

# NIST Decision Tree Report

## Summary

Include	Laboratory	Result	Uncertainty	DegreesOfFreedom
TRUE	IRMM	34.30	1.03	60
TRUE	KRISS	32.90	0.69	4
TRUE	NARL	34.53	0.83	18
TRUE	NIST	32.42	0.29	2
TRUE	NMIJ	31.90	0.40	13
TRUE	NRC	35.80	0.38	60

Date: 2023-09-27

Version Number: 1.0.2

Type of DoE: Degrees of Equivalence Recognizing Dark Uncertainty

Random Seed: 19

Selected Procedure: Hierarchical Gauss-Gauss

Consensus estimate: 33.61

Standard uncertainty: 0.55

95% coverage interval: (32.52, 34.7)

Dark uncertainty (tau): 1.484

Tau posterior 0.025 and 0.975 quantiles: (0.8119,3.128)

## Decision Tree Hypothesis test results

Cochran's test for Homogeneity:

p-value:  $p < 0.001$

$Q = 68.22$  (Reference Distribution: Chi-Square with 5 Degrees of Freedom)

tau est. = 1.711

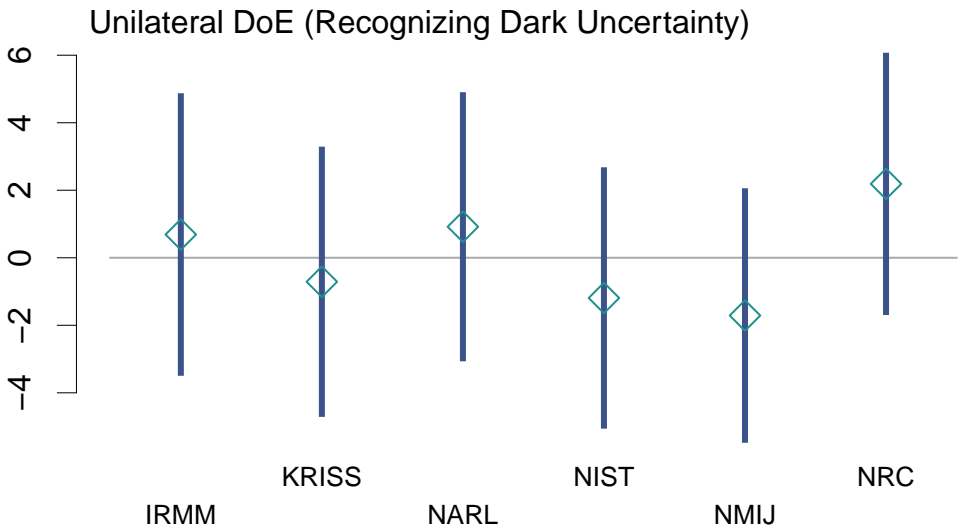
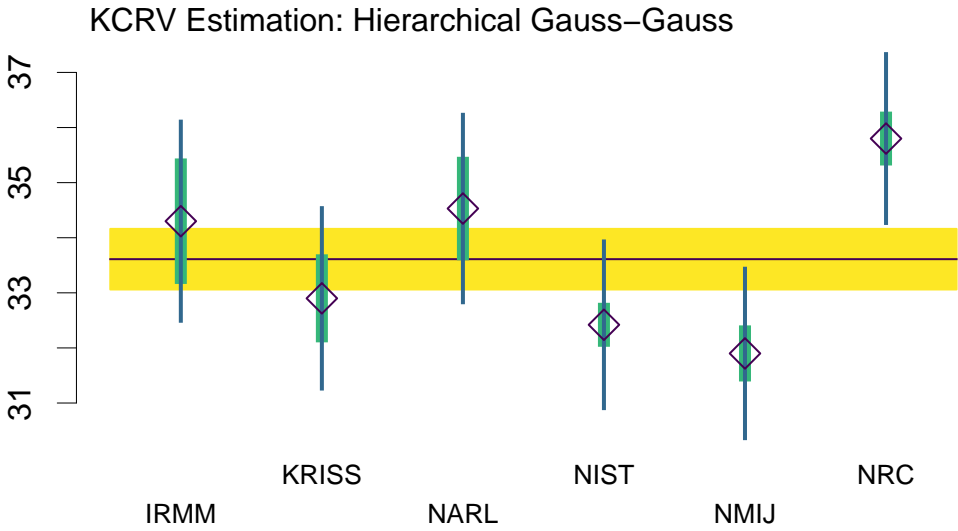
tau/median(x) = 0.05093

tau/median(u) = 3.14

Shapiro-Wilk test for Normality:  $p = 0.5301$

Miao-Gel-Gastwirth test of Symmetry:  $p = 0.9372$

Plots



## DoE Table

	Lab	DoE.x	DoE.U95	DoE.Lwr	DoE.Upr
IRMM	IRMM	0.6892	4.096	-3.407	4.785
KRISS	KRISS	-0.7108	3.913	-4.624	3.203
NARL	NARL	0.9192	3.896	-2.977	4.815
NIST	NIST	-1.1910	3.782	-4.972	2.591
NMIJ	NMIJ	-1.7110	3.681	-5.391	1.970
NRC	NRC	2.1890	3.795	-1.606	5.984

## Lab Uncertainties Table

lab	x	u	nu	ut
IRMM	34.30	1.03	60	1.807
KRISS	32.90	0.69	4	1.637
NARL	34.53	0.83	18	1.701
NIST	32.42	0.29	2	1.512
NMIJ	31.90	0.40	13	1.537
NRC	35.80	0.38	60	1.532

lab	D	uDR	UDR	LwrR	UprR	uDI	UDI	LwrI	UprI
IRMM	0.6892	2.078	4.096	-3.407	4.785	1.1700	2.262	-1.5720	2.9510
KRISS	-0.7108	1.992	3.913	-4.624	3.203	0.9970	1.968	-2.6790	1.2570
NARL	0.9192	1.988	3.896	-2.977	4.815	1.0210	2.025	-1.1050	2.9440
NIST	-1.1910	1.908	3.782	-4.972	2.591	0.8003	1.555	-2.7460	0.3645
NMIJ	-1.7110	1.863	3.681	-5.391	1.970	0.7037	1.397	-3.1080	-0.3140
NRC	2.1890	1.871	3.795	-1.606	5.984	0.6722	1.320	0.8696	3.5090

## MCMC Sampler Diagnostics Table (if applicable)

If one of the Bayesian models is run (Hierarchical Gauss-Gauss, Hierarchical Laplace-Gauss, or Hierarchical Skew-Student-t), then diagnostics for the MCMC sampler will be given below. As a general recommendation, if any of the R-hat values are greater than 1.05, then the sampler may not have reached equilibrium, and the “Total Number of MCMC Steps” should be increased, and the run repeated. The “Number of MCMC Warm-Up Steps” should be about half of the “Total Number of MCMC Steps.” The “Effective Sample Size” (n.eff) is approximately the size of the MCMC sample that the results are based on.

	Rhat	n.eff
deviance	1.002	1900
lambda[1]	1.001	5000
lambda[2]	1.001	3800
lambda[3]	1.002	2400
lambda[4]	1.001	5000
lambda[5]	1.001	4000
lambda[6]	1.001	5000
mu	1.001	5000
sigma[1]	1.001	3200

	Rhat	n.eff
sigma[2]	1.001	5000
sigma[3]	1.001	3800
sigma[4]	1.001	5000
sigma[5]	1.002	2400
sigma[6]	1.001	2800
tau	1.001	5000