

TABLE S1
BENCHMARK OF CEC17-MTSO TEST SUITE.

Category	Function	Search Space	Global Optima	Landscape	Similarity
F_1 :CI+HS	T_1 :Griewank T_2 :Rastrign	$\{-100, 100\}^{50}$ $\{-50, 50\}^{50}$	$\{0\}^{50}$ $\{0\}^{50}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	1.0000
F_2 :CI+MS	T_1 :Ackley T_2 :Rastrign	$\{-50, 50\}^{50}$ $\{-50, 50\}^{50}$	$\{0\}^{50}$ $\{0\}^{50}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	0.2261
F_3 :CI+LS	T_1 :Ackley T_2 :Schwefel	$\{-50, 50\}^{50}$ $\{-500, 500\}^{50}$	$\{42.0969\}^{50}$ $\{420.9687\}^{50}$	Multi-modality, Nonseparable Multi-modality, Separable	0.0002
F_4 :PI+HS	T_1 :Rastrign T_2 :Sphere	$\{-50, 50\}^{50}$ $\{-100, 100\}^{50}$	$\{0\}^{50}$ $\{0\}^{25} \times \{20\}^{25}$	Multi-modality, Nonseparable Unimodality, Separable	0.8670
F_5 :PI+MS	T_1 :Ackley T_2 :Rosenbrock	$\{-50, 50\}^{50}$ $\{-50, 50\}^{50}$	$\{0\}^{25} \times \{1\}^{25}$ $\{1\}^{50}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	0.2154
F_6 :PI+LS	T_1 :Ackley T_2 :Weierstrass	$\{-50, 50\}^{50}$ $\{-0.5, 0.5\}^{25}$	$\{0\}^{50}$ $\{0\}^{25}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	0.0725
F_7 :NI+HS	T_1 :Rosenbrock T_2 :Rastrign	$\{-50, 50\}^{50}$ $\{-50, 50\}^{50}$	$\{1\}^{50}$ $\{0\}^{50}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	0.9434
F_8 :NI+MS	T_1 :Griewank T_2 :Weierstrass	$\{-100, 100\}^{50}$ $\{-0.5, 0.5\}^{25}$	$\{10\}^{50}$ $\{0\}^{25}$	Multi-modality, Nonseparable Multi-modality, Nonseparable	0.3669
F_9 :NI+LS	T_1 :Rastrign T_2 :Schwefel	$\{-50, 50\}^{50}$ $\{-500, 500\}^{50}$	$\{0\}^{50}$ $\{420.9687\}^{50}$	Multi-modality, Nonseparable Multi-modality, Separable	0.0016

TABLE S2
BENCHMARK OF MATDE-PROBLEM TEST SUITE.

Tasks	Function	Search Space	Global Optima	Landscape	Category	Ideal Assisted Task
F_1	$Sphere_1$	$[-100, 100]^{50}$	$\{0\}^{50}$	Unimodality, Separable	E task	None
F_2	$Sphere_2$	$[-100, 100]^{50}$	$\{80\}^{50}$	Unimodality, Separable	E task	None
F_3	$Sphere_3$	$[-100, 100]^{50}$	$\{-80\}^{50}$	Unimodality, Separable	E task	None
F_4	$Weierstrass_1$	$[-0.5, 0.5]^{25}$	$\{-0.4\}^{25}$	Multi-modality, Nonseparable	E task	None
F_5	Rosenbrock	$[-50, 50]^{50}$	$\{0\}^{50}$	Multi-modality, Nonseparable	C task	F_1
F_6	Ackley	$[-50, 50]^{50}$	$\{40\}^{50}$	Multi-modality, Nonseparable	C task	F_2
F_7	$Weierstrass_2$	$[-0.5, 0.5]^{50}$	$\{-0.4\}^{50}$	Multi-modality, Nonseparable	C task	F_3, F_4
F_8	Schwefel	$[-500, 500]^{50}$	$\{420.9687\}^{50}$	Multi-modality, Separable	C task	None
F_9	Griewank	$[-100, 100]^{50}$	$\{-80\}^{25} \times \{80\}^{25}$	Multi-modality, Nonseparable	C task	F_4
F_{10}	Rastrign	$[-50, 50]^{50}$	$\{40\}^{25} \times \{-40\}^{25}$	Multi-modality, Nonseparable	C task	None

TABLE S3
FUNCTION COMBINATION OF EACH PROBLEM IN WCCI20-MATSO TEST SUITE.

