta.h:



This graph shows which files directly or indirectly include this file:



### Classes

- struct [prior\\_hessian::meta::conjunction<... >](#)
- struct [prior\\_hessian::meta::conjunction< B1 >](#)
- struct [prior\\_hessian::meta::conjunction< B1, Bn... >](#)
- struct [prior\\_hessian::meta::disjunction<... >](#)
- struct [prior\\_hessian::meta::disjunction< B1 >](#)
- struct [prior\\_hessian::meta::disjunction< B1, Bn... >](#)
- struct [prior\\_hessian::meta::is\\_template\\_of< class, typename >](#)
- struct [prior\\_hessian::meta::is\\_template\\_of< ClassTemplate, ClassTemplate< Ts... > >](#)
- struct [prior\\_hessian::meta::is\\_numeric\\_template\\_of< class, typename >](#)
- struct [prior\\_hessian::meta::is\\_numeric\\_template\\_of< ClassNumericTemplate, ClassNumericTemplate< Is... > >](#)
- class [prior\\_hessian::meta::is\\_subclass\\_of\\_numeric\\_template< T, U >](#)
- class [prior\\_hessian::meta::is\\_copula< T, U >](#)

## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::meta](#)

*Class templates to utilize sequencing behaviour of `std::initializer_list` expressions.*

## Macros

- `#define GCC_VERSION (__GNUC__ * 100 + __GNUC_MINOR__ * 10 + __GNUC_PATCHLEVEL__)`
- `#define PRIOR_HESSIAN_META_CONSTEXPR`
- `#define PRIOR_HESSIAN_META_HAS_CONSTEXPR 0`

## Typedefs

- `template<template< template< int > class, class... > class CopulaT, class U >`  
`using prior_hessian::meta::ConstructableIfsCopulaT = std::enable_if_t< is_copula< CopulaT, U >::value, bool >`
- `template<class ReturnT, class BoolT >`  
`using prior_hessian::meta::ReturnIfT = std::enable_if_t< BoolT::value, ReturnT >`
- `template<bool val>`  
`using prior_hessian::meta::ConstructableIf = std::enable_if_t< val, bool >`
- `template<bool val>`  
`using prior_hessian::meta::ConstructableIfNot = std::enable_if_t< !val, bool >`
- `template<class T, class SelfT >`  
`using prior_hessian::meta::ConstructableIfNotSelfT = std::enable_if_t< !std::is_same< std::decay_t< T >, SelfT >::value, bool >`
- `template<class T, class BaseT >`  
`using prior_hessian::meta::EnableIfSubclassT = std::enable_if_t< std::is_base_of< std::remove_reference_t< BaseT >, std::remove_reference_t< T >>::value >`
- `template<class T, template< int > class ClassNumericTemplate>`  
`using prior_hessian::meta::EnableIfSubclassOfNumericTemplateT = std::enable_if_t< is_subclass_of_numeric<←`  
`_template< ClassNumericTemplate, std::remove_reference_t< T >>::value >`
- `template<class ReturnT, class T, template< int > class ClassNumericTemplate>`  
`using prior_hessian::meta::ReturnIfSubclassOfNumericTemplateT = std::enable_if_t< is_subclass_of_numeric<←`  
`_template< ClassNumericTemplate, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class T, class SelfT >`  
`using prior_hessian::meta::EnableIfNotIsSelfT = std::enable_if_t< !std::is_same< std::decay_t< T >, SelfT >←`  
`::value >`
- `template<class ReturnT, class T, class BaseT >`  
`using prior_hessian::meta::ReturnIfSubclassT = std::enable_if_t< std::is_base_of< std::remove_reference_t< BaseT >, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class BaseT, class... Ts>`  
`using prior_hessian::meta::EnableIfsSuperclassOfAllT = std::enable_if_t< conjunction< std::is_base_of< std←`  
`::remove_reference_t< BaseT >, std::remove_reference_t< Ts >>... >::value >`
- `template<class T, template< typename... > class ClassTemplate>`  
`using prior_hessian::meta::EnableIfInstantiatedFromT = std::enable_if_t< is_template_of< ClassTemplate, std←`  
`::remove_reference_t< T >>::value >`
- `template<class T, template< int > class ClassTemplate>`  
`using prior_hessian::meta::EnableIfInstantiatedFromNumericT = std::enable_if_t< is_numeric_template_of< ClassTemplate, std::remove_reference_t< T >>::value >`

- `template<class ReturnT, class T, template< int > class ClassTemplate>`  
`using prior_hessian::meta::ReturnIfInstantiatedFromNumericT = std::enable_if_t< is_numeric_template_of<`  
`ClassTemplate, std::remove_reference_t< T >>::value, ReturnT >`
- `template<class T, template< typename... > class ClassTemplate>`  
`using prior_hessian::meta::EnableIfNotInstantiatedFromT = std::enable_if_t< !is_template_of< ClassTemplate,`  
`std::remove_reference_t< T >>::value >`
- `template<class ReturnT, class TestT, template< typename... > class ClassTemplate>`  
`using prior_hessian::meta::ReturnIfInstantiatedFromT = std::enable_if_t< is_template_of< ClassTemplate, std::`  
`remove_reference_t< TestT >>::value, ReturnT >`
- `template<class ReturnT, class TestT, template< typename... > class ClassTemplate>`  
`using prior_hessian::meta::ReturnIfNotInstantiatedFromT = std::enable_if_t< !is_template_of< ClassTemplate,`  
`std::remove_reference_t< TestT >>::value, ReturnT >`
- `template<template< typename > class ClassTemplate, class... Ts>`  
`using prior_hessian::meta::EnableIfIsTemplateForAllT = std::enable_if_t< conjunction< is_template_of<`  
`ClassTemplate, std::remove_reference_t< Ts >>... >::value >`
- `template<template< typename... > class ClassTemplate, class... Ts>`  
`using prior_hessian::meta::ConstructableIfIsTemplateForAllT = std::enable_if_t< conjunction< is_template_of<`  
`ClassTemplate, std::remove_reference_t< Ts >>... >::value, bool >`
- `template<class SuperClass, class T >`  
`using prior_hessian::meta::ConstructableIfIsSuperClassT = std::enable_if_t< std::is_base_of< std::remove_`  
`reference_t< SuperClass >, std::remove_reference_t< T >>::value, bool >`
- `template<class SuperClass, class... Ts>`  
`using prior_hessian::meta::ConstructableIfIsSuperClassForAllT = std::enable_if_t< conjunction< std::is_base_`  
`_of< std::remove_reference_t< SuperClass >, std::remove_reference_t< Ts >>... >::value, bool >`
- `template<class T, template< int > class ClassTemplate>`  
`using prior_hessian::meta::ConstructableIfInstantiatedFromNumericT = std::enable_if_t< is_numeric_template_`  
`_of< ClassTemplate, std::remove_reference_t< T >>::value, bool >`
- `template<class T >`  
`using prior_hessian::meta::EnableIfIsNotTupleT = std::enable_if_t< !is_template_of< std::tuple, std::remove_`  
`reference_t< T >>::value >`
- `template<class... Ts>`  
`using prior_hessian::meta::EnableIfNonEmpty = std::enable_if_t< (sizeof...(Ts)>0) >`
- `template<class... Ts>`  
`using prior_hessian::meta::EnableIfAllAreNotTupleT = std::enable_if_t< !disjunction< is_template_of< std::tuple,`  
`std::remove_reference_t< Ts >>... >::value >`
- `template<class SelfT, class T >`  
`using prior_hessian::meta::EnableIfIsNotTupleAndIsNotSelfT = std::enable_if_t< !is_template_of< std::tuple,`  
`std::remove_reference_t< T >>::value &&!std::is_same< std::decay_t< T >, SelfT >::value >`
- `template<class T, class... Ts>`  
`using prior_hessian::meta::ConstructableIfAllAreNotTupleAndAreNotT = std::enable_if_t< !disjunction< is_`  
`template_of< std::tuple, std::remove_reference_t< Ts >>... >::value &&!disjunction< std::is_same< std::`  
`decay_t< Ts >, T >... >::value, bool >`
- `template<class Dist, class BaseDist >`  
`using prior_hessian::meta::DerivedFrom = std::enable_if_t< std::is_base_of< std::decay_t< BaseDist >, std::`  
`decay_t< Dist >>::value, std::decay_t< Dist >>`

## Functions

- `template<class T >`  
`void prior_hessian::meta::call_in_order (std::initializer_list< T >)`
- `template<class InputIterator, class ResultT, class BinaryOperation >`  
`PRIOR_HESSIAN_META_CONSTEXPR ResultT prior_hessian::meta::constexpr_accumulate (InputIterator first,`  
`InputIterator last, ResultT init, BinaryOperation op)`

- `PRIOR_HESSIAN_META_CONSTEXPR` `bool` `prior_hessian::meta::logical_and_in_order` (`std::initializer_list< bool > L`)
- `template<class T >`  
`PRIOR_HESSIAN_META_CONSTEXPR T` `prior_hessian::meta::sum_in_order` (`std::initializer_list< T > L`)
- `template<class T >`  
`PRIOR_HESSIAN_META_CONSTEXPR T` `prior_hessian::meta::prod_in_order` (`std::initializer_list< T > L`)

### 8.12.1 Detailed Description

Enables the use of variadic templates in interesting ways.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

#### Date

2017

### 8.12.2 Macro Definition Documentation

#### 8.12.2.1 `#define GCC_VERSION (__GNUC__ * 100 + __GNUC_MINOR__ * 10 + __GNUC_PATCHLEVEL__)`

Definition at line 11 of file Meta.h.

#### 8.12.2.2 `#define PRIOR_HESSIAN_META_CONSTEXPR`

Definition at line 19 of file Meta.h.

Referenced by `prior_hessian::meta::call_in_order()`, `prior_hessian::meta::constexpr_accumulate()`, `prior_hessian::meta::logical_and_in_order()`, and `prior_hessian::meta::sum_in_order()`.

#### 8.12.2.3 `#define PRIOR_HESSIAN_META_HAS_CONSTEXPR 0`

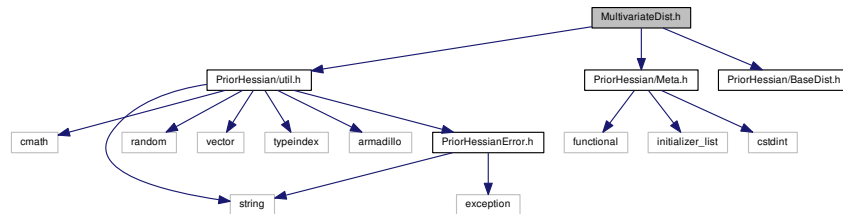
Definition at line 20 of file Meta.h.



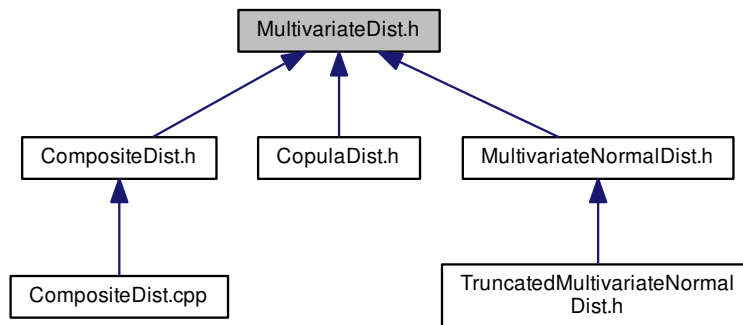
### 8.13 MultivariateDist.h File Reference

MultivariateDist base class.

```
#include "PriorHessian/util.h"
#include "PriorHessian/Meta.h"
#include "PriorHessian/BaseDist.h"
Include dependency graph for MultivariateDist.h:
```



This graph shows which files directly or indirectly include this file:



#### Classes

- class [prior\\_hessian::MultivariateDist](#)

#### Namespaces

- [prior\\_hessian](#)

## 8.13.1 Detailed Description

MultivariateDist base class.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

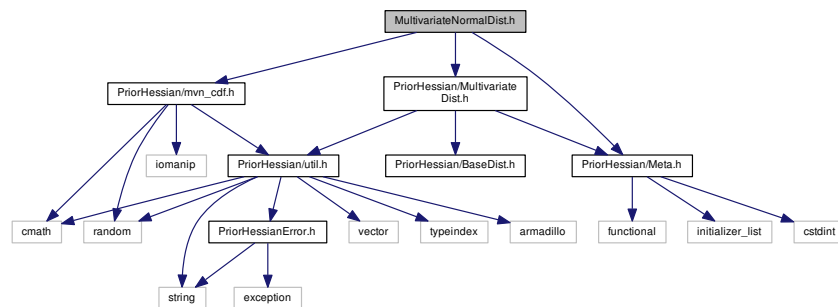
## Date

2017-2019

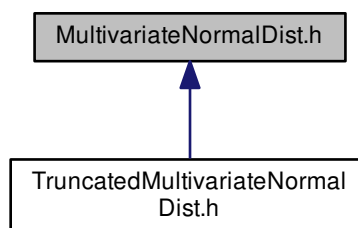
## 8.14 MultivariateNormalDist.h File Reference

MultivariateNormalDist base class.

```
#include "PriorHessian/MultivariateDist.h"
#include "PriorHessian/Meta.h"
#include "PriorHessian/mvn_cdf.h"
Include dependency graph for MultivariateNormalDist.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class `prior_hessian::MultivariateNormalDist< Ndim >`  
*Multivariate Normal distribution.*

## Namespaces

- `prior_hessian`
- `prior_hessian::helpers`

## Functions

- template<class Vec , class Mat >  
double `prior_hessian::helpers::compute_quadratic_from_symmetric` (IdxT Ndim, const Vec &v, const Mat &A)

## 8.14.1 Detailed Description

MultivariateNormalDist base class.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

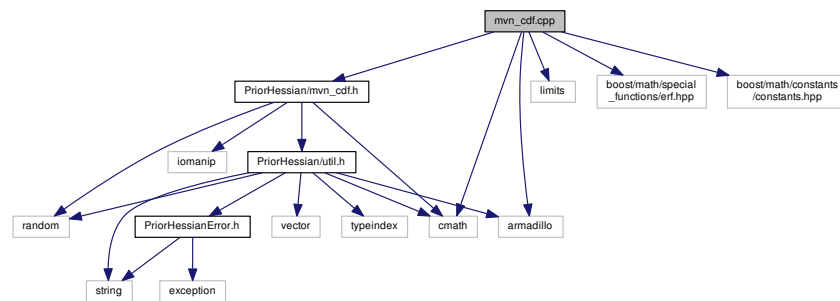
2017-2019

## 8.15 mvn\_cdf.cpp File Reference

NormalDist class definition.

```
#include "PriorHessian/mvn_cdf.h"
#include <cmath>
#include <limits>
#include <armadillo>
#include <boost/math/special_functions/erf.hpp>
#include <boost/math/constants/constants.hpp>
```

Include dependency graph for mvn\_cdf.cpp:



## Namespaces

- [prior\\_hessian](#)

## Functions

- double [prior\\_hessian::unit\\_normal\\_cdf](#) (double t)
- double [prior\\_hessian::unit\\_normal\\_icdf](#) (double u)
- double [prior\\_hessian::bounded](#) (double x)
- double [prior\\_hessian::owen\\_t\\_integral](#) (double h, double a, double gh)
- double [prior\\_hessian::owen\\_b\\_integral](#) (double h, double k, double r)
- double [prior\\_hessian::donnelly\\_bvn\\_integral](#) (double ah, double ak, double r)
- double [prior\\_hessian::donnelly\\_bvn\\_integral\\_orig](#) (double ah, double ak, double r)

## 8.15.1 Detailed Description

NormalDist class defintion.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

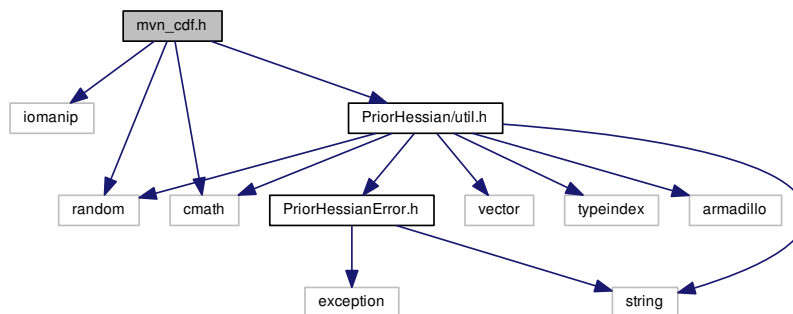
## Date

2017-2018

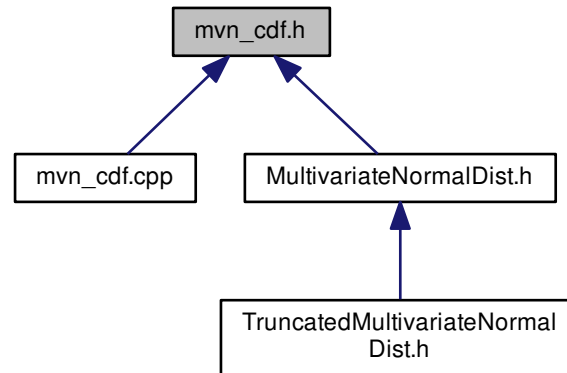
## 8.16 mvn\_cdf.h File Reference

Numerical computation of multivariate normal cdfs in 2,3 and higher dims.

