

1 Nominal correlations.

Measurements		CVW/%	IIW/%	MIW/%	RI/%	Stat	Sys1	Sys2	Sys3
X1	172.50 ± 0.89	5.28	4.71	5.54	5.28	0.43	0.35	0.69	0
X2	172.35 ± 0.23	75.70	71.47	78.73	75.70	0.16	0.12	0.10	0.04
X3	172.80 ± 0.43	19.02	19.77	17.41	19.02	0.19	0.24	0.28	0.12
Correlations	—	—	4.05	—	—	—	—	—	—
BLUE x	172.44 ± 0.19	100.00	100.00	101.68	100.00	0.13	0.15	-nan	0.01

Table 1: BLUE of the combination ($\chi^2/\text{ndof} = 0.85/2$). For each input measurement i the following are listed: the central value weight CVW_i or λ_i , the intrinsic information weight IIW_i , the marginal information weight MIW_i , the relative importance RI_i . The intrinsic information weight IIW_{corr} of correlations is also shown on a separate row.

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.78 & -0.03 & 0.08 \\ \text{X2} & -0.03 & 0.05 & \sim 0 \\ \text{X3} & 0.08 & \sim 0 & 0.19 \end{array} \right)$$

Table 2: Full input covariance between measurements (summed over error sources).

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.18 & 0 & 0 \\ \text{X2} & 0 & 0.03 & 0 \\ \text{X3} & 0 & 0 & 0.04 \end{array} \right)$$

Table 3: Partial input covariance between measurements. Error source #0: Stat.

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.12 & 0.04 & 0.08 \\ \text{X2} & 0.04 & 0.01 & 0.03 \\ \text{X3} & 0.08 & 0.03 & 0.06 \end{array} \right)$$

Table 4: Partial input covariance between measurements. Error source #1: Sys1.

$$\left(\begin{array}{c|ccc} & X1 & X2 & X3 \\ \hline X1 & 0.48 & -0.07 & 0 \\ X2 & -0.07 & 0.01 & -0.03 \\ X3 & 0 & -0.03 & 0.08 \end{array} \right)$$

Table 5: Partial input covariance between measurements. Error source #2: Sys2.

$$\left(\begin{array}{c|ccc} & X1 & X2 & X3 \\ \hline X1 & 0 & 0 & 0 \\ X2 & 0 & \sim 0 & \sim 0 \\ X3 & 0 & \sim 0 & 0.01 \end{array} \right)$$

Table 6: Partial input covariance between measurements. Error source #3: Sys3.

2 Modified correlations.

2.1 Zero correlations.

Measurements		CVW/%	IIW/%	MIW/%	RI/%	Stat	Sys1	Sys2	Sys3
X1	172.50 ± 0.89	4.91	4.91	4.91	4.91	0.43	0.35	0.69	0
X2	172.35 ± 0.23	74.49	74.49	74.49	74.49	0.16	0.12	0.10	0.04
X3	172.80 ± 0.43	20.61	20.61	20.61	20.61	0.19	0.24	0.28	0.12
Correlations	—	—	0	—	—	—	—	—	—
BLUE x	172.45 ± 0.20	100.00	100.00	100.00	100.00	0.13	0.10	0.10	0.04

Table 7: BLUE of the combination ($\chi^2/\text{ndof} = 0.85/2$). For each input measurement i the following are listed: the central value weight CVW_i or λ_i , the intrinsic information weight IIW_i , the marginal information weight MIW_i , the relative importance RI_i . The intrinsic information weight IIW_{corr} of correlations is also shown on a separate row.

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.78 & 0 & 0 \\ \text{X2} & 0 & 0.05 & 0 \\ \text{X3} & 0 & 0 & 0.19 \end{array} \right)$$

Table 8: Full input covariance between measurements (summed over error sources).