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Sphere	✓			✓						
Rosenbrock		✓		✓		✓		✓	✓	
Ackley				✓			✓	✓	✓	✓
Rastrign			✓		✓		✓	✓	✓	✓
Griewank					✓	✓		✓	✓	✓
Weierstrass					✓		✓	✓	✓	✓
Schwefel						✓			✓	✓

TABLE S4

COMPARISON OF KR-MTDE, AEMTO, MaTDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN EACH MTO PROBLEM IN CEC17-MTSO. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/=-"), OVER ALL 18 COMPONENT TASKS FROM ALL NINE MTO PROBLEMS IN CEC17-MTSO.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
MTSO1-CI-HS-T1	0.00e+00 (0.00e+00)	4.63e-07 (2.05e-06) -	2.96e-03 (1.52e-03) -	1.70e-05 (8.18e-06) -	0.00e+00 (0.00e+00) =	3.92e-03 (1.05e-03) -
MTSO1-CI-HS-T2	3.46e+02 (2.88e+01)	3.48e-01 (1.56e+00) +	4.38e+00 (2.51e+00) +	2.31e-02 (1.04e-02) +	0.00e+00 (0.00e+00) +	4.05e+02 (1.44e+01) -
MTSO2-CI-MS-T1	8.88e-16 (0.00e+00)	1.03e-04 (3.41e-04) -	3.47e-02 (9.03e-03) -	2.60e-03 (7.34e-04) -	8.88e-16 (0.00e+00) =	2.92e+00 (2.69e+00) -
MTSO2-CI-MS-T2	3.45e+02 (2.13e+01)	4.98e-01 (2.22e+00) +	6.23e-01 (2.80e-01) +	4.41e-03 (2.31e-03) +	0.00e+00 (0.00e+00) +	4.08e+02 (1.45e+01) -
MTSO3-CI-LS-T1	2.93e-14 (0.00e+00)	2.12e+01 (4.13e-02) -	2.12e+01 (3.10e-02) -	2.12e+01 (4.84e-02) -	2.12e+01 (5.45e-02) -	2.12e+01 (3.25e-02) -
MTSO3-CI-LS-T2	6.77e+02 (1.18e+03)	8.02e+03 (5.17e+02) -	1.28e+04 (5.40e+02) -	1.28e+04 (7.21e+02) -	1.32e+04 (6.59e+02) -	1.33e+04 (7.93e+02) -
MTSO4-PI-HS-T1	3.34e+02 (4.81e+01)	3.88e+02 (1.41e+01) +	4.07e+02 (1.47e+01) -	3.95e+02 (9.46e+00) -	7.83e+00 (1.64e+01) +	4.04e+02 (1.64e+01) -
MTSO4-PI-LS-T2	1.63e-27 (6.20e-28)	7.48e-06 (6.93e-06) -	2.37e-02 (1.15e-02) -	1.97e-05 (1.14e-05) -	2.26e-03 (9.79e-04) -	5.08e-03 (1.94e-03) -
MTSO5-PI-MS-T1	8.88e-16 (0.00e+00)	1.21e-04 (1.11e-04) -	7.92e-02 (2.28e-02) -	3.53e-03 (1.26e-03) -	2.24e+00 (2.85e-01) -	2.78e+00 (4.18e+00) -
MTSO5-PI-MS-T2	4.73e+01 (2.59e-01)	8.41e+01 (2.39e+00) -	7.28e+01 (2.56e+01) -	5.64e+01 (1.77e+01) =	4.72e+01 (8.43e-01) =	6.14e+01 (2.32e+01) -
MTSO6-PI-LS-T1	8.88e-16 (0.00e+00)	4.87e-03 (7.68e-03) -	7.20e+00 (7.82e+00) -	1.14e+00 (2.55e+00) -	8.88e-16 (0.00e+00) +	6.62e+00 (7.07e+00) -
MTSO6-PI-LS-T2	1.46e-14 (1.02e-14)	1.67e-02 (4.16e-02) -	2.97e+00 (2.07e+00) -	8.38e-01 (1.44e+00) -	3.20e-07 (8.54e-07) -	8.51e+00 (6.02e+00) -
MTSO7-NI-HS-T1	4.76e+01 (2.10e-01)	4.52e+01 (7.98e-01) +	5.07e+01 (1.31e+00) -	4.63e+01 (4.37e-01) +	4.74e+01 (1.88e-01) +	5.64e+01 (1.71e+01) -
MTSO7-NI-LS-T2	3.51e+02 (2.18e+01)	1.29e+00 (2.72e+00) +	6.10e+00 (4.95e+00) +	1.71e-01 (5.59e-01) +	3.68e+02 (9.61e+00) -	4.06e+02 (2.15e+01) -
MTSO8-NI-MS-T1	0.00e+00 (0.00e+00)	3.86e-05 (3.09e-05) -	1.04e-02 (3.10e-03) -	6.70e-05 (2.79e-05) -	1.21e-01 (2.50e-02) -	4.51e-03 (1.81e-03) -
MTSO8-NI-MS-T2	1.43e-07 (5.52e-07)	7.94e-01 (6.14e-01) -	3.48e+00 (4.74e-01) -	7.55e-01 (2.23e-01) -	2.19e+00 (6.58e-01) -	2.73e+01 (1.50e+01) -
MTSO9-NI-LS-T1	3.56e+02 (1.66e+01)	3.99e+02 (1.25e+01) -	4.12e+02 (1.88e+01) -	3.92e+02 (1.52e+01) -	0.00e+00 (0.00e+00) +	4.14e+02 (1.71e+01) -
MTSO9-NI-LS-T2	8.26e+03 (2.03e+03)	1.12e+04 (5.02e+02) -	1.37e+04 (5.63e+02) -	1.31e+04 (6.33e+02) -	1.35e+04 (5.42e+02) -	1.34e+04 (6.39e+02) -
+/=-	Base	4/14/0	3/15/0	4/13/1	5/9/4	0/18/0