```
#include <iomanip>
#include <random>
#include <cmath>
#include "PriorHessian/util.h"
Include dependency graph for mvn_cdf.h:
```



This graph shows which files directly or indirectly include this file:



### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::genz](#)
- [prior\\_hessian::genz::fortran](#)

### Functions

- double [prior\\_hessian::unit\\_normal\\_cdf](#) (double t)
- double [prior\\_hessian::unit\\_normal\\_icdf](#) (double u)
- double [prior\\_hessian::owen\\_t\\_integral](#) (double h, double a, double gh)
- double [prior\\_hessian::owen\\_t\\_integral](#) (double h, double a)
- double [prior\\_hessian::owen\\_b\\_integral](#) (double h, double k, double r)
- double [prior\\_hessian::donnelly\\_bvn\\_integral](#) (double ah, double ak, double r)
- double [prior\\_hessian::donnelly\\_bvn\\_integral\\_orig](#) (double ah, double ak, double r)
- template<class Vec , class Mat >  
double [prior\\_hessian::donnelly\\_bvn\\_cdf](#) (const Vec &b, const Mat &sigma)
- template<class Vec , class Mat >  
double [prior\\_hessian::owen\\_bvn\\_cdf](#) (const Vec &b, const Mat &sigma)
- template<class Vec , class Mat >  
double [prior\\_hessian::mc\\_mvn\\_integral](#) (const Vec &a, const Vec &b, const Mat &U, double &error, int &niter)
- template<class Vec , class Mat >  
double [prior\\_hessian::mc\\_mvn\\_cdf\\_core](#) (const Vec &b, const Mat &U, double &error, int &niter)
- template<class Vec , class Mat >  
double [prior\\_hessian::mc\\_mvn\\_cdf](#) (const Vec &b, const Mat &S, double &error)
- int [prior\\_hessian::genz::fortran::mvndst\\_](#) (int \*n, double lower[], double upper[], int infin[], double correl[], int \*maxpts, double \*abseps, double \*releps, double \*error, double \*value, int \*inform)
- template<class Vec , class Mat >  
double [prior\\_hessian::genz::mvn\\_cdf\\_genz](#) (const Vec &b, const Mat &S, double &error)

## 8.16.1 Detailed Description

Numerical computation of multivariate normal cdfs in 2,3 and higher dims.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

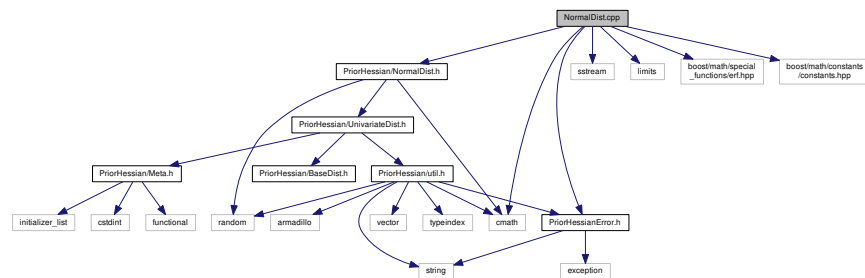
10-2017

## 8.17 NormalDist.cpp File Reference

NormalDist class defintion.

```
#include "PriorHessian/NormalDist.h"
#include "PriorHessian/PriorHessianError.h"
#include <sstream>
#include <cmath>
#include <limits>
#include <boost/math/special_functions/erf.hpp>
#include <boost/math/constants/constants.hpp>
```

Include dependency graph for NormalDist.cpp:



## Namespaces

- [prior\\_hessian](#)

## 8.17.1 Detailed Description

NormalDist class defintion.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

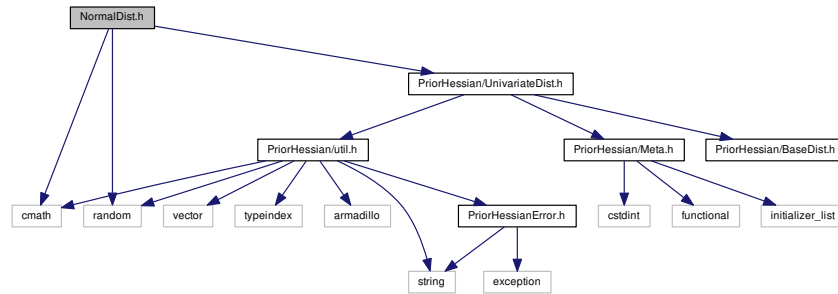
2017-2018

## 8.18 NormalDist.h File Reference

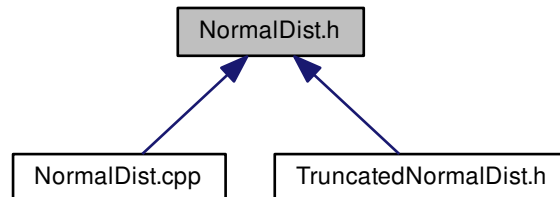
NormalDist class declaration and templated methods.

```
#include <cmath>
#include <random>
#include "PriorHessian/UnivariateDist.h"
```

Include dependency graph for NormalDist.h:



This graph shows which files directly or indirectly include this file:



### Classes

- class [prior\\_hessian::NormalDist](#)  
*Normal distribution with truncation.*

### Namespaces

- [prior\\_hessian](#)

## 8.18.1 Detailed Description

NormalDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

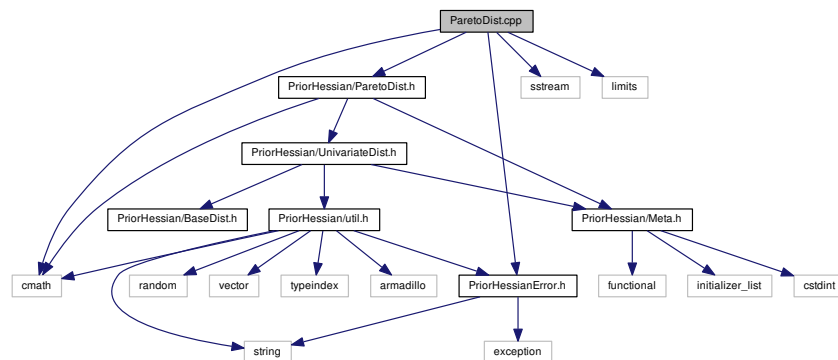
2017-2019

## 8.19 ParetoDist.cpp File Reference

ParetoDist class defintion.

```
#include "PriorHessian/ParetoDist.h"
#include "PriorHessian/PriorHessianError.h"
#include <cmath>
#include <sstream>
#include <limits>
```

Include dependency graph for ParetoDist.cpp:



## Namespaces

- [prior\\_hessian](#)

## 8.19.1 Detailed Description

ParetoDist class defintion.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

2017-2018

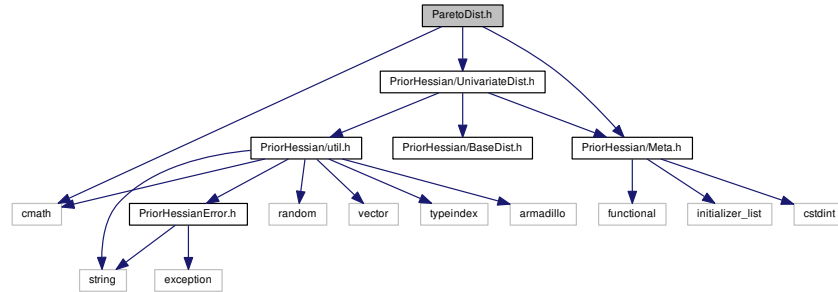


## 8.20 ParetoDist.h File Reference

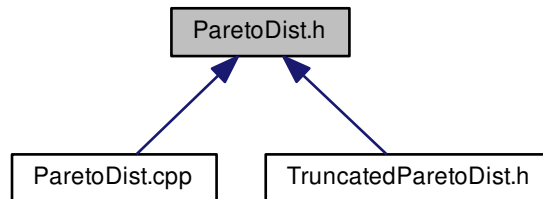
ParetoDist class declaration and templated methods.

```
#include <cmath>
#include "PriorHessian/Meta.h"
#include "PriorHessian/UnivariateDist.h"
```

Include dependency graph for ParetoDist.h:



This graph shows which files directly or indirectly include this file:



### Classes

- class [prior\\_hessian::ParetoDist](#)  
*Pareto dist with infinite upper bound.*

### Namespaces

- [prior\\_hessian](#)

### 8.20.1 Detailed Description

ParetoDist class declaration and templated methods.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

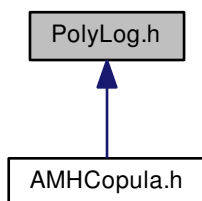
#### Date

2017-2019

## 8.21 PolyLog.h File Reference

Poly log computation for negative integer valued paramters.

This graph shows which files directly or indirectly include this file:



#### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::polylog](#)

#### Functions

- `template<int n>`  
`double prior\_hessian::polylog::eulerian\_polynomial (double z)`
- `template<>`  
`double prior\_hessian::polylog::eulerian\_polynomial< 0 > (double)`
- `template<>`  
`double prior\_hessian::polylog::eulerian\_polynomial< 1 > (double z)`
- `template<>`  
`double prior\_hessian::polylog::eulerian\_polynomial< 2 > (double z)`

- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 3 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 4 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 5 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 6 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 7 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 8 > (double z)`
- `template<>`  
`double prior_hessian::polylog::eulerian_polynomial< 9 > (double z)`
- `template<int n>`  
`double prior_hessian::polylog::polylog (double z)`
- `template<>`  
`double prior_hessian::polylog::polylog< 1 > (double z)`

### 8.21.1 Detailed Description

Poly log computation for negative integer valued paramters.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

#### Date

2017 - 2018

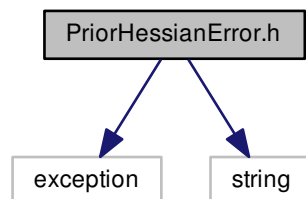
## 8.22 PriorHessianError.h File Reference

The Exception classes for the PriorHessian library.

```
#include <exception>
```

```
#include <string>
```

Include dependency graph for PriorHessianError.h:



[illegible]

- class `prior_hessian::PriorHessianError`
- struct `prior_hessian::IndexError`
  - Indicates a index access was out of bounds.*
- struct `prior_hessian::InvalidOperationError`
- struct `prior_hessian::ParameterSizeError`
- struct `prior_hessian::ParameterValueError`
- struct `prior_hessian::ParameterNameError`
- struct `prior_hessian::ParameterNameUniquenessError`
- struct `prior_hessian::RuntimeConvergenceError`
- struct `prior_hessian::RuntimeSamplingError`
- struct `prior_hessian::RuntimeTypeError`
- struct `prior_hessian::NumericalOverflowError`
- struct `prior_hessian::NotImplementedError`

- prior hessian

- #define **DEBUG\_ASSERT**(...)
- #define **ASSERT\_SETUP**(...)

## The Exception classes for the PriorHessian library.

Mark J. Olah (mjo@cs.unm DOT edu)

## 2017

### 8.22.2 Macro Definition Documentation

#### 8.22.2.1 `#define ASSERT_SETUP( ... )`

Definition at line 37 of file PriorHessianError.h.

#### 8.22.2.2 `#define DEBUG_ASSERT( ... )`

Definition at line 32 of file PriorHessianError.h.

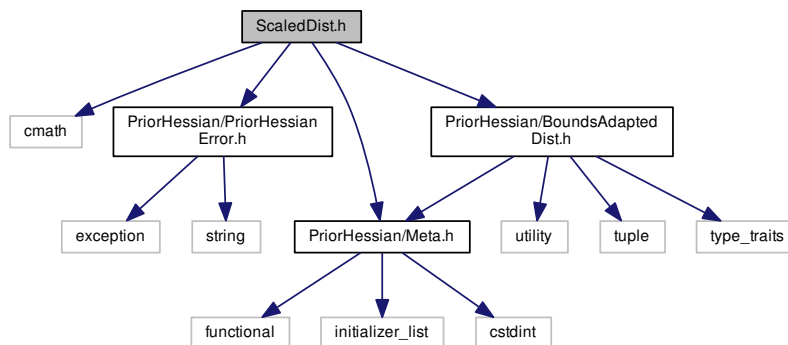
## 8.23 README.md File Reference

## 8.24 ScaledDist.h File Reference

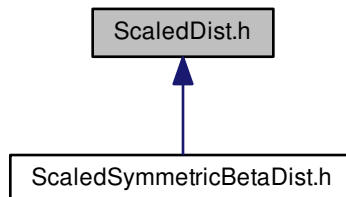
SemilInfiniteDist class declaration and templated methods.

```
#include <cmath>
#include "PriorHessian/Meta.h"
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/BoundsAdaptedDist.h"
```

Include dependency graph for ScaledDist.h:



This graph shows which files directly or indirectly include this file:



## Classes

- class [prior\\_hessian::ScaledDist< Dist >](#)

## Namespaces

- [prior\\_hessian](#)

## 8.24.1 Detailed Description

SemiInfiniteDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

2017

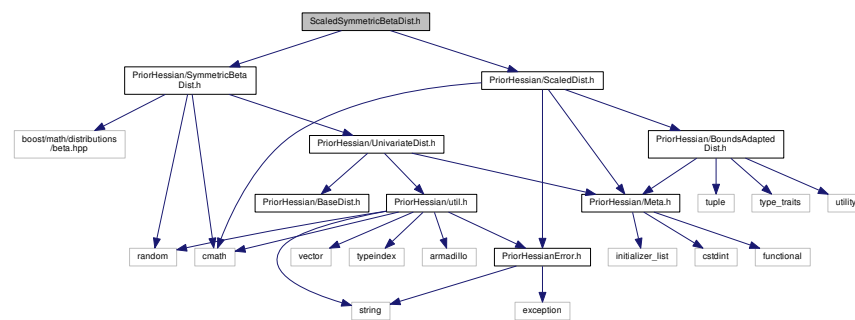
## 8.25 ScaledSymmetricBetaDist.h File Reference

SymmetricBetaDist class declaration and templated methods.

```
#include "PriorHessian/SymmetricBetaDist.h"
```

```
#include "PriorHessian/ScaledDist.h"
```

Include dependency graph for ScaledSymmetricBetaDist.h:



## Classes

- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< SymmetricBetaDist >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< ScaledSymmetricBetaDist >](#)

## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

## Typedefs

- using [prior\\_hessian::ScaledSymmetricBetaDist](#) = ScaledDist< SymmetricBetaDist >

## Functions

- ScaledSymmetricBetaDist [prior\\_hessian::make\\_scaled\\_symmetric\\_beta\\_dist](#) (double beta, std::pair< double, double > bounds)

## 8.25.1 Detailed Description

SymmetricBetaDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

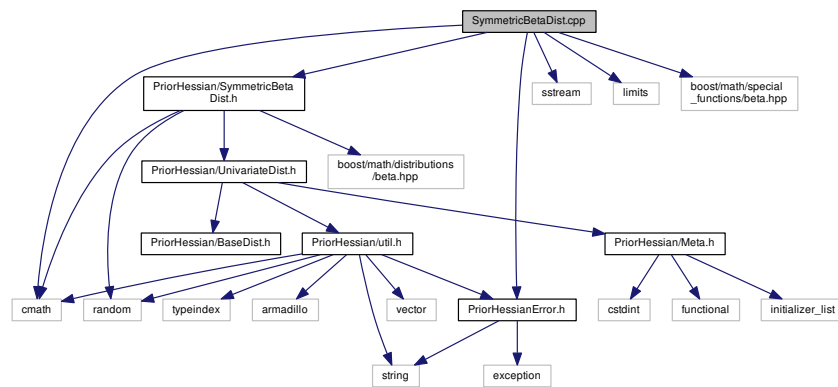
2017-2019

## 8.26 SymmetricBetaDist.cpp File Reference

SymmetricBetaDist class defintion.