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.18 & 0 & 0 \\ \text{X2} & 0 & 0.03 & 0 \\ \text{X3} & 0 & 0 & 0.04 \end{array} \right)$$

Table 9: Partial input covariance between measurements. Error source #0: Stat.

$$\left(\begin{array}{c|ccc} & \text{X1} & \text{X2} & \text{X3} \\ \hline \text{X1} & 0.12 & 0 & 0 \\ \text{X2} & 0 & 0.01 & 0 \\ \text{X3} & 0 & 0 & 0.06 \end{array} \right)$$

Table 10: Partial input covariance between measurements. Error source #1: Sys1.

$$\left(\begin{array}{c|ccc} & X1 & X2 & X3 \\ \hline X1 & 0.48 & 0 & 0 \\ X2 & 0 & 0.01 & 0 \\ X3 & 0 & 0 & 0.08 \end{array} \right)$$

Table 11: Partial input covariance between measurements. Error source #2: Sys2.

$$\left(\begin{array}{c|ccc} & X1 & X2 & X3 \\ \hline X1 & 0 & 0 & 0 \\ X2 & 0 & \sim 0 & 0 \\ X3 & 0 & 0 & 0.01 \end{array} \right)$$

Table 12: Partial input covariance between measurements. Error source #3: Sys3.

Appendix A1. Input data.

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1 #=====
2 #---- BlueFin input data file -----
3 #=====
4
5 # The file is expected to have the following format.
6 # Blank lines and lines with only empty spaces are ignored.
7 # Lines starting by '#' are reserved for comments and are ignored.
8 # Data lines are composed of fields separated by one or more empty spaces.
9 # Fields cannot contain empty spaces, with the exception of the title line.
10
11 # The next line must have 2 fields: 'TITLE' and the title of the
12 # BlueFin combination, which must be enclosed within double quotes
13 # and may contain only alphanumeric characters or spaces or hyphens.
14 TITLE "2018-06 Discussion with A Rej and R Nisius - example with flag 1"
15
16 # The next line must have 2 fields: 'NOBS' and the number of observables.
17 NOBS 1
18
19 # The next line must have 2 fields: 'NMEA' and the number of measurements.
20 NMEA 3
21
22 # The next line must have 2 fields: 'NERR' and the number of error sources.
23 NERR 4
24
25 # The next NERR+3 lines must have NMEA+1 fields in this format:
26 # - in the 1st line: 'MEANAME' followed by NMEA distinct measurement names
27 #   (measurement names may contain only alphanumeric characters or spaces);
28 # - in the 2nd line: 'OBSNAME' followed by the NMEA names (with NOBS distinct
29 #   values) of the observables measured by the corresponding measurements
30 #   (observable names may contain only alphanumeric characters or spaces
31 #   and should preferably be at most 3 characters long);
32 # - in the 3rd line: 'MEAVAL' followed by the NMEA measured central values;
33 # - in each of the last NERR lines: the error source name followed by the
34 #   NMEA partial errors for each measurement due to the given error source
35 #   (error source names may contain only alphanumeric characters or spaces).
36 MEANAME      X1      X2      X3
37 OBSNAME      x      x      x
38 MEAVAL  172.50  172.35  172.80
39 Stat    0.43    0.16    0.19
40 Sys1    0.35    0.12    0.24
41 Sys2    0.69    0.10    0.28
42 Sys3    0.00    0.04    0.12
43
44 # The next NMEA*(NMEA-1)/2+1 rows must have NERR+2 fields in this format:
45 # - in the 1st line: 'CMEA1' 'CMEA2' (correlations between 2 measurements)
46 #   followed by the NERR error source names in the same order used above;
47 # - in each of the NMEA*(NMEA-1)/2 last lines: the names of two distinct
48 #   measurements followed by the NERR correlations between the partial
49 #   errors on the two measurements due to corresponding error source.

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50	#	Measurements must appear in the same order listed above.				
51	CMEA1	CMEA2	Stat	Sys1	Sys2	Sys3
52	X1	X2	0	1	-1	-1
53	X1	X3	0	1	0	0
54	X2	X3	0	1	-1	-1

Input data file: misc201806RNflag1.bfin.