TABLE S5

COMPARISON OF KR-MTDE, AEMTO, MaTDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN EACH MTO PROBLEM IN MaTEA-PROBLEM. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/=-"), OVER ALL 10 COMPONENT TASKS FROM MaTEA-PROBLEM.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
MaTSO10-T1	0.00e+00 (0.00e+00)	9.78e-07 (8.43e-07) -	2.04e-02 (8.48e-03) -	2.24e-05 (1.22e-05) -	4.41e-21 (1.97e-20) -	4.56e-03 (1.52e-03) -
MaTSO10-T2	1.06e-26 (7.26e-27)	5.97e-07 (7.78e-07) -	6.16e-03 (2.37e-03) -	6.29e-04 (6.93e-04) -	2.39e-03 (1.03e-03) -	1.81e-03 (5.62e-04) -
MaTSO10-T3	0.00e+00 (0.00e+00)	6.09e-07 (5.56e-07) -	5.53e-03 (3.05e-03) -	5.35e-04 (5.33e-04) -	1.59e+00 (3.91e-01) -	2.00e-03 (9.78e-04) -
MaTSO10-T4	1.21e-14 (6.95e-15)	3.28e-04 (6.34e-04) -	4.33e-02 (1.07e-02) -	6.29e-01 (1.18e+00) -	1.43e+00 (9.43e-01) -	8.77e-01 (1.13e+00) -
MaTSO10-T5	4.72e+01 (4.12e-01)	4.65e+01 (5.51e-01) +	4.84e+01 (4.20e-01) -	5.87e+01 (2.39e+01) -	4.74e+01 (1.60e-01) =	7.42e+01 (8.26e+01) -
MaTSO10-T6	2.56e-14 (1.08e-14)	1.61e-04 (7.82e-05) -	3.07e-01 (1.27e+00) -	8.53e+00 (9.88e+00) -	1.99e+01 (6.61e-02) -	2.00e+01 (2.33e-03) -
MaTSO10-T7	2.06e-14 (7.25e-15)	2.26e-02 (6.35e-03) -	4.46e-01 (8.90e-02) -	7.55e+00 (6.09e+00) -	2.10e+01 (4.78e+00) -	1.25e+01 (3.48e+00) -
MaTSO10-T8	9.43e+02 (1.57e+03)	6.86e-04 (1.27e-04) =	5.57e-01 (6.92e-01) =	6.50e+03 (6.19e+03) -	1.32e+04 (7.33e+02) -	1.36e+04 (4.66e+02) -
MaTSO10-T9	0.00e+00 (0.00e+00)	2.09e-03 (5.43e-03) -	2.79e-04 (8.06e-05) -	1.55e-05 (2.44e-05) -	4.35e-02 (1.05e-02) -	4.39e-04 (1.65e-03) -
MaTSO10-T10	0.00e+00 (0.00e+00)	8.25e+01 (3.47e+01) -	3.85e+02 (1.88e+01) -	3.79e+02 (2.00e+01) -	3.90e+02 (1.66e+01) -	3.91e+02 (1.47e+01) -
+/=-	Base	1/8/1	0/9/1	0/10/0	0/9/1	0/10/0