```
#include "PriorHessian/SymmetricBetaDist.h"
#include "PriorHessian/PriorHessianError.h"
#include <sstream>
#include <cmath>
#include <limits>
#include <boost/math/special_functions/beta.hpp>
```

Include dependency graph for SymmetricBetaDist.cpp:



## Namespaces

- [prior\\_hessian](#)

## 8.26.1 Detailed Description

SymmetricBetaDist class defintion.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

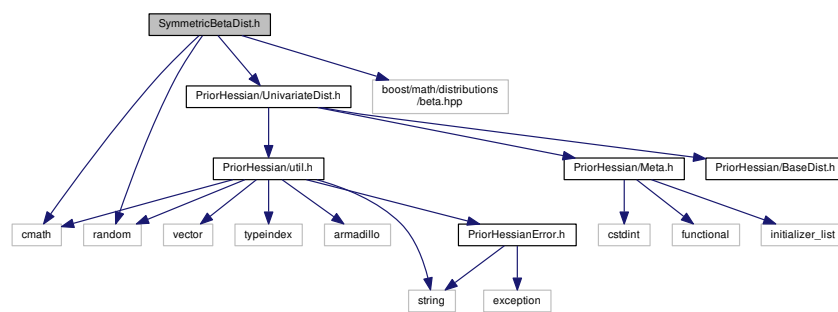
2017-2018

## 8.27 SymmetricBetaDist.h File Reference

SymmetricBetaDist class declaration and templated methods.

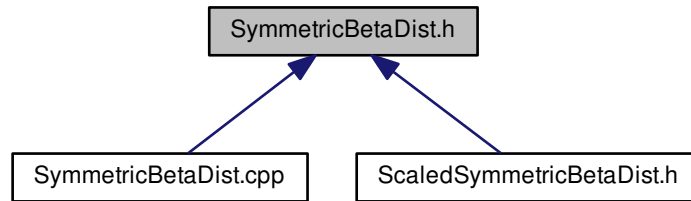
```
#include <cmath>
#include <random>
#include <boost/math/distributions/beta.hpp>
#include "PriorHessian/UnivariateDist.h"
```

Include dependency graph for SymmetricBetaDist.h:





This graph shows which files directly or indirectly include this file:



## Classes

- class [prior\\_hessian::SymmetricBetaDist](#)

*Single parameter beta distribution where  $\alpha = \beta$ , leading to symmetric bounded distribution.*

## Namespaces

- [prior\\_hessian](#)

### 8.27.1 Detailed Description

SymmetricBetaDist class declaration and templated methods.

## Author

Mark J. Olah ([mjo@cs.unm.edu](mailto:mjo@cs.unm.edu))

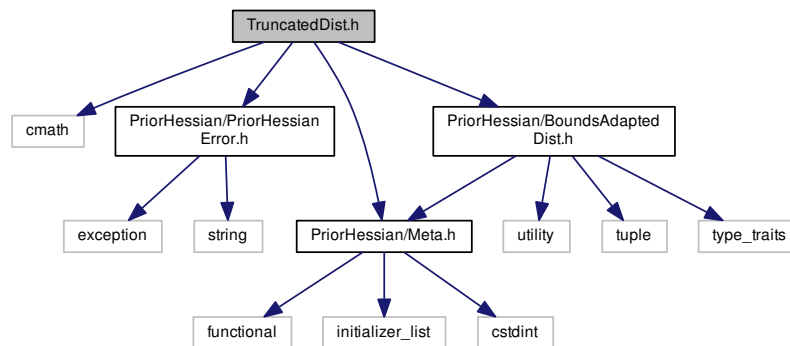
## Date

2017-2018

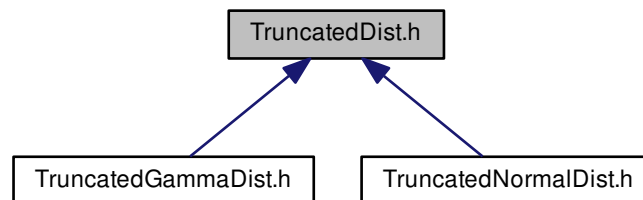
## 8.28 TruncatedDist.h File Reference

TruncatedDist declaration and templated methods definitions.

```
#include <cmath>
#include "PriorHessian/Meta.h"
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/BoundsAdaptedDist.h"
Include dependency graph for TruncatedDist.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class `prior_hessian::TruncatedDist< Dist >`

## Namespaces

- `prior_hessian`

### 8.28.1 Detailed Description

TruncatedDist declaration and templated methods definitions.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

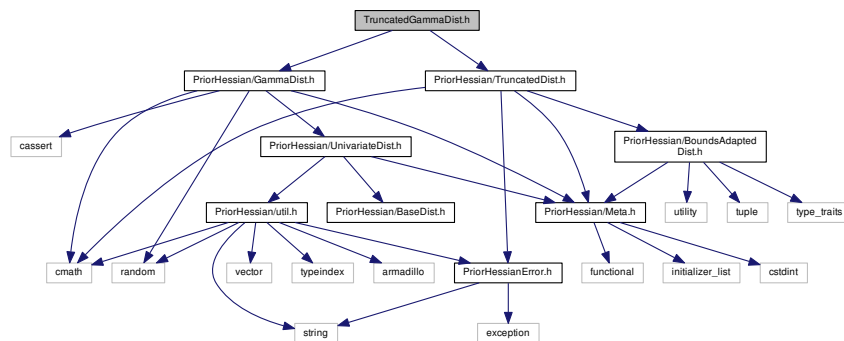
#### Date

2017

## 8.29 TruncatedGammaDist.h File Reference

TruncatedGammaDist class declaration and templated methods.

```
#include "PriorHessian/GammaDist.h"
#include "PriorHessian/TruncatedDist.h"
Include dependency graph for TruncatedGammaDist.h:
```



#### Classes

- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< GammaDist >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< TruncatedGammaDist >](#)

#### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

#### Typedefs

- using [prior\\_hessian::TruncatedGammaDist](#) = [TruncatedDist< GammaDist >](#)

## Functions

- TruncatedGammaDist [prior\\_hessian::make\\_bounded\\_gamma\\_dist](#) (double scale, double shape, std::pair< double, double > bounds)

## 8.29.1 Detailed Description

TruncatedGammaDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

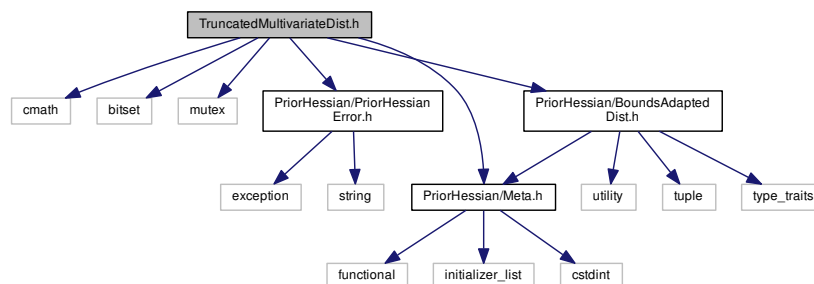
## Date

2017-2019

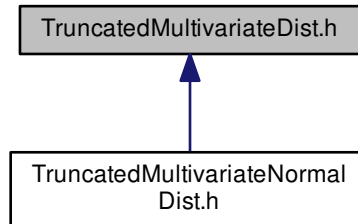
## 8.30 TruncatedMultivariateDist.h File Reference

TruncatedMultivariateDist declaration and templated methods definitions.

```
#include <cmath>
#include <bitset>
#include <mutex>
#include "PriorHessian/Meta.h"
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/BoundsAdaptedDist.h"
Include dependency graph for TruncatedMultivariateDist.h:
```



This graph shows which files directly or indirectly include this file:



#### Classes

- class [prior\\_hessian::mcmc::MCMCData< Ndim >](#)
- class [prior\\_hessian::TruncatedMultivariateDist< Dist >](#)

#### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::mcmc](#)

#### 8.30.1 Detailed Description

TruncatedMultivariateDist declaration and templated methods definitions.

#### Author

Mark J. Olah ([mjo@cs.unm.edu](mailto:mjo@cs.unm.edu))

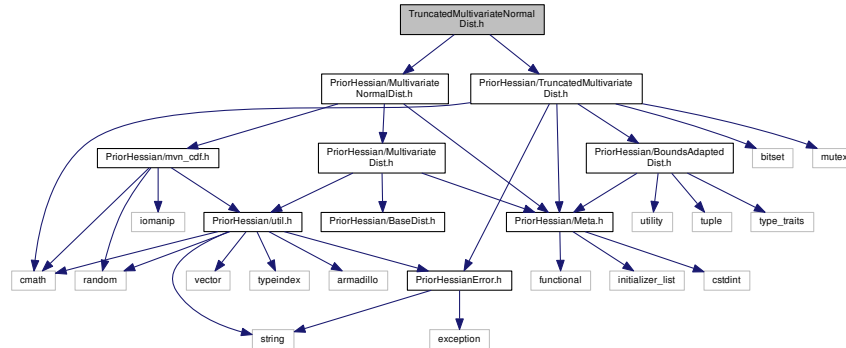
#### Date

2017

## 8.31 TruncatedMultivariateNormalDist.h File Reference

TruncatedMultivariateNormalDist class declaration.

```
#include "PriorHessian/MultivariateNormalDist.h"
#include "PriorHessian/TruncatedMultivariateDist.h"
Include dependency graph for TruncatedMultivariateNormalDist.h:
```



## Classes

- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< MultivariateNormalDist< Ndim > >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< TruncatedMultivariateNormalDist< Ndim > >](#)

## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

## Typedefs

- `template<int Ndim>`  
using [prior\\_hessian::TruncatedMultivariateNormalDist](#) = TruncatedMultivariateDist< MultivariateNormalDist< Ndim >>

## Functions

- `template<int Ndim, class Vec, class Mat, class Vec2 >`  
TruncatedMultivariateNormalDist< Ndim > [prior\\_hessian::make\\_bounded\\_multivariate\\_normal\\_dist](#) (Vec &&mu, Mat &&sigma, Vec2 &&lbound, Vec2 &&ubound)

### 8.31.1 Detailed Description

TruncatedMultivariateNormalDist class declaration.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

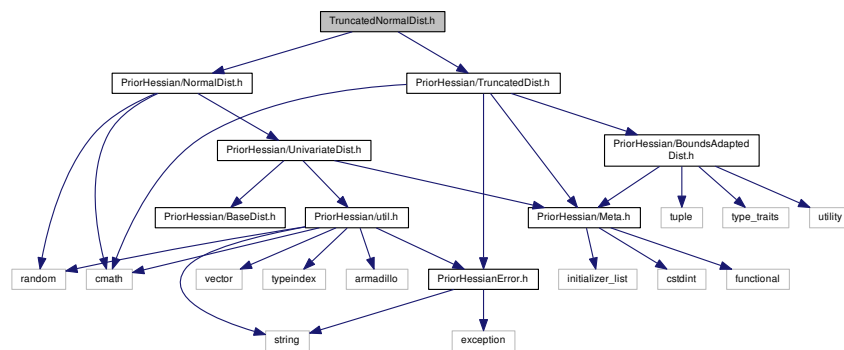
#### Date

2017-2018

## 8.32 TruncatedNormalDist.h File Reference

TruncatedNormalDist class declaration.

```
#include "PriorHessian/NormalDist.h"
#include "PriorHessian/TruncatedDist.h"
Include dependency graph for TruncatedNormalDist.h:
```



#### Classes

- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< NormalDist >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< TruncatedNormalDist >](#)

#### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

#### Typedefs

- using [prior\\_hessian::TruncatedNormalDist](#) = [TruncatedDist< NormalDist >](#)

## Functions

- TruncatedNormalDist [prior\\_hessian::make\\_bounded\\_normal\\_dist](#) (double mu, double sigma, std::pair< double, double > bounds)

## 8.32.1 Detailed Description

TruncatedNormalDist class declaration.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

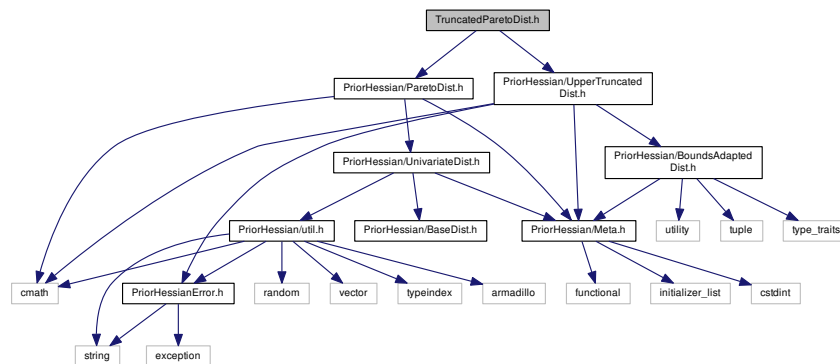
## Date

2017-2018

## 8.33 TruncatedParetoDist.h File Reference

ParetoDist class declaration and templated methods.

```
#include "PriorHessian/ParetoDist.h"
#include "PriorHessian/UpperTruncatedDist.h"
Include dependency graph for TruncatedParetoDist.h:
```



## Classes

- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< ParetoDist >](#)
- struct [prior\\_hessian::detail::dist\\_adaptor\\_traits< TruncatedParetoDist >](#)



## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::detail](#)

## Typedefs

- using [prior\\_hessian::TruncatedParetoDist](#) = UpperTruncatedDist< ParetoDist >

## Functions

- TruncatedParetoDist [prior\\_hessian::make\\_bounded\\_pareto\\_dist](#) (double alpha, std::pair< double, double > bounds)

## 8.33.1 Detailed Description

ParetoDist class declaration and templated methods.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

## Date

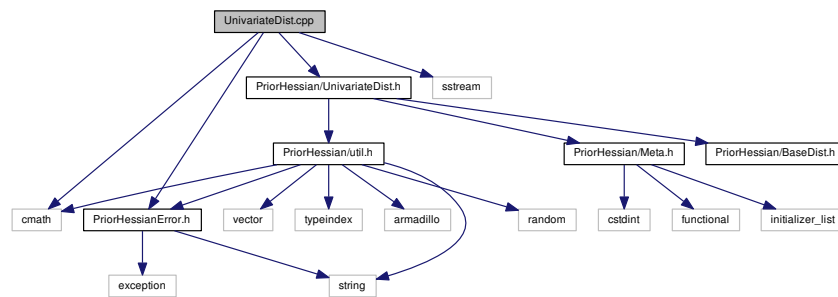
2017-2019

## 8.34 UnivariateDist.cpp File Reference

UnivariateDist base class method definition.

```
#include "PriorHessian/UnivariateDist.h"
#include "PriorHessian/PriorHessianError.h"
#include <cmath>
#include <sstream>
```

Include dependency graph for UnivariateDist.cpp:



## Namespaces

- [prior\\_hessian](#)

## 8.34.1 Detailed Description

UnivariateDist base class method definition.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

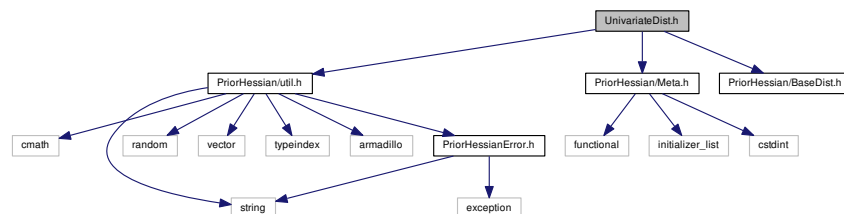
## Date

2017-2019

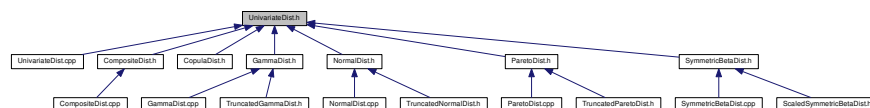
## 8.35 UnivariateDist.h File Reference

UnivariateDist base class.

```
#include "PriorHessian/util.h"
#include "PriorHessian/Meta.h"
#include "PriorHessian/BaseDist.h"
Include dependency graph for UnivariateDist.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class [prior\\_hessian::UnivariateDist](#)

## Namespaces

- [prior\\_hessian](#)

### 8.35.1 Detailed Description

UnivariateDist base class.

## Author

Mark J. Olah (mjo@cs.unm DOT edu)

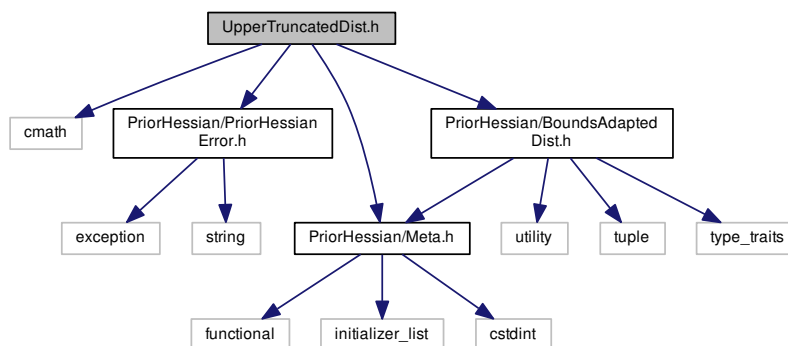
## Date

2017-2019

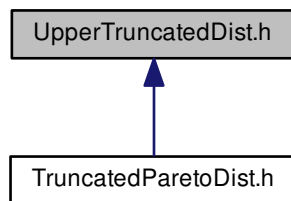
### 8.36 UpperTruncatedDist.h File Reference

UpperTruncatedDist declaration and templated methods definitions.