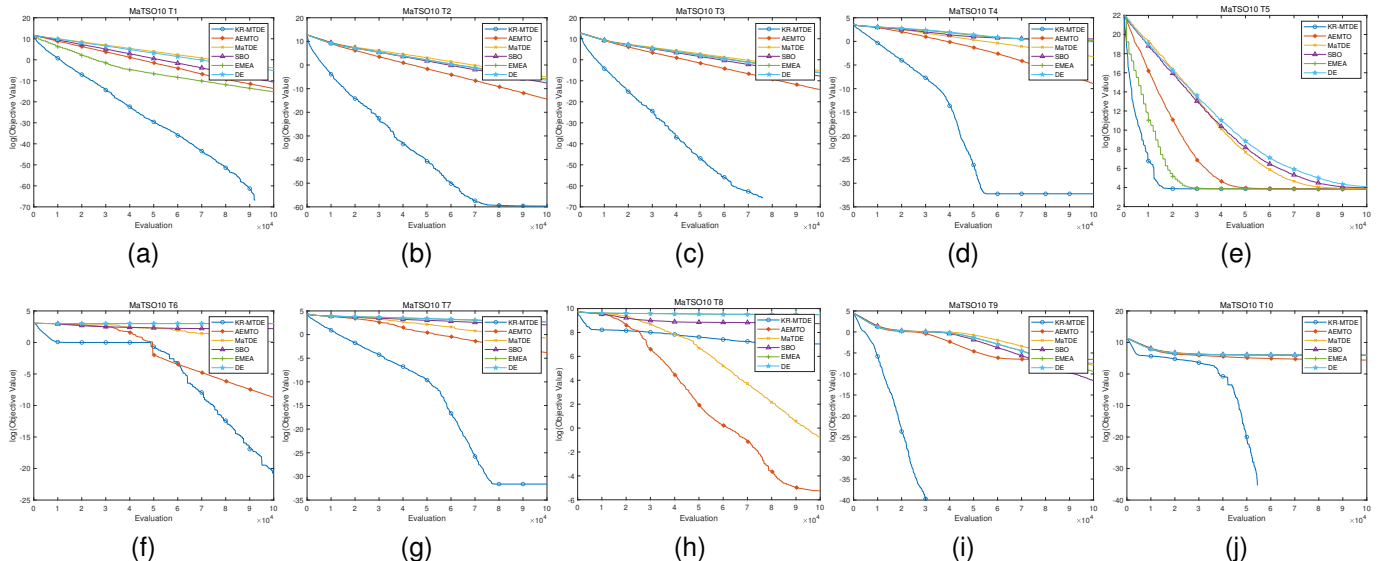


Fig. S1. Average convergence trends of six compared methods, i.e., KR-MTDE, AEMTO, MaTDE, SBO, EMEA, and single-tasking DE on MaTEA-problem.

TABLE S6

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO1 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO1 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MatDE	SBO	EMEA	DE
CEC19-MaTSO1-T1	4.65e+01 (4.37e-01)	5.25e+02 (7.68e+02) -	9.07e+01 (5.56e+01) -	5.05e+01 (1.45e+01) =	1.06e+03 (1.14e+03) -	5.30e+01 (4.06e+00) -
CEC19-MaTSO1-T2	4.64e+01 (3.02e-01)	4.74e+03 (1.84e+04) -	7.92e+01 (2.38e+01) -	5.83e+01 (2.54e+01) -	6.02e+01 (3.39e+01) -	6.58e+01 (2.86e+01) -
CEC19-MaTSO1-T3	5.26e+01 (1.79e+01)	5.68e+03 (1.96e+04) -	8.42e+01 (3.57e+01) -	5.44e+01 (1.65e+01) -	9.79e+02 (9.42e+02) -	7.40e+01 (4.32e+01) -
CEC19-MaTSO1-T4	5.26e+01 (1.86e+01)	8.18e+03 (2.98e+04) -	8.03e+01 (3.32e+01) -	5.64e+01 (2.02e+01) -	5.62e+01 (1.50e+01) -	6.83e+01 (3.15e+01) -
CEC19-MaTSO1-T5	4.92e+01 (1.31e+01)	6.13e+02 (6.71e+02) -	8.50e+01 (4.46e+01) -	5.64e+01 (2.03e+01) -	1.21e+03 (1.50e+03) -	5.58e+01 (1.90e+01) -
CEC19-MaTSO1-T6	4.66e+01 (4.02e-01)	7.52e+03 (2.78e+04) -	7.76e+01 (3.60e+01) -	6.30e+01 (4.29e+01) -	6.15e+01 (2.78e+01) -	6.04e+01 (1.73e+01) -
CEC19-MaTSO1-T7	5.18e+01 (2.11e+01)	7.77e+03 (2.08e+04) -	8.49e+01 (5.28e+01) -	6.29e+01 (3.06e+01) -	1.17e+03 (1.37e+03) -	5.31e+01 (4.16e+00) -
CEC19-MaTSO1-T8	4.98e+01 (1.39e+01)	1.70e+03 (5.74e+03) -	9.39e+01 (4.49e+01) -	5.95e+01 (2.85e+01) -	5.57e+01 (1.05e+01) -	6.71e+01 (3.79e+01) -
CEC19-MaTSO1-T9	4.93e+01 (1.28e+01)	7.42e+03 (2.79e+04) -	8.42e+01 (4.40e+01) -	5.06e+01 (2.59e+00) -	8.45e+02 (8.79e+02) -	6.05e+01 (2.26e+01) -
CEC19-MaTSO1-T10	4.66e+01 (2.99e-01)	8.68e+03 (3.20e+04) -	8.96e+01 (3.34e+01) -	5.20e+01 (9.14e+00) -	5.93e+01 (2.45e+01) -	6.21e+01 (2.69e+01) -
CEC19-MaTSO1-T11	4.67e+01 (4.07e-01)	2.84e+03 (5.10e+03) -	7.60e+01 (1.84e+01) -	6.19e+01 (2.51e+01) -	1.55e+03 (1.83e+03) -	6.81e+01 (3.22e+01) -