```
#include <cmath>
#include "PriorHessian/Meta.h"
#include "PriorHessian/PriorHessianError.h"
#include "PriorHessian/BoundsAdaptedDist.h"
Include dependency graph for UpperTruncatedDist.h:
```



This graph shows which files directly or indirectly include this file:



#### Classes

- class [prior\\_hessian::UpperTruncatedDist< Dist >](#)

#### Namespaces

- [prior\\_hessian](#)

#### 8.36.1 Detailed Description

UpperTruncatedDist declaration and templated methods definitions.

#### Author

Mark J. Olah ([mjo@cs.unm DOT edu](mailto:mjo@cs.unm DOT edu))

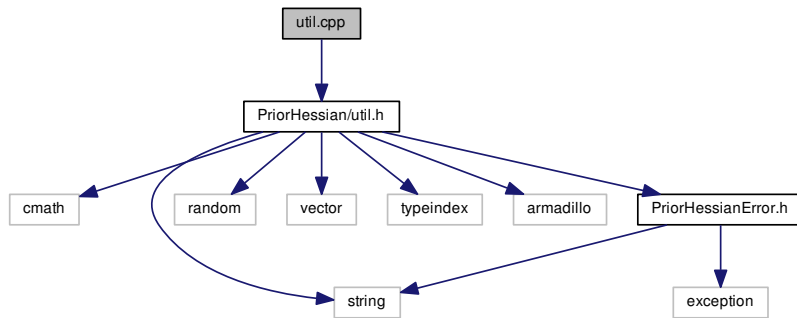
#### Date

2017

### 8.37 util.cpp File Reference

```
#include "PriorHessian/util.h"
```

Include dependency graph for util.cpp:



#### Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::constants](#)

#### Variables

- const double [prior\\_hessian::constants::sqrt2](#) = std::sqrt(2.)
- const double [prior\\_hessian::constants::sqrt2\\_inv](#) = 1./std::sqrt(2.)
- const double [prior\\_hessian::constants::sqrt2pi](#) = std::sqrt(2.\*arma::datum::pi)
- const double [prior\\_hessian::constants::sqrt2pi\\_inv](#) = 1./std::sqrt(2.\*arma::datum::pi)
- const double [prior\\_hessian::constants::log2pi](#) = std::log(2.\*arma::datum::pi)

#### 8.37.1 Detailed Description

##### Author

Mark J. Olah (mjo@cs.unm DOT edu)

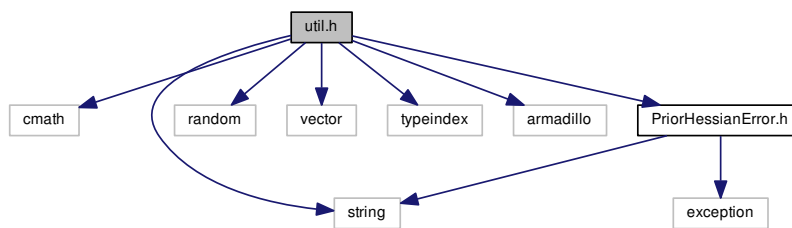
##### Date

2017 - 2018

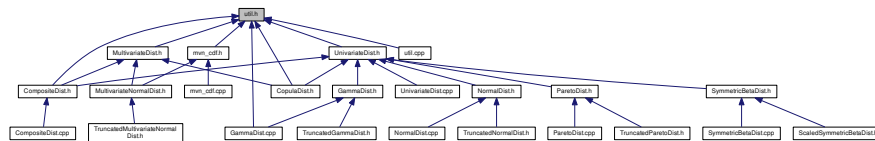
## 8.38 util.h File Reference

Utilities and namespace globals.