CEC19-MaTSO1-T12	4.95e+01 (1.39e+01)	1.42e+03 (1.99e+03) -	8.93e+01 (3.54e+01) -	6.02e+01 (2.46e+01) -	7.62e+01 (4.14e+01) -	5.81e+01 (2.34e+01) -
CEC19-MaTSO1-T13	4.65e+01 (3.56e-01)	2.13e+03 (5.65e+03) -	9.23e+01 (4.53e+01) -	5.27e+01 (1.01e+01) -	1.31e+03 (1.73e+03) -	6.43e+01 (2.79e+01) -
CEC19-MaTSO1-T14	4.65e+01 (2.37e-01)	2.62e+03 (4.17e+03) -	8.53e+01 (4.02e+01) -	6.09e+01 (2.58e+01) -	6.03e+01 (2.55e+01) -	6.63e+01 (3.68e+01) -
CEC19-MaTSO1-T15	4.68e+01 (2.64e-01)	3.16e+03 (7.23e+03) -	9.85e+01 (6.09e+01) -	4.97e+01 (1.86e+00) -	1.51e+03 (1.66e+03) -	6.83e+01 (3.74e+01) -
CEC19-MaTSO1-T16	5.23e+01 (1.83e+01)	3.58e+03 (1.02e+04) -	8.20e+01 (3.01e+01) -	6.22e+01 (2.70e+01) -	6.27e+01 (2.82e+01) -	5.52e+01 (1.57e+01) -
CEC19-MaTSO1-T17	6.15e+01 (2.63e+01)	1.82e+03 (3.49e+03) -	1.06e+02 (5.81e+01) -	5.59e+01 (1.88e+01) +	1.20e+03 (1.54e+03) -	6.11e+01 (2.54e+01) +
CEC19-MaTSO1-T18	4.95e+01 (1.30e+01)	1.43e+03 (3.44e+03) -	8.17e+01 (3.60e+01) -	5.35e+01 (9.91e+00) -	6.18e+01 (2.62e+01) -	6.58e+01 (3.90e+01) -
CEC19-MaTSO1-T19	4.65e+01 (3.84e-01)	4.16e+02 (4.95e+02) -	6.85e+01 (1.18e+01) -	5.36e+01 (1.93e+01) -	7.48e+02 (9.39e+02) -	6.77e+01 (3.98e+01) -
CEC19-MaTSO1-T20	4.94e+01 (1.28e+01)	2.75e+03 (8.41e+03) -	7.56e+01 (2.21e+01) -	5.60e+01 (1.72e+01) -	6.27e+01 (3.07e+01) -	5.78e+01 (2.11e+01) -
CEC19-MaTSO1-T21	4.97e+01 (1.36e+01)	4.49e+03 (1.67e+04) -	9.54e+01 (4.82e+01) -	6.63e+01 (3.30e+01) -	6.12e+02 (3.04e+02) -	6.42e+01 (2.84e+01) -
CEC19-MaTSO1-T22	6.52e+01 (2.94e+01)	1.76e+03 (4.01e+03) -	9.53e+01 (4.54e+01) -	6.69e+01 (3.35e+01) -	7.12e+01 (3.94e+01) -	5.56e+01 (1.75e+01) =
CEC19-MaTSO1-T23	4.67e+01 (6.08e-01)	2.50e+03 (7.59e+03) -	7.56e+01 (2.21e+01) -	6.20e+01 (2.79e+01) -	9.37e+02 (8.61e+02) -	6.27e+01 (2.92e+01) -
CEC19-MaTSO1