```
#include <cmath>
#include <string>
#include <random>
#include <vector>
#include <typeindex>
#include <armadillo>
#include "PriorHessianError.h"
Include dependency graph for util.h:
```



This graph shows which files directly or indirectly include this file:



## Namespaces

- [prior\\_hessian](#)
- [prior\\_hessian::constants](#)

## Typedefs

- using [prior\\_hessian::IdxT](#) = `arma::uword`
- using [prior\\_hessian::UVecT](#) = `arma::Col< IdxT >`
- using [prior\\_hessian::VecT](#) = `arma::Col< double >`
- using [prior\\_hessian::MatT](#) = `arma::Mat< double >`
- using [prior\\_hessian::StringVecT](#) = `std::vector< std::string >`
- using [prior\\_hessian::TypeInfoVecT](#) = `std::vector< std::type_index >`

## Functions

- `template<class T >`  
`T prior_hessian::square (T t)`

### 8.38.1 Detailed Description

Utilities and namespace globals.

#### Author

Mark J. Olah (mjo@cs.unm DOT edu)

#### Date

10-2017

## Index

`_scaled_lbound`  

`prior_hessian::ScaledDist`, [343](#)

`_scaled_ubound`  

`prior_hessian::ScaledDist`, [343](#)

`_truncated`  

`prior_hessian::TruncatedDist`, [375](#)

`prior_hessian::TruncatedMultivariateDist`, [381](#)

`_truncated_lbound`  

`prior_hessian::TruncatedDist`, [375](#)

`prior_hessian::TruncatedMultivariateDist`, [381](#)

`_truncated_ubound`  

`prior_hessian::TruncatedDist`, [376](#)

`prior_hessian::TruncatedMultivariateDist`, [382](#)

AMHCopula  

`prior_hessian::AMHCopula`, [48](#)

AMHCopula.h, [395](#)

ASSERT\_SETUP  

`PriorHessianError.h`, [424](#)

adaptable\_bounds  

`prior_hessian::detail::dist_adaptor_traits`, [172](#)

`prior_hessian::detail::dist_adaptor_traits< Copula↵  
    DistImpl::CopulaDist< CopulaTemplate, Dist↵  
    Ts... > >`, [173](#)

`prior_hessian::detail::dist_adaptor_traits< Gamma↵  
    Dist >`, [174](#)

`prior_hessian::detail::dist_adaptor_traits< Multivariate↵  
    NormalDist< Ndim > >`, [175](#)

`prior_hessian::detail::dist_adaptor_traits< Normal↵  
    Dist >`, [176](#)

`prior_hessian::detail::dist_adaptor_traits< ParetoDist  
    >`, [177](#)

`prior_hessian::detail::dist_adaptor_traits< Scaled↵  
    SymmetricBetaDist >`, [178](#)

`prior_hessian::detail::dist_adaptor_traits< Symmetric↵  
    BetaDist >`, [179](#)

`prior_hessian::detail::dist_adaptor_traits< Truncated↵  
    GammaDist >`, [180](#)

`prior_hessian::detail::dist_adaptor_traits< Truncated↵  
    MultivariateNormalDist< Ndim > >`, [181](#)

`prior_hessian::detail::dist_adaptor_traits< Truncated↵  
    NormalDist >`, [182](#)

`prior_hessian::detail::dist_adaptor_traits< Truncated↵  
    ParetoDist >`, [183](#)

alpha  

`prior_hessian::ParetoDist`, [287](#)

AnyRngT  

`prior_hessian::CompositeDist`, [92](#)

append\_global\_lbound  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [80](#)

append\_global\_ubound  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [69](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [80](#)

append\_lbound  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [69](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [81](#)

append\_param\_names  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [70](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [81](#)

append\_params  

`prior_hessian::AMHCopula`, [49](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [70](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [82](#)

`prior_hessian::MultivariateNormalDist`, [224](#)

append\_params\_iter  

`prior_hessian::NormalDist`, [252](#)

append\_params\_lbound  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [71](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [82](#)

append\_params\_ubound  

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [71](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [82](#)

append\_sample  

`MultivariateDist > >`, [69](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [80](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [69](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [80](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [81](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [81](#)

`prior_hessian::AMHCopula`, [49](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    MultivariateDist > >`, [70](#)

`prior_hessian::CompositeDist::ComponentDist↵  
    Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
    UnivariateDist > >`, [82](#)

`prior_hessian::MultivariateNormalDist`, [224](#)

`append_params_iter`  

`prior_hessian::NormalDist`, [252](#)

`append_params_lbound`  

`prior_hessian::CompositeDist::ComponentDist↵  
      Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
      MultivariateDist > >`, [71](#)

`prior_hessian::CompositeDist::ComponentDist↵  
      Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
      UnivariateDist > >`, [82](#)

`append_params_ubound`  

`prior_hessian::CompositeDist::ComponentDist↵  
      Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
      MultivariateDist > >`, [71](#)

`prior_hessian::CompositeDist::ComponentDist↵  
      Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
      UnivariateDist > >`, [82](#)

`append_sample`  

`MultivariateDist > >`, [69](#)



- prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 71
- prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 82
- append\_ubound
  - prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 71
  - prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 83
- ArchimedeanCopula.h, 395
- BaseDist.h, 397
- beta
  - prior\_hessian::SymmetricBetaDist, 347
- bounded
  - prior\_hessian, 15
- bounds\_adapted\_dist
  - prior\_hessian::detail::dist\_adaptor\_traits, 171
  - prior\_hessian::detail::dist\_adaptor\_traits< Copula↵  
DistImpl::CopulaDist< CopulaTemplate, Dist↵  
Ts... > >, 172
  - prior\_hessian::detail::dist\_adaptor\_traits< Gamma↵  
Dist >, 173
  - prior\_hessian::detail::dist\_adaptor\_traits< Multivariate↵  
NormalDist< Ndim > >, 174
  - prior\_hessian::detail::dist\_adaptor\_traits< Normal↵  
Dist >, 175
  - prior\_hessian::detail::dist\_adaptor\_traits< ParetoDist  
>, 176
  - prior\_hessian::detail::dist\_adaptor\_traits< Scaled↵  
SymmetricBetaDist >, 177
  - prior\_hessian::detail::dist\_adaptor\_traits< Symmetric↵  
BetaDist >, 178
  - prior\_hessian::detail::dist\_adaptor\_traits< Truncated↵  
GammaDist >, 179
  - prior\_hessian::detail::dist\_adaptor\_traits< Truncated↵  
MultivariateNormalDist< Ndim > >, 180
  - prior\_hessian::detail::dist\_adaptor\_traits< Truncated↵  
NormalDist >, 181
  - prior\_hessian::detail::dist\_adaptor\_traits< Truncated↵  
ParetoDist >, 182
- bounds\_pdf\_integral
  - prior\_hessian::TruncatedDist, 376
  - prior\_hessian::TruncatedMultivariateDist, 382
- BoundsAdaptedDist.h, 397
- BoundsAdaptedDistT
  - prior\_hessian, 14
- call\_in\_order
  - prior\_hessian::meta, 39
- cdf
  - prior\_hessian::AMHCopula, 49
  - prior\_hessian::CompositeDist, 95
  - prior\_hessian::CopulaDistImpl::CopulaDist, 141
  - prior\_hessian::GammaDist, 190
  - prior\_hessian::MultivariateNormalDist, 224, 225
  - prior\_hessian::NormalDist, 252
  - prior\_hessian::ParetoDist, 288
  - prior\_hessian::ScaledDist, 331
  - prior\_hessian::SymmetricBetaDist, 347
  - prior\_hessian::TruncatedDist, 366
  - prior\_hessian::TruncatedMultivariateDist, 379
  - prior\_hessian::UpperTruncatedDist, 388
- cdf\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 72
  - prior\_hessian::CompositeDist::ComponentDist↵  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 83
- check\_bounds
  - prior\_hessian::CopulaDistImpl::CopulaDist, 141
  - prior\_hessian::GammaDist, 191
  - prior\_hessian::MultivariateDist, 219
  - prior\_hessian::MultivariateNormalDist, 225
  - prior\_hessian::NormalDist, 252
  - prior\_hessian::ParetoDist, 289
  - prior\_hessian::SymmetricBetaDist, 348
  - prior\_hessian::UnivariateDist, 384
- check\_copula\_theta
  - prior\_hessian::CopulaDistImpl::CopulaDist, 141
- check\_lbound
  - prior\_hessian::ParetoDist, 290
- check\_mu
  - prior\_hessian::MultivariateNormalDist, 225
- check\_params
  - prior\_hessian::AMHCopula, 50
  - prior\_hessian::CompositeDist, 95
  - prior\_hessian::CopulaDistImpl::CopulaDist, 141
  - prior\_hessian::GammaDist, 191
  - prior\_hessian::MultivariateNormalDist, 225, 226
  - prior\_hessian::NormalDist, 253
  - prior\_hessian::ParetoDist, 290, 291
  - prior\_hessian::SymmetricBetaDist, 348
- check\_params\_iter
  - prior\_hessian::AMHCopula, 50
  - prior\_hessian::CopulaDistImpl::CopulaDist, 142
  - prior\_hessian::GammaDist, 192
  - prior\_hessian::MultivariateNormalDist, 227
  - prior\_hessian::NormalDist, 254
  - prior\_hessian::ParetoDist, 292
  - prior\_hessian::SymmetricBetaDist, 349
- check\_sigma
  - prior\_hessian::MultivariateNormalDist, 228
- check\_theta

- prior\_hessian::AMHCopula, 50
- clear
  - prior\_hessian::CompositeDist, 95
- component\_names
  - prior\_hessian::CompositeDist, 96
- component\_types
  - prior\_hessian::CompositeDist, 96
- ComponentDistAdaptor
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 68
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 80
- ComponentDistT
  - prior\_hessian::CompositeDist, 92
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 68
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 80
- CompositeDist
  - prior\_hessian::CompositeDist, 93, 94
- CompositeDist.cpp, 400
- CompositeDist.h, 401
- compute\_quadratic\_from\_symmetric
  - prior\_hessian::helpers, 32
- compute\_truncated\_pdf\_integral
  - prior\_hessian::TruncatedMultivariateDist, 379
- condition
  - prior\_hessian::IndexError, 207
  - prior\_hessian::InvalidOperationError, 210
  - prior\_hessian::NotImplementedError, 274
  - prior\_hessian::NumericalOverflowError, 276
  - prior\_hessian::ParameterNameError, 278
  - prior\_hessian::ParameterNameUniquenessError,  
280
  - prior\_hessian::ParameterSizeError, 282
  - prior\_hessian::ParameterValueError, 284
  - prior\_hessian::PriorHessianError, 321
  - prior\_hessian::RuntimeConvergenceError, 323
  - prior\_hessian::RuntimeSamplingError, 325
  - prior\_hessian::RuntimeTypeError, 327
- constexpr\_accumulate
  - prior\_hessian::meta, 39
- ConstructableIf
  - prior\_hessian::meta, 36
- ConstructableIfAllAreNotTupleAndAreNotT
  - prior\_hessian::meta, 36
- ConstructableIfAllDistsAreBoundedT
  - prior\_hessian::meta, 36
- ConstructableIfInstantiatedFromNumericT
  - prior\_hessian::meta, 36
- ConstructableIfIsCopulaT
  - prior\_hessian::meta, 36
- ConstructableIfIsSuperClassForAllT
  - prior\_hessian::meta, 36
- ConstructableIfIsSuperClassT
  - prior\_hessian::meta, 36
- ConstructableIfIsTemplateForAllT
  - prior\_hessian::meta, 36
- ConstructableIfNot
  - prior\_hessian::meta, 36
- ConstructableIfNotAllDistsAreBoundedT
  - prior\_hessian::meta, 37
- ConstructableIfNotSelfT
  - prior\_hessian::meta, 37
- convert\_from\_unitary\_coords
  - prior\_hessian::ScaledDist, 331
- convert\_to\_unitary\_coords
  - prior\_hessian::ScaledDist, 332
- copula.h, 403
- CopulaDist
  - prior\_hessian, 14
  - prior\_hessian::CopulaDistImpl::CopulaDist, 140
- CopulaDist.h, 403
- CopulaT
  - prior\_hessian::CopulaDistImpl::CopulaDist, 139
- d1\_igen
  - prior\_hessian::AMHCopula, 51
- d1\_igen\_ui
  - prior\_hessian::ArchimedeanCopula::D2\_IGenTerms,  
162
  - prior\_hessian::ArchimedeanCopula::D\_IGenTerms,  
167
- d2\_igen\_ui
  - prior\_hessian::ArchimedeanCopula::D2\_IGenTerms,  
162
- DEBUG\_ASSERT
  - PriorHessianError.h, 424
- ddim\_gen
  - prior\_hessian::AMHCopula, 52
- DerivedFrom
  - prior\_hessian::meta, 37
- dim\_variables
  - prior\_hessian::CompositeDist, 97
- DistTraitsT
  - prior\_hessian::detail, 29
- donnely\_bvn\_cdf
  - prior\_hessian, 15
- donnely\_bvn\_integral
  - prior\_hessian, 15
- donnely\_bvn\_integral\_orig
  - prior\_hessian, 16
- EnableIfAllAreNotTupleT
  - prior\_hessian::meta, 37

EnableIfInstantiatedFromNumericT  
     prior\_hessian::meta, 37  
 EnableIfInstantiatedFromT  
     prior\_hessian::meta, 37  
 EnableIfIsNotTupleAndIsNotSelfT  
     prior\_hessian::meta, 37  
 EnableIfIsNotTupleT  
     prior\_hessian::meta, 37  
 EnableIfIsSuperclassOfAllT  
     prior\_hessian::meta, 37  
 EnableIfIsTemplateForAllT  
     prior\_hessian::meta, 38  
 EnableIfNotEmpty  
     prior\_hessian::meta, 38  
 EnableIfNotInstantiatedFromT  
     prior\_hessian::meta, 38  
 EnableIfNotIsSelfT  
     prior\_hessian::meta, 38  
 EnableIfSubclassOfNumericTemplateT  
     prior\_hessian::meta, 38  
 EnableIfSubclassT  
     prior\_hessian::meta, 38  
 eta\_0n\_1n\_t  
     prior\_hessian::ArchimedeanCopula::D2Theta\_↵  
         GenTerms, 164  
     prior\_hessian::ArchimedeanCopula::DTheta\_Gen↵  
         Terms, 183  
 eta\_n\_np1\_t  
     prior\_hessian::ArchimedeanCopula::D2\_GenTerms,  
         161  
     prior\_hessian::ArchimedeanCopula::D\_GenTerms,  
         166  
 eulerian\_polynomial  
     prior\_hessian, 17  
     prior\_hessian::detail, 29  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 0 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 1 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 2 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 3 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 4 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 5 >  
     prior\_hessian::polylog, 43  
 eulerian\_polynomial< 6 >  
     prior\_hessian::polylog, 44  
 eulerian\_polynomial< 7 >  
     prior\_hessian::polylog, 44  
 eulerian\_polynomial< 8 >  
     prior\_hessian::polylog, 44  
 eulerian\_polynomial< 9 >  
     prior\_hessian::polylog, 44  
 EulerianPolynomial.h, 404  
 GCC\_VERSION  
     Meta.h, 411  
 GammaDist  
     prior\_hessian::GammaDist, 189, 190  
 GammaDist.cpp, 405  
 GammaDist.h, 406  
 gen  
     prior\_hessian::AMHCopula, 52  
 get\_copula\_theta  
     prior\_hessian::CopulaDistImpl::CopulaDist, 142  
 get\_dist\_tuple  
     prior\_hessian::CompositeDist, 97  
 get\_param  
     prior\_hessian::GammaDist, 192  
     prior\_hessian::MultivariateNormalDist, 228  
     prior\_hessian::NormalDist, 255  
     prior\_hessian::ParetoDist, 293  
     prior\_hessian::SymmetricBetaDist, 350  
 get\_param\_index  
     prior\_hessian::CompositeDist, 98  
 get\_param\_value  
     prior\_hessian::CompositeDist, 98  
 global\_lbound  
     prior\_hessian::CompositeDist, 99  
     prior\_hessian::CopulaDistImpl::CopulaDist, 143  
     prior\_hessian::ParetoDist, 294  
     prior\_hessian::ScaledDist, 333  
     prior\_hessian::TruncatedDist, 366  
     prior\_hessian::TruncatedMultivariateDist, 380  
 global\_ubound  
     prior\_hessian::CompositeDist, 99  
     prior\_hessian::CopulaDistImpl::CopulaDist, 143  
     prior\_hessian::ScaledDist, 333  
     prior\_hessian::TruncatedDist, 366  
     prior\_hessian::TruncatedMultivariateDist, 380  
     prior\_hessian::UpperTruncatedDist, 388  
 grad  
     prior\_hessian::AMHCopula, 53  
     prior\_hessian::CompositeDist, 99  
     prior\_hessian::CopulaDistImpl::CopulaDist, 144  
     prior\_hessian::GammaDist, 193  
     prior\_hessian::MultivariateNormalDist, 228  
     prior\_hessian::NormalDist, 255  
     prior\_hessian::ParetoDist, 294  
     prior\_hessian::SymmetricBetaDist, 350  
 grad2  
     prior\_hessian::AMHCopula, 53  
     prior\_hessian::CompositeDist, 101  
     prior\_hessian::CopulaDistImpl::CopulaDist, 145  
     prior\_hessian::GammaDist, 193

- prior\_hessian::MultivariateNormalDist, [229](#)
- prior\_hessian::NormalDist, [256](#)
- prior\_hessian::ParetoDist, [295](#)
- prior\_hessian::SymmetricBetaDist, [351](#)
- grad2\_accumulate
  - prior\_hessian::CompositeDist, [102](#)
- grad2\_accumulate\_idx
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [72](#)
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [84](#)
- grad\_accumulate
  - prior\_hessian::CompositeDist, [103](#)
- grad\_accumulate\_idx
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [73](#)
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [84](#)
- grad\_grad2\_accumulate
  - prior\_hessian::CompositeDist, [103](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [145](#)
  - prior\_hessian::GammaDist, [193](#)
  - prior\_hessian::MultivariateNormalDist, [230](#)
  - prior\_hessian::NormalDist, [257](#)
  - prior\_hessian::ParetoDist, [296](#)
  - prior\_hessian::SymmetricBetaDist, [351](#)
- grad\_grad2\_accumulate\_idx
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [73](#)
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [84](#)
- grad\_hess\_accumulate
  - prior\_hessian::CompositeDist, [104](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [145](#)
  - prior\_hessian::MultivariateNormalDist, [231](#)
- grad\_hess\_accumulate\_idx
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [74](#)
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [85](#)
- has\_param
  - prior\_hessian::CompositeDist, [104](#)
- hess
  - prior\_hessian::AMHCopula, [54](#)
  - prior\_hessian::CompositeDist, [105](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [146](#)
  - prior\_hessian::MultivariateNormalDist, [231](#)
- hess\_accumulate
  - prior\_hessian::CompositeDist, [106](#)
- hess\_accumulate\_idx
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [74](#)
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [85](#)
- icdf
  - prior\_hessian::GammaDist, [194](#)
  - prior\_hessian::NormalDist, [257](#)
  - prior\_hessian::ParetoDist, [297](#)
  - prior\_hessian::ScaledDist, [333](#)
  - prior\_hessian::SymmetricBetaDist, [352](#)
  - prior\_hessian::TruncatedDist, [367](#)
  - prior\_hessian::UpperTruncatedDist, [388](#)
- IdxT
  - prior\_hessian, [14](#)
- ieta\_21\_ui
  - prior\_hessian::ArchimedeanCopula::D2\_IGenTerms,  
[162](#)
  - prior\_hessian::ArchimedeanCopula::D\_IGenTerms,  
[167](#)
- igen
  - prior\_hessian::AMHCopula, [55](#)
- igen\_sum
  - prior\_hessian::AMHCopula, [55](#)
- in\_bounds
  - prior\_hessian::CompositeDist, [106](#)
  - prior\_hessian::GammaDist, [194](#)
  - prior\_hessian::MultivariateNormalDist, [232](#)
  - prior\_hessian::NormalDist, [258](#)
  - prior\_hessian::ParetoDist, [298](#)
  - prior\_hessian::SymmetricBetaDist, [352](#)
  - prior\_hessian::TruncatedMultivariateDist, [380](#)
- in\_bounds\_all
  - prior\_hessian::CompositeDist, [106](#)
- IndexError
  - prior\_hessian::IndexError, [207](#)
- initialize
  - prior\_hessian::CompositeDist, [107–109](#)
- initialize\_copula
  - prior\_hessian::CopulaDistImpl::CopulaDist, [146](#)
- initialize\_marginals
  - prior\_hessian::CopulaDistImpl::CopulaDist, [147](#)
- InvalidOperationError
  - prior\_hessian::InvalidOperationError, [209](#)
- is\_empty
  - prior\_hessian::CompositeDist, [109](#)
- ixi\_1\_ui

- prior\_hessian::ArchimedeanCopula::D2\_IGenTerms, 162
- lbound
  - prior\_hessian::CompositeDist, 110
  - prior\_hessian::CopulaDistImpl::CopulaDist, 147
  - prior\_hessian::GammaDist, 195
  - prior\_hessian::MultivariateNormalDist, 233
  - prior\_hessian::NormalDist, 258
  - prior\_hessian::ParetoDist, 299
  - prior\_hessian::ScaledDist, 334
  - prior\_hessian::SymmetricBetaDist, 353
  - prior\_hessian::TruncatedDist, 367
  - prior\_hessian::TruncatedMultivariateDist, 380
- lbound\_cdf
  - prior\_hessian::TruncatedDist, 376
  - prior\_hessian::TruncatedMultivariateDist, 382
- llh
  - prior\_hessian::AMHCopula, 56
  - prior\_hessian::CompositeDist, 110
  - prior\_hessian::CopulaDistImpl::CopulaDist, 147
  - prior\_hessian::GammaDist, 195
  - prior\_hessian::MultivariateNormalDist, 234
  - prior\_hessian::NormalDist, 259
  - prior\_hessian::ParetoDist, 301
  - prior\_hessian::ScaledDist, 335
  - prior\_hessian::SymmetricBetaDist, 353
  - prior\_hessian::TruncatedDist, 368
  - prior\_hessian::TruncatedMultivariateDist, 380
  - prior\_hessian::UpperTruncatedDist, 389
- llh\_components
  - prior\_hessian::CompositeDist, 111
- llh\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 74
  - prior\_hessian::CompositeDist::ComponentDist↔  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 86
- llh\_scaling\_const
  - prior\_hessian::ScaledDist, 343
- llh\_truncation\_const
  - prior\_hessian::TruncatedDist, 376
  - prior\_hessian::TruncatedMultivariateDist, 382
- log2pi
  - prior\_hessian::constants, 28
- log\_dn\_gen\_t
  - prior\_hessian::ArchimedeanCopula::D2\_GenTerms, 161
  - prior\_hessian::ArchimedeanCopula::D2Theta\_↔  
GenTerms, 164
  - prior\_hessian::ArchimedeanCopula::D\_GenTerms, 166
- prior\_hessian::ArchimedeanCopula::DTheta\_Gen↔  
Terms, 183
- logical\_and\_in\_order
  - prior\_hessian::meta, 40
- MCMCData
  - prior\_hessian::mcmc::MCMCData, 217
- make\_adapted\_bounded\_dist
  - prior\_hessian, 17, 18
- make\_adapted\_bounded\_dist\_tuple
  - prior\_hessian, 18, 19
  - prior\_hessian::detail, 29, 30
- make\_bounded\_gamma\_dist
  - prior\_hessian, 19
- make\_bounded\_multivariate\_normal\_dist
  - prior\_hessian, 19
- make\_bounded\_normal\_dist
  - prior\_hessian, 19
- make\_bounded\_pareto\_dist
  - prior\_hessian, 19
- make\_component\_dist
  - prior\_hessian::CompositeDist, 111, 112
- make\_component\_dist\_tuple
  - prior\_hessian::CompositeDist, 112–114
- make\_copula\_dist
  - prior\_hessian, 20
- make\_scaled\_symmetric\_beta\_dist
  - prior\_hessian, 20
- make\_zero\_grad
  - prior\_hessian::CompositeDist, 114
- make\_zero\_hess
  - prior\_hessian::CompositeDist, 114
- MarginalDistTupleT
  - prior\_hessian::CopulaDistImpl::CopulaDist, 139
- MarginalDistT
  - prior\_hessian::CopulaDistImpl::CopulaDist, 139
- MatT
  - prior\_hessian, 14
- mc\_mvn\_cdf
  - prior\_hessian, 20
- mc\_mvn\_cdf\_core
  - prior\_hessian, 20
- mc\_mvn\_integral
  - prior\_hessian, 21
- mean
  - prior\_hessian::GammaDist, 196
  - prior\_hessian::MultivariateNormalDist, 234
  - prior\_hessian::NormalDist, 259
  - prior\_hessian::ParetoDist, 302
  - prior\_hessian::ScaledDist, 335
  - prior\_hessian::SymmetricBetaDist, 354
  - prior\_hessian::TruncatedDist, 368
  - prior\_hessian::TruncatedMultivariateDist, 380
  - prior\_hessian::UpperTruncatedDist, 389

- median
  - prior\_hessian::GammaDist, 196
  - prior\_hessian::NormalDist, 260
  - prior\_hessian::ParetoDist, 304
  - prior\_hessian::ScaledDist, 336
  - prior\_hessian::SymmetricBetaDist, 354
  - prior\_hessian::TruncatedDist, 368
  - prior\_hessian::UpperTruncatedDist, 389
- Meta.h, 408
  - GCC\_VERSION, 411
  - PRIOR\_HESSIAN\_META\_CONSTEXPR, 411
  - PRIOR\_HESSIAN\_META\_HAS\_CONSTEXPR, 411
- min
  - prior\_hessian::ParetoDist, 305
- min\_bounds\_pdf\_integral
  - prior\_hessian::TruncatedDist, 376
  - prior\_hessian::TruncatedMultivariateDist, 382
- mode
  - prior\_hessian::MultivariateNormalDist, 235
- mu
  - prior\_hessian::MultivariateNormalDist, 235
  - prior\_hessian::NormalDist, 260
- MultivariateDist
  - prior\_hessian::MultivariateDist, 219
- MultivariateDist.h, 412
- MultivariateNormalDist
  - prior\_hessian::MultivariateNormalDist, 223
- MultivariateNormalDist.h, 413
- mutex
  - prior\_hessian::mcmc::MCMCData, 218
- mvn\_cdf.cpp, 414
- mvn\_cdf.h, 415
- mvn\_cdf\_genz
  - prior\_hessian::genz, 31
- mvndst\_
  - prior\_hessian::genz::fortran, 32
- NdimMatT
  - prior\_hessian::AMHCopula, 48
  - prior\_hessian::CopulaDistImpl::CopulaDist, 139
  - prior\_hessian::MultivariateNormalDist, 222
- NdimVecT
  - prior\_hessian::AMHCopula, 48
  - prior\_hessian::CopulaDistImpl::CopulaDist, 140
  - prior\_hessian::MultivariateNormalDist, 222
  - prior\_hessian::mcmc::MCMCData, 217
- NormalDist
  - prior\_hessian::NormalDist, 251
- NormalDist.cpp, 417
- NormalDist.h, 418
- NotImplementedError
  - prior\_hessian::NotImplementedError, 273
- NparamsVecT
  - prior\_hessian::CopulaDistImpl::CopulaDist, 140
  - prior\_hessian::GammaDist, 189
  - prior\_hessian::MultivariateNormalDist, 223
  - prior\_hessian::NormalDist, 250
  - prior\_hessian::ParetoDist, 286
  - prior\_hessian::SymmetricBetaDist, 346
- nsample
  - prior\_hessian::mcmc::MCMCData, 218
- num\_components
  - prior\_hessian::CompositeDist, 115
  - prior\_hessian::CopulaDistImpl::CopulaDist, 148
- num\_dim
  - prior\_hessian::AMHCopula, 56
  - prior\_hessian::CompositeDist, 115
  - prior\_hessian::CopulaDistImpl::CopulaDist, 148
  - prior\_hessian::GammaDist, 197
  - prior\_hessian::MultivariateNormalDist, 236
  - prior\_hessian::NormalDist, 261
  - prior\_hessian::ParetoDist, 306
  - prior\_hessian::SymmetricBetaDist, 354
  - prior\_hessian::UnivariateDist, 384
- num\_dim\_components
  - prior\_hessian::CompositeDist, 116
- num\_params
  - prior\_hessian::AMHCopula, 57
  - prior\_hessian::CompositeDist, 117
  - prior\_hessian::CopulaDistImpl::CopulaDist, 149
  - prior\_hessian::GammaDist, 197
  - prior\_hessian::MultivariateNormalDist, 237
  - prior\_hessian::NormalDist, 261
  - prior\_hessian::ParetoDist, 306
  - prior\_hessian::SymmetricBetaDist, 354
  - prior\_hessian::TruncatedDist, 369
- num\_params\_components
  - prior\_hessian::CompositeDist, 117
- NumericalOverflowError
  - prior\_hessian::NumericalOverflowError, 275
- operator bool
  - prior\_hessian::CompositeDist, 117
- operator!=
  - prior\_hessian::AMHCopula, 57
  - prior\_hessian::CompositeDist, 117
  - prior\_hessian::CopulaDistImpl::CopulaDist, 149
  - prior\_hessian::GammaDist, 197
  - prior\_hessian::MultivariateNormalDist, 237
  - prior\_hessian::NormalDist, 261
  - prior\_hessian::ParetoDist, 306
  - prior\_hessian::ScaledDist, 336
  - prior\_hessian::SymmetricBetaDist, 355
  - prior\_hessian::TruncatedDist, 369
  - prior\_hessian::TruncatedMultivariateDist, 380
  - prior\_hessian::UpperTruncatedDist, 390
- operator<<
  - prior\_hessian, 22



- operator=
  - prior\_hessian::CompositeDist, [118](#)
  - prior\_hessian::mcmc::MCMCData, [217](#)
- operator==
  - prior\_hessian::AMHCopula, [57](#)
  - prior\_hessian::CompositeDist, [118](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [151](#)
  - prior\_hessian::GammaDist, [197](#)
  - prior\_hessian::MultivariateNormalDist, [238](#)
  - prior\_hessian::NormalDist, [262](#)
  - prior\_hessian::ParetoDist, [307](#)
  - prior\_hessian::ScaledDist, [337](#)
  - prior\_hessian::SymmetricBetaDist, [355](#)
  - prior\_hessian::TruncatedDist, [369](#)
  - prior\_hessian::TruncatedMultivariateDist, [380](#)
  - prior\_hessian::UpperTruncatedDist, [390](#)
- owen\_b\_integral
  - prior\_hessian, [23](#)
- owen\_bvn\_cdf
  - prior\_hessian, [24](#)
- owen\_t\_integral
  - prior\_hessian, [25](#)
- PRIOR\_HESSIAN\_META\_CONSTEXPR
  - Meta.h, [411](#)
- PRIOR\_HESSIAN\_META\_HAS\_CONSTEXPR
  - Meta.h, [411](#)
- param\_lbound
  - prior\_hessian::AMHCopula, [57](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [152](#)
  - prior\_hessian::GammaDist, [198](#)
  - prior\_hessian::MultivariateNormalDist, [238](#)
  - prior\_hessian::NormalDist, [262](#)
  - prior\_hessian::ParetoDist, [307](#)
  - prior\_hessian::SymmetricBetaDist, [355](#)
- param\_names
  - prior\_hessian::AMHCopula, [58](#)
  - prior\_hessian::CompositeDist, [119](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [152](#)
  - prior\_hessian::GammaDist, [198](#)
  - prior\_hessian::MultivariateNormalDist, [239](#)
  - prior\_hessian::NormalDist, [263](#)
  - prior\_hessian::ParetoDist, [308](#)
  - prior\_hessian::SymmetricBetaDist, [356](#)
- param\_ubound
  - prior\_hessian::AMHCopula, [58](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [153](#)
  - prior\_hessian::GammaDist, [198](#)
  - prior\_hessian::MultivariateNormalDist, [239](#)
  - prior\_hessian::NormalDist, [263](#)
  - prior\_hessian::ParetoDist, [308](#)
  - prior\_hessian::SymmetricBetaDist, [356](#)
- ParameterNameError
  - prior\_hessian::ParameterNameError, [277](#)
- ParameterNameUniquenessError
  - prior\_hessian::ParameterNameUniquenessError, [279](#)
- ParameterSizeError
  - prior\_hessian::ParameterSizeError, [281](#)
- ParameterValueError
  - prior\_hessian::ParameterValueError, [283](#)
- params
  - prior\_hessian::CompositeDist, [120](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [153](#)
  - prior\_hessian::GammaDist, [198](#)
  - prior\_hessian::MultivariateNormalDist, [239](#)
  - prior\_hessian::NormalDist, [263](#)
  - prior\_hessian::ParetoDist, [308](#)
  - prior\_hessian::SymmetricBetaDist, [356](#)
- params\_components
  - prior\_hessian::CompositeDist, [121](#)
- params\_lbound
  - prior\_hessian::CompositeDist, [122](#)
- params\_ubound
  - prior\_hessian::CompositeDist, [122](#)
- ParetoDist
  - prior\_hessian::ParetoDist, [287](#)
- ParetoDist.cpp, [419](#)
- ParetoDist.h, [420](#)
- pdf
  - prior\_hessian::AMHCopula, [58](#)
  - prior\_hessian::CompositeDist, [122](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [154](#)
  - prior\_hessian::GammaDist, [199](#)
  - prior\_hessian::MultivariateNormalDist, [240](#)
  - prior\_hessian::NormalDist, [264](#)
  - prior\_hessian::ParetoDist, [309](#)
  - prior\_hessian::ScaledDist, [337](#)
  - prior\_hessian::SymmetricBetaDist, [357](#)
  - prior\_hessian::TruncatedDist, [370](#)
  - prior\_hessian::TruncatedMultivariateDist, [380](#)
  - prior\_hessian::UpperTruncatedDist, [391](#)
- pdf\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, [75](#)
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, [86](#)
- PolyLog.h, [421](#)
- polylog
  - prior\_hessian::polylog, [44](#)
- polylog< 1 >
  - prior\_hessian::polylog, [44](#)
- prior\_hessian, [11](#)
  - bounded, [15](#)
  - BoundsAdaptedDistT, [14](#)
  - CopulaDist, [14](#)

- donnelly\_bvn\_cdf, 15
- donnelly\_bvn\_integral, 15
- donnelly\_bvn\_integral\_orig, 16
- eulerian\_polynomial, 17
- IdxT, 14
- make\_adapted\_bounded\_dist, 17, 18
- make\_adapted\_bounded\_dist\_tuple, 18, 19
- make\_bounded\_gamma\_dist, 19
- make\_bounded\_multivariate\_normal\_dist, 19
- make\_bounded\_normal\_dist, 19
- make\_bounded\_pareto\_dist, 19
- make\_copula\_dist, 20
- make\_scaled\_symmetric\_beta\_dist, 20
- MatT, 14
- mc\_mvn\_cdf, 20
- mc\_mvn\_cdf\_core, 20
- mc\_mvn\_integral, 21
- operator<<, 22
- owen\_b\_integral, 23
- owen\_bvn\_cdf, 24
- owen\_t\_integral, 25
- ScaledSymmetricBetaDist, 14
- square, 26
- StringVecT, 14
- TruncatedGammaDist, 14
- TruncatedMultivariateNormalDist, 14
- TruncatedNormalDist, 14
- TruncatedParetoDist, 14
- TypeInfoVecT, 15
- UVecT, 15
- unit\_normal\_cdf, 26
- unit\_normal\_icdf, 27
- VecT, 15
- prior\_hessian::AMHCopula
  - AMHCopula, 48
  - append\_params, 49
  - cdf, 49
  - check\_params, 50
  - check\_params\_iter, 50
  - check\_theta, 50
  - d1\_igen, 51
  - ddim\_gen, 52
  - gen, 52
  - grad, 53
  - grad2, 53
  - hess, 54
  - igen, 55
  - igen\_sum, 55
  - llh, 56
  - NdimMatT, 48
  - NdimVecT, 48
  - num\_dim, 56
  - num\_params, 57
  - operator!=, 57
  - operator==, 57
  - param\_lbound, 57
  - param\_names, 58
  - param\_ubound, 58
  - pdf, 58
  - rllh, 59
  - rllh\_const, 59
  - rllh\_d2theta\_accumulate, 59
  - rllh\_dtheta\_accumulate, 60
  - rllh\_grad\_accumulate, 60
  - rllh\_grad\_grad2\_accumulate, 60
  - rllh\_grad\_hess\_accumulate, 61
  - sample, 61
  - set\_params, 61
  - set\_params\_iter, 62
  - set\_theta, 62
  - theta, 63
- prior\_hessian::AMHCopula< Ndim >, 46
- prior\_hessian::ArchimedeanCopula, 64
- prior\_hessian::ArchimedeanCopula::D2\_GenTerms, 159
  - eta\_n\_np1\_t, 161
  - log\_dn\_gen\_t, 161
  - xi\_n\_t, 161
- prior\_hessian::ArchimedeanCopula::D2\_IGenTerms, 161
  - d1\_igen\_ui, 162
  - d2\_igen\_ui, 162
  - ieta\_21\_ui, 162
  - ixi\_1\_ui, 162
- prior\_hessian::ArchimedeanCopula::D2Theta\_GenTerms, 163
  - eta\_0n\_1n\_t, 164
  - log\_dn\_gen\_t, 164
  - xi\_0n\_t, 164
- prior\_hessian::ArchimedeanCopula::D2Theta\_IGenTerms, 164
  - sum\_d10\_igen\_u, 165
  - sum\_d20\_igen\_u, 165
  - sum\_ieta\_01\_11\_u, 165
  - sum\_ixi\_01\_u, 165
  - sum\_log\_d1\_igen\_u, 165
- prior\_hessian::ArchimedeanCopula::D\_GenTerms, 166
  - eta\_n\_np1\_t, 166
  - log\_dn\_gen\_t, 166
- prior\_hessian::ArchimedeanCopula::D\_IGenTerms, 167
  - d1\_igen\_ui, 167
  - ieta\_21\_ui, 167
- prior\_hessian::ArchimedeanCopula::DTheta\_GenTerms, 183
  - eta\_0n\_1n\_t, 183
  - log\_dn\_gen\_t, 183
- prior\_hessian::ArchimedeanCopula::DTheta\_IGenTerms, 184
  - sum\_d10\_igen\_u, 184
  - sum\_ieta\_01\_11\_u, 184



- sum\_log\_d1\_igen\_u, 185
- prior\_hessian::BaseDist, 65
- prior\_hessian::CompositeDist, 89
  - AnyRngT, 92
  - cdf, 95
  - check\_params, 95
  - clear, 95
  - component\_names, 96
  - component\_types, 96
  - ComponentDistT, 92
  - CompositeDist, 93, 94
  - dim\_variables, 97
  - get\_dist\_tuple, 97
  - get\_param\_index, 98
  - get\_param\_value, 98
  - global\_lbound, 99
  - global\_ubound, 99
  - grad, 99
  - grad2, 101
  - grad2\_accumulate, 102
  - grad\_accumulate, 103
  - grad\_grad2\_accumulate, 103
  - grad\_hess\_accumulate, 104
  - has\_param, 104
  - hess, 105
  - hess\_accumulate, 106
  - in\_bounds, 106
  - in\_bounds\_all, 106
  - initialize, 107–109
  - is\_empty, 109
  - lbound, 110
  - llh, 110
  - llh\_components, 111
  - make\_component\_dist, 111, 112
  - make\_component\_dist\_tuple, 112–114
  - make\_zero\_grad, 114
  - make\_zero\_hess, 114
  - num\_components, 115
  - num\_dim, 115
  - num\_dim\_components, 116
  - num\_params, 117
  - num\_params\_components, 117
  - operator bool, 117
  - operator!=, 117
  - operator=, 118
  - operator==, 118
  - param\_names, 119
  - params, 120
  - params\_components, 121
  - params\_lbound, 122
  - params\_ubound, 122
  - pdf, 122
  - rename\_param, 123
  - rllh, 124
  - rllh\_components, 125
  - sample, 126, 127
  - set\_bounds, 127
  - set\_component\_names, 128
  - set\_dim\_variables, 128
  - set\_lbound, 129
  - set\_param\_names, 130
  - set\_param\_value, 131
  - set\_params, 132
  - set\_ubound, 132
  - ubound, 133
- prior\_hessian::CompositeDist::ComponentDistAdaptor, 92, 403
- prior\_hessian::CompositeDist::ComponentDistAdaptor<
  - Dist, meta::EnableIfSubclassT< Dist, Multivariate←
  - Dist > >, 66
  - append\_global\_lbound, 69
  - append\_global\_ubound, 69
  - append\_lbound, 69
  - append\_param\_names, 70
  - append\_params, 70
  - append\_params\_lbound, 71
  - append\_params\_ubound, 71
  - append\_sample, 71
  - append\_ubound, 71
  - cdf\_from\_iter, 72
  - ComponentDistAdaptor, 68
  - ComponentDistT, 68
  - grad2\_accumulate\_idx, 72
  - grad\_accumulate\_idx, 73
  - grad\_grad2\_accumulate\_idx, 73
  - grad\_hess\_accumulate\_idx, 74
  - hess\_accumulate\_idx, 74
  - llh\_from\_iter, 74
  - pdf\_from\_iter, 75
  - rllh\_from\_iter, 75
  - set\_bounds\_from\_iter, 76
  - set\_lbound\_from\_iter, 76
  - set\_ubound\_from\_iter, 77
- prior\_hessian::CompositeDist::ComponentDistAdaptor<
  - Dist, meta::EnableIfSubclassT< Dist, Univariate←
  - Dist > >, 78
  - append\_global\_lbound, 80
  - append\_global\_ubound, 80
  - append\_lbound, 81
  - append\_param\_names, 81
  - append\_params, 82
  - append\_params\_lbound, 82
  - append\_params\_ubound, 82
  - append\_sample, 82
  - append\_ubound, 83
  - cdf\_from\_iter, 83
  - ComponentDistAdaptor, 80
  - ComponentDistT, 80

- grad2\_accumulate\_idx, 84
- grad\_accumulate\_idx, 84
- grad\_grad2\_accumulate\_idx, 84
- grad\_hess\_accumulate\_idx, 85
- hess\_accumulate\_idx, 85
- llh\_from\_iter, 86
- pdf\_from\_iter, 86
- rllh\_from\_iter, 87
- set\_bounds\_from\_iter, 87
- set\_lbound\_from\_iter, 88
- set\_ubound\_from\_iter, 88
- prior\_hessian::CopulaDistImpl, 28
- prior\_hessian::CopulaDistImpl::CopulaDist
  - cdf, 141
  - check\_bounds, 141
  - check\_copula\_theta, 141
  - check\_params, 141
  - check\_params\_iter, 142
  - CopulaDist, 140
  - CopulaT, 139
  - get\_copula\_theta, 142
  - global\_lbound, 143
  - global\_ubound, 143
  - grad, 144
  - grad2, 145
  - grad\_grad2\_accumulate, 145
  - grad\_hess\_accumulate, 145
  - hess, 146
  - initialize\_copula, 146
  - initialize\_marginals, 147
  - lbound, 147
  - llh, 147
  - MarginalDistTupleT, 139
  - MarginalDistT, 139
  - NdimMatT, 139
  - NdimVecT, 140
  - NparamsVecT, 140
  - num\_components, 148
  - num\_dim, 148
  - num\_params, 149
  - operator!=, 149
  - operator==, 151
  - param\_lbound, 152
  - param\_names, 152
  - param\_ubound, 153
  - params, 153
  - pdf, 154
  - rllh, 154
  - sample, 154
  - set\_bounds, 155
  - set\_copula\_theta, 155
  - set\_lbound, 156
  - set\_params, 157
  - set\_params\_iter, 157
  - set\_ubound, 157
  - ubound, 158
- prior\_hessian::CopulaDistImpl::CopulaDist<
  - Template, MarginalDistTs >, 137
- prior\_hessian::GammaDist, 187
  - cdf, 190
  - check\_bounds, 191
  - check\_params, 191
  - check\_params\_iter, 192
  - GammaDist, 189, 190
  - get\_param, 192
  - grad, 193
  - grad2, 193
  - grad\_grad2\_accumulate, 193
  - icdf, 194
  - in\_bounds, 194
  - lbound, 195
  - llh, 195
  - mean, 196
  - median, 196
  - NparamsVecT, 189
  - num\_dim, 197
  - num\_params, 197
  - operator!=, 197
  - operator==, 197
  - param\_lbound, 198
  - param\_names, 198
  - param\_ubound, 198
  - params, 198
  - pdf, 199
  - rllh, 199
  - sample, 199
  - scale, 200
  - set\_param, 200
  - set\_params, 201, 202
  - set\_params\_iter, 202
  - set\_scale, 202
  - set\_shape, 203
  - shape, 203
  - ubound, 204
- prior\_hessian::IndexError, 205
  - condition, 207
  - IndexError, 207
  - what, 207
  - what\_, 207
  - what\_str, 207
- prior\_hessian::InvalidOperationError, 208
  - condition, 210
  - InvalidOperationError, 209
  - what, 210
  - what\_, 210
  - what\_str, 210
- prior\_hessian::MultivariateDist, 218
  - check\_bounds, 219

- MultivariateDist, 219
- prior\_hessian::MultivariateNormalDist
  - append\_params, 224
  - cdf, 224, 225
  - check\_bounds, 225
  - check\_mu, 225
  - check\_params, 225, 226
  - check\_params\_iter, 227
  - check\_sigma, 228
  - get\_param, 228
  - grad, 228
  - grad2, 229
  - grad\_grad2\_accumulate, 230
  - grad\_hess\_accumulate, 231
  - hess, 231
  - in\_bounds, 232
  - lbound, 233
  - llh, 234
  - mean, 234
  - mode, 235
  - mu, 235
  - MultivariateNormalDist, 223
  - NdimMatT, 222
  - NdimVecT, 222
  - NparamsVecT, 223
  - num\_dim, 236
  - num\_params, 237
  - operator!=, 237
  - operator==, 238
  - param\_lbound, 238
  - param\_names, 239
  - param\_ubound, 239
  - params, 239
  - pdf, 240
  - rllh, 241
  - sample, 242
  - set\_mu, 243
  - set\_params, 243, 244
  - set\_params\_iter, 245
  - set\_sigma, 245
  - sigma, 246
  - sigma\_inv, 246
  - ubound, 247
- prior\_hessian::MultivariateNormalDist< Ndim >, 220
- prior\_hessian::NormalDist, 248
  - append\_params\_iter, 252
  - cdf, 252
  - check\_bounds, 252
  - check\_params, 253
  - check\_params\_iter, 254
  - get\_param, 255
  - grad, 255
  - grad2, 256
  - grad\_grad2\_accumulate, 257
  - icdf, 257
  - in\_bounds, 258
  - lbound, 258
  - llh, 259
  - mean, 259
  - median, 260
  - mu, 260
  - NormalDist, 251
  - NparamsVecT, 250
  - num\_dim, 261
  - num\_params, 261
  - operator!=, 261
  - operator==, 262
  - param\_lbound, 262
  - param\_names, 263
  - param\_ubound, 263
  - params, 263
  - pdf, 264
  - rllh, 264
  - sample, 265
  - set\_mu, 266
  - set\_param, 266
  - set\_params, 267, 268
  - set\_params\_iter, 269
  - set\_sigma, 269
  - sigma, 270
  - ubound, 271
- prior\_hessian::NotImplementedError, 272
  - condition, 274
  - NotImplementedError, 273
  - what, 274
  - what\_, 274
  - what\_str, 274
- prior\_hessian::NumericalOverflowError, 274
  - condition, 276
  - NumericalOverflowError, 275
  - what, 276
  - what\_, 276
  - what\_str, 276
- prior\_hessian::ParameterNameError, 276
  - condition, 278
  - ParameterNameError, 277
  - what, 278
  - what\_, 278
  - what\_str, 278
- prior\_hessian::ParameterNameUniquenessError, 278
  - condition, 280
  - ParameterNameUniquenessError, 279
  - what, 280
  - what\_, 280
  - what\_str, 280
- prior\_hessian::ParameterSizeError, 280
  - condition, 282
  - ParameterSizeError, 281

- what, 282
- what\_, 282
- what\_str, 282
- prior\_hessian::ParameterValueError, 282
  - condition, 284
  - ParameterValueError, 283
  - what, 284
  - what\_, 284
  - what\_str, 284
- prior\_hessian::ParetoDist, 284
  - alpha, 287
  - cdf, 288
  - check\_bounds, 289
  - check\_lbound, 290
  - check\_params, 290, 291
  - check\_params\_iter, 292
  - get\_param, 293
  - global\_lbound, 294
  - grad, 294
  - grad2, 295
  - grad\_grad2\_accumulate, 296
  - icdf, 297
  - in\_bounds, 298
  - lbound, 299
  - llh, 301
  - mean, 302
  - median, 304
  - min, 305
  - NparamsVecT, 286
  - num\_dim, 306
  - num\_params, 306
  - operator!=, 306
  - operator==, 307
  - param\_lbound, 307
  - param\_names, 308
  - param\_ubound, 308
  - params, 308
  - ParetoDist, 287
  - pdf, 309
  - rllh, 311
  - sample, 312
  - set\_alpha, 313
  - set\_lbound, 314
  - set\_min, 314
  - set\_param, 315
  - set\_params, 316
  - set\_params\_iter, 317
  - ubound, 318
- prior\_hessian::PriorHessianError, 319
  - condition, 321
  - PriorHessianError, 320
  - what, 321
  - what\_, 321
  - what\_str, 321
- prior\_hessian::RuntimeConvergenceError, 321
  - condition, 323
  - RuntimeConvergenceError, 322
  - what, 323
  - what\_, 323
  - what\_str, 323
- prior\_hessian::RuntimeSamplingError, 323
  - condition, 325
  - RuntimeSamplingError, 324
  - what, 325
  - what\_, 325
  - what\_str, 325
- prior\_hessian::RuntimeTypeError, 325
  - condition, 327
  - RuntimeTypeError, 326
  - what, 327
  - what\_, 327
  - what\_str, 327
- prior\_hessian::ScaledDist
  - \_scaled\_lbound, 343
  - \_scaled\_ubound, 343
  - cdf, 331
  - convert\_from\_unitary\_coords, 331
  - convert\_to\_unitary\_coords, 332
  - global\_lbound, 333
  - global\_ubound, 333
  - icdf, 333
  - lbound, 334
  - llh, 335
  - llh\_scaling\_const, 343
  - mean, 335
  - median, 336
  - operator!=, 336
  - operator==, 337
  - pdf, 337
  - sample, 338
  - ScaledDist, 329, 330
  - scaling\_ratio, 343
  - set\_bounds, 339
  - set\_lbound, 340
  - set\_ubound, 340
  - ubound, 341
  - unscaled\_lbound, 342
  - unscaled\_ubound, 342
- prior\_hessian::ScaledDist< Dist >, 327
- prior\_hessian::SymmetricBetaDist, 344
  - beta, 347
  - cdf, 347
  - check\_bounds, 348
  - check\_params, 348
  - check\_params\_iter, 349
  - get\_param, 350
  - grad, 350
  - grad2, 351

- grad\_grad2\_accumulate, 351
- icdf, 352
- in\_bounds, 352
- lbound, 353
- llh, 353
- mean, 354
- median, 354
- NparamsVecT, 346
- num\_dim, 354
- num\_params, 354
- operator!=, 355
- operator==, 355
- param\_lbound, 355
- param\_names, 356
- param\_ubound, 356
- params, 356
- pdf, 357
- rllh, 357
- sample, 357
- set\_beta, 358
- set\_param, 358
- set\_params, 359, 360
- set\_params\_iter, 360
- SymmetricBetaDist, 346
- ubound, 361
- prior\_hessian::TruncatedDist
  - \_truncated, 375
  - \_truncated\_lbound, 375
  - \_truncated\_ubound, 376
  - bounds\_pdf\_integral, 376
  - cdf, 366
  - global\_lbound, 366
  - global\_ubound, 366
  - icdf, 367
  - lbound, 367
  - lbound\_cdf, 376
  - llh, 368
  - llh\_truncation\_const, 376
  - mean, 368
  - median, 368
  - min\_bounds\_pdf\_integral, 376
  - num\_params, 369
  - operator!=, 369
  - operator==, 369
  - pdf, 370
  - sample, 370
  - set\_bounds, 371
  - set\_lbound, 372
  - set\_ubound, 373
  - truncated, 374
  - TruncatedDist, 363–365
  - ubound, 375
- prior\_hessian::TruncatedDist< Dist >, 361
- prior\_hessian::TruncatedMultivariateDist
  - \_truncated, 381
  - \_truncated\_lbound, 381
  - \_truncated\_ubound, 382
  - bounds\_pdf\_integral, 382
  - cdf, 379
  - compute\_truncated\_pdf\_integral, 379
  - global\_lbound, 380
  - global\_ubound, 380
  - in\_bounds, 380
  - lbound, 380
  - lbound\_cdf, 382
  - llh, 380
  - llh\_truncation\_const, 382
  - mean, 380
  - min\_bounds\_pdf\_integral, 382
  - operator!=, 380
  - operator==, 380
  - pdf, 380
  - sample, 381
  - set\_bounds, 381
  - set\_lbound, 381
  - set\_ubound, 381
  - truncated, 381
  - TruncatedMultivariateDist, 379
  - ubound, 381
- prior\_hessian::TruncatedMultivariateDist< Dist >, 377
- prior\_hessian::UnivariateDist, 383
  - check\_bounds, 384
  - num\_dim, 384
  - UnivariateDist, 384
- prior\_hessian::UpperTruncatedDist
  - cdf, 388
  - global\_ubound, 388
  - icdf, 388
  - llh, 389
  - mean, 389
  - median, 389
  - operator!=, 390
  - operator==, 390
  - pdf, 391
  - sample, 391
  - set\_bounds, 392
  - set\_lbound, 392
  - set\_ubound, 393
  - truncated, 394
  - ubound, 394
  - UpperTruncatedDist, 386, 387
- prior\_hessian::UpperTruncatedDist< Dist >, 385
- prior\_hessian::constants, 28
  - log2pi, 28
  - sqrt2, 28
  - sqrt2\_inv, 28
  - sqrt2pi, 28
  - sqrt2pi\_inv, 28

- prior\_hessian::detail, 29
  - DistTraitsT, 29
  - eulerian\_polynomial, 29
  - make\_adapted\_bounded\_dist\_tuple, 29, 30
- prior\_hessian::detail::dist\_adaptor\_traits
  - adaptable\_bounds, 172
  - bounds\_adapted\_dist, 171
- prior\_hessian::detail::dist\_adaptor\_traits< CopulaDist←  
Impl::CopulaDist< CopulaTemplate, DistTs... >  
>, 172
  - adaptable\_bounds, 173
  - bounds\_adapted\_dist, 172
- prior\_hessian::detail::dist\_adaptor\_traits< Dist >, 171
- prior\_hessian::detail::dist\_adaptor\_traits< GammaDist >, 173
  - adaptable\_bounds, 174
  - bounds\_adapted\_dist, 173
- prior\_hessian::detail::dist\_adaptor\_traits< Multivariate←  
NormalDist< Ndim > >, 174
  - adaptable\_bounds, 175
  - bounds\_adapted\_dist, 174
- prior\_hessian::detail::dist\_adaptor\_traits< NormalDist >, 175
  - adaptable\_bounds, 176
  - bounds\_adapted\_dist, 175
- prior\_hessian::detail::dist\_adaptor\_traits< ParetoDist >, 176
  - adaptable\_bounds, 177
  - bounds\_adapted\_dist, 176
- prior\_hessian::detail::dist\_adaptor\_traits< Scaled←  
SymmetricBetaDist >, 177
  - adaptable\_bounds, 178
  - bounds\_adapted\_dist, 177
- prior\_hessian::detail::dist\_adaptor\_traits< Symmetric←  
BetaDist >, 178
  - adaptable\_bounds, 179
  - bounds\_adapted\_dist, 178
- prior\_hessian::detail::dist\_adaptor\_traits< Truncated←  
GammaDist >, 179
  - adaptable\_bounds, 180
  - bounds\_adapted\_dist, 179
- prior\_hessian::detail::dist\_adaptor\_traits< Truncated←  
MultivariateNormalDist< Ndim > >, 180
  - adaptable\_bounds, 181
  - bounds\_adapted\_dist, 180
- prior\_hessian::detail::dist\_adaptor\_traits< Truncated←  
NormalDist >, 181
  - adaptable\_bounds, 182
  - bounds\_adapted\_dist, 181
- prior\_hessian::detail::dist\_adaptor\_traits< Truncated←  
ParetoDist >, 182
  - adaptable\_bounds, 183
  - bounds\_adapted\_dist, 182
- prior\_hessian::eulerian\_number< 0, M >, 186
- prior\_hessian::eulerian\_number< N, M >, 185
- prior\_hessian::genz, 31
  - mvn\_cdf\_genz, 31
- prior\_hessian::genz::fortran, 32
  - mvndst\_, 32
- prior\_hessian::helpers, 32
  - compute\_quadratic\_from\_symmetric, 32
- prior\_hessian::mcmc, 33
- prior\_hessian::mcmc::MCMCData
  - MCMCData, 217
  - mutex, 218
  - NdimVecT, 217
  - nsample, 218
  - operator=, 217
  - rllh, 218
  - sample, 218
- prior\_hessian::mcmc::MCMCData< Ndim >, 216
- prior\_hessian::meta, 33
  - call\_in\_order, 39
  - constexpr\_accumulate, 39
  - ConstructableIf, 36
  - ConstructableIfAllAreNotTupleAndAreNotT, 36
  - ConstructableIfAllDistsAreBoundedT, 36
  - ConstructableIfInstantiatedFromNumericT, 36
  - ConstructableIfsCopulaT, 36
  - ConstructableIfsSuperClassForAllT, 36
  - ConstructableIfsSuperClassT, 36
  - ConstructableIfsTemplateForAllT, 36
  - ConstructableIfNot, 36
  - ConstructableIfNotAllDistsAreBoundedT, 37
  - ConstructableIfNotSelfT, 37
  - DerivedFrom, 37
  - EnableIfAllAreNotTupleT, 37
  - EnableIfInstantiatedFromNumericT, 37
  - EnableIfInstantiatedFromT, 37
  - EnableIfIsNotTupleAndIsNotSelfT, 37
  - EnableIfIsNotTupleT, 37
  - EnableIfIsSuperclassOfAllT, 37
  - EnableIfIsTemplateForAllT, 38
  - EnableIfNonEmpty, 38
  - EnableIfNotInstantiatedFromT, 38
  - EnableIfNotIsSelfT, 38
  - EnableIfSubclassOfNumericTemplateT, 38
  - EnableIfSubclassT, 38
  - logical\_and\_in\_order, 40
  - prod\_in\_order, 41
  - ReturnIfInstantiatedFromNumericT, 38
  - ReturnIfInstantiatedFromT, 38
  - ReturnIfNotInstantiatedFromT, 38
  - ReturnIfSubclassOfNumericTemplateT, 39
  - ReturnIfSubclassT, 39
  - ReturnIfT, 39
  - sum\_in\_order, 41
- prior\_hessian::meta::all\_dists\_are\_bounded

- value, [45](#)
- prior\_hessian::meta::all\_dists\_are\_bounded< DistTs >, [45](#)
- prior\_hessian::meta::conjunction< B1 >, [135](#)
- prior\_hessian::meta::conjunction< B1, Bn... >, [136](#)
- prior\_hessian::meta::conjunction<... >, [134](#)
- prior\_hessian::meta::disjunction< B1 >, [169](#)
- prior\_hessian::meta::disjunction< B1, Bn... >, [170](#)
- prior\_hessian::meta::disjunction<... >, [168](#)
- prior\_hessian::meta::is\_copula
  - value, [211](#)
- prior\_hessian::meta::is\_copula< T, U >, [210](#)
- prior\_hessian::meta::is\_numeric\_template\_of< class, typename >, [211](#)
- prior\_hessian::meta::is\_numeric\_template\_of< Class↵ NumericTemplate, ClassNumericTemplate< Is... > >, [212](#)
- prior\_hessian::meta::is\_subclass\_of\_numeric\_template
  - value, [214](#)
- prior\_hessian::meta::is\_subclass\_of\_numeric\_template< T, U >, [213](#)
- prior\_hessian::meta::is\_template\_of< class, typename >, [214](#)
- prior\_hessian::meta::is\_template\_of< ClassTemplate, ClassTemplate< Ts... > >, [215](#)
- prior\_hessian::polylog, [42](#)
  - eulerian\_polynomial, [43](#)
  - eulerian\_polynomial< 0 >, [43](#)
  - eulerian\_polynomial< 1 >, [43](#)
  - eulerian\_polynomial< 2 >, [43](#)
  - eulerian\_polynomial< 3 >, [43](#)
  - eulerian\_polynomial< 4 >, [43](#)
  - eulerian\_polynomial< 5 >, [43](#)
  - eulerian\_polynomial< 6 >, [44](#)
  - eulerian\_polynomial< 7 >, [44](#)
  - eulerian\_polynomial< 8 >, [44](#)
  - eulerian\_polynomial< 9 >, [44](#)
  - polylog, [44](#)
  - polylog< 1 >, [44](#)
- PriorHessianError
  - prior\_hessian::PriorHessianError, [320](#)
- PriorHessianError.h, [422](#)
  - ASSERT\_SETUP, [424](#)
  - DEBUG\_ASSERT, [424](#)
- prod\_in\_order
  - prior\_hessian::meta, [41](#)
- README.md, [424](#)
- rename\_param
  - prior\_hessian::CompositeDist, [123](#)
- ReturnIfInstantiatedFromNumericT
  - prior\_hessian::meta, [38](#)
- ReturnIfInstantiatedFromT
  - prior\_hessian::meta, [38](#)
- ReturnIfSubclassOfNumericTemplateT
  - prior\_hessian::meta, [39](#)
- ReturnIfSubclassT
  - prior\_hessian::meta, [39](#)
- ReturnIfT
  - prior\_hessian::meta, [39](#)
- rllh
  - prior\_hessian::AMHCopula, [59](#)
  - prior\_hessian::CompositeDist, [124](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [154](#)
  - prior\_hessian::GammaDist, [199](#)
  - prior\_hessian::MultivariateNormalDist, [241](#)
  - prior\_hessian::NormalDist, [264](#)
  - prior\_hessian::ParetoDist, [311](#)
  - prior\_hessian::SymmetricBetaDist, [357](#)
  - prior\_hessian::mcmc::MCMCData, [218](#)
- rllh\_components
  - prior\_hessian::CompositeDist, [125](#)
- rllh\_const
  - prior\_hessian::AMHCopula, [59](#)
- rllh\_d2theta\_accumulate
  - prior\_hessian::AMHCopula, [59](#)
- rllh\_dtheta\_accumulate
  - prior\_hessian::AMHCopula, [60](#)
- rllh\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist↵ Adaptor< Dist, meta::EnableIfSubclassT< Dist, MultivariateDist > >, [75](#)
  - prior\_hessian::CompositeDist::ComponentDist↵ Adaptor< Dist, meta::EnableIfSubclassT< Dist, UnivariateDist > >, [87](#)
- rllh\_grad\_accumulate
  - prior\_hessian::AMHCopula, [60](#)
- rllh\_grad\_grad2\_accumulate
  - prior\_hessian::AMHCopula, [60](#)
- rllh\_grad\_hess\_accumulate
  - prior\_hessian::AMHCopula, [61](#)
- RuntimeConvergenceError
  - prior\_hessian::RuntimeConvergenceError, [322](#)
- RuntimeSamplingError
  - prior\_hessian::RuntimeSamplingError, [324](#)
- RuntimeTypeError
  - prior\_hessian::RuntimeTypeError, [326](#)
- sample
  - prior\_hessian::AMHCopula, [61](#)
  - prior\_hessian::CompositeDist, [126](#), [127](#)
  - prior\_hessian::CopulaDistImpl::CopulaDist, [154](#)
  - prior\_hessian::GammaDist, [199](#)
  - prior\_hessian::MultivariateNormalDist, [242](#)
  - prior\_hessian::NormalDist, [265](#)
  - prior\_hessian::ParetoDist, [312](#)

- prior\_hessian::ScaledDist, 338
- prior\_hessian::SymmetricBetaDist, 357
- prior\_hessian::TruncatedDist, 370
- prior\_hessian::TruncatedMultivariateDist, 381
- prior\_hessian::UpperTruncatedDist, 391
- prior\_hessian::mcmc::MCMCData, 218
- scale
  - prior\_hessian::GammaDist, 200
- ScaledDist
  - prior\_hessian::ScaledDist, 329, 330
- ScaledDist.h, 424
- ScaledSymmetricBetaDist
  - prior\_hessian, 14
- ScaledSymmetricBetaDist.h, 425
- scaling\_ratio
  - prior\_hessian::ScaledDist, 343
- set\_alpha
  - prior\_hessian::ParetoDist, 313
- set\_beta
  - prior\_hessian::SymmetricBetaDist, 358
- set\_bounds
  - prior\_hessian::CompositeDist, 127
  - prior\_hessian::CopulaDistImpl::CopulaDist, 155
  - prior\_hessian::ScaledDist, 339
  - prior\_hessian::TruncatedDist, 371
  - prior\_hessian::TruncatedMultivariateDist, 381
  - prior\_hessian::UpperTruncatedDist, 392
- set\_bounds\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 76
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
UnivariateDist > >, 87
- set\_component\_names
  - prior\_hessian::CompositeDist, 128
- set\_copula\_theta
  - prior\_hessian::CopulaDistImpl::CopulaDist, 155
- set\_dim\_variables
  - prior\_hessian::CompositeDist, 128
- set\_lbound
  - prior\_hessian::CompositeDist, 129
  - prior\_hessian::CopulaDistImpl::CopulaDist, 156
  - prior\_hessian::ParetoDist, 314
  - prior\_hessian::ScaledDist, 340
  - prior\_hessian::TruncatedDist, 372
  - prior\_hessian::TruncatedMultivariateDist, 381
  - prior\_hessian::UpperTruncatedDist, 392
- set\_lbound\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 76
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,
- UnivariateDist > >, 88
- set\_min
  - prior\_hessian::ParetoDist, 314
- set\_mu
  - prior\_hessian::MultivariateNormalDist, 243
  - prior\_hessian::NormalDist, 266
- set\_param
  - prior\_hessian::GammaDist, 200
  - prior\_hessian::NormalDist, 266
  - prior\_hessian::ParetoDist, 315
  - prior\_hessian::SymmetricBetaDist, 358
- set\_param\_names
  - prior\_hessian::CompositeDist, 130
- set\_param\_value
  - prior\_hessian::CompositeDist, 131
- set\_params
  - prior\_hessian::AMHCopula, 61
  - prior\_hessian::CompositeDist, 132
  - prior\_hessian::CopulaDistImpl::CopulaDist, 157
  - prior\_hessian::GammaDist, 201, 202
  - prior\_hessian::MultivariateNormalDist, 243, 244
  - prior\_hessian::NormalDist, 267, 268
  - prior\_hessian::ParetoDist, 316
  - prior\_hessian::SymmetricBetaDist, 359, 360
- set\_params\_iter
  - prior\_hessian::AMHCopula, 62
  - prior\_hessian::CopulaDistImpl::CopulaDist, 157
  - prior\_hessian::GammaDist, 202
  - prior\_hessian::MultivariateNormalDist, 245
  - prior\_hessian::NormalDist, 269
  - prior\_hessian::ParetoDist, 317
  - prior\_hessian::SymmetricBetaDist, 360
- set\_scale
  - prior\_hessian::GammaDist, 202
- set\_shape
  - prior\_hessian::GammaDist, 203
- set\_sigma
  - prior\_hessian::MultivariateNormalDist, 245
  - prior\_hessian::NormalDist, 269
- set\_theta
  - prior\_hessian::AMHCopula, 62
- set\_ubound
  - prior\_hessian::CompositeDist, 132
  - prior\_hessian::CopulaDistImpl::CopulaDist, 157
  - prior\_hessian::ScaledDist, 340
  - prior\_hessian::TruncatedDist, 373
  - prior\_hessian::TruncatedMultivariateDist, 381
  - prior\_hessian::UpperTruncatedDist, 393
- set\_ubound\_from\_iter
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,  
MultivariateDist > >, 77
  - prior\_hessian::CompositeDist::ComponentDist←  
Adaptor< Dist, meta::EnableIfSubclassT< Dist,



- UnivariateDist > >, 88
- shape
  - prior\_hessian::GammaDist, 203
- sigma
  - prior\_hessian::MultivariateNormalDist, 246
  - prior\_hessian::NormalDist, 270
- sigma\_inv
  - prior\_hessian::MultivariateNormalDist, 246
- sqrt2
  - prior\_hessian::constants, 28
- sqrt2\_inv
  - prior\_hessian::constants, 28
- sqrt2pi
  - prior\_hessian::constants, 28
- sqrt2pi\_inv
  - prior\_hessian::constants, 28
- square
  - prior\_hessian, 26
- StringVecT
  - prior\_hessian, 14
- sum\_d10\_igen\_u
  - prior\_hessian::ArchimedeanCopula::D2Theta\_I↔GenTerms, 165
  - prior\_hessian::ArchimedeanCopula::DTheta\_IGen↔Terms, 184
- sum\_d20\_igen\_u
  - prior\_hessian::ArchimedeanCopula::D2Theta\_I↔GenTerms, 165
- sum\_ieta\_01\_11\_u
  - prior\_hessian::ArchimedeanCopula::D2Theta\_I↔GenTerms, 165
  - prior\_hessian::ArchimedeanCopula::DTheta\_IGen↔Terms, 184
- sum\_in\_order
  - prior\_hessian::meta, 41
- sum\_ixi\_01\_u
  - prior\_hessian::ArchimedeanCopula::D2Theta\_I↔GenTerms, 165
- sum\_log\_d1\_igen\_u
  - prior\_hessian::ArchimedeanCopula::D2Theta\_I↔GenTerms, 165
  - prior\_hessian::ArchimedeanCopula::DTheta\_IGen↔Terms, 185
- SymmetricBetaDist
  - prior\_hessian::SymmetricBetaDist, 346
- SymmetricBetaDist.cpp, 426
- SymmetricBetaDist.h, 427
- theta
  - prior\_hessian::AMHCopula, 63
- truncated
  - prior\_hessian::TruncatedDist, 374
  - prior\_hessian::TruncatedMultivariateDist, 381
  - prior\_hessian::UpperTruncatedDist, 394
- TruncatedDist
  - prior\_hessian::TruncatedDist, 363–365
- TruncatedDist.h, 429
- TruncatedGammaDist
  - prior\_hessian, 14
- TruncatedGammaDist.h, 430
- TruncatedMultivariateDist
  - prior\_hessian::TruncatedMultivariateDist, 379
- TruncatedMultivariateDist.h, 431
- TruncatedMultivariateNormalDist
  - prior\_hessian, 14
- TruncatedMultivariateNormalDist.h, 433
- TruncatedNormalDist
  - prior\_hessian, 14
- TruncatedNormalDist.h, 434
- TruncatedParetoDist
  - prior\_hessian, 14
- TruncatedParetoDist.h, 435
- TypeInfoVecT
  - prior\_hessian, 15
- UVecT
  - prior\_hessian, 15
- ubound
  - prior\_hessian::CompositeDist, 133
  - prior\_hessian::CopulaDistImpl::CopulaDist, 158
  - prior\_hessian::GammaDist, 204
  - prior\_hessian::MultivariateNormalDist, 247
  - prior\_hessian::NormalDist, 271
  - prior\_hessian::ParetoDist, 318
  - prior\_hessian::ScaledDist, 341
  - prior\_hessian::SymmetricBetaDist, 361
  - prior\_hessian::TruncatedDist, 375
  - prior\_hessian::TruncatedMultivariateDist, 381
  - prior\_hessian::UpperTruncatedDist, 394
- unit\_normal\_cdf
  - prior\_hessian, 26
- unit\_normal\_icdf
  - prior\_hessian, 27
- UnivariateDist
  - prior\_hessian::UnivariateDist, 384
- UnivariateDist.cpp, 436
- UnivariateDist.h, 437
- unscaled\_lbound
  - prior\_hessian::ScaledDist, 342
- unscaled\_ubound
  - prior\_hessian::ScaledDist, 342
- UpperTruncatedDist
  - prior\_hessian::UpperTruncatedDist, 386, 387
- UpperTruncatedDist.h, 438
- util.cpp, 440
- util.h, 441
- value
  - prior\_hessian::meta::all\_dists\_are\_bounded, 45

prior\_hessian::meta::is\_copula, [211](#)  
prior\_hessian::meta::is\_subclass\_of\_numeric\_↔  
template, [214](#)

## VecT

prior\_hessian, [15](#)

## what

prior\_hessian::IndexError, [207](#)  
prior\_hessian::InvalidOperationError, [210](#)  
prior\_hessian::NotImplementedError, [274](#)  
prior\_hessian::NumericalOverflowError, [276](#)  
prior\_hessian::ParameterNameError, [278](#)  
prior\_hessian::ParameterNameUniquenessError,  
[280](#)  
prior\_hessian::ParameterSizeError, [282](#)  
prior\_hessian::ParameterValueError, [284](#)  
prior\_hessian::PriorHessianError, [321](#)  
prior\_hessian::RuntimeConvergenceError, [323](#)  
prior\_hessian::RuntimeSamplingError, [325](#)  
prior\_hessian::RuntimeTypeError, [327](#)

## what\_

prior\_hessian::IndexError, [207](#)  
prior\_hessian::InvalidOperationError, [210](#)  
prior\_hessian::NotImplementedError, [274](#)  
prior\_hessian::NumericalOverflowError, [276](#)  
prior\_hessian::ParameterNameError, [278](#)  
prior\_hessian::ParameterNameUniquenessError,  
[280](#)  
prior\_hessian::ParameterSizeError, [282](#)  
prior\_hessian::ParameterValueError, [284](#)  
prior\_hessian::PriorHessianError, [321](#)  
prior\_hessian::RuntimeConvergenceError, [323](#)  
prior\_hessian::RuntimeSamplingError, [325](#)  
prior\_hessian::RuntimeTypeError, [327](#)

## what\_str

prior\_hessian::IndexError, [207](#)  
prior\_hessian::InvalidOperationError, [210](#)  
prior\_hessian::NotImplementedError, [274](#)  
prior\_hessian::NumericalOverflowError, [276](#)  
prior\_hessian::ParameterNameError, [278](#)  
prior\_hessian::ParameterNameUniquenessError,  
[280](#)  
prior\_hessian::ParameterSizeError, [282](#)  
prior\_hessian::ParameterValueError, [284](#)  
prior\_hessian::PriorHessianError, [321](#)  
prior\_hessian::RuntimeConvergenceError, [323](#)  
prior\_hessian::RuntimeSamplingError, [325](#)  
prior\_hessian::RuntimeTypeError, [327](#)

## xi\_On\_t

prior\_hessian::ArchimedeanCopula::D2Theta\_↔  
GenTerms, [164](#)

## xi\_n\_t

prior\_hessian::ArchimedeanCopula::D2\_GenTerms,  
[161](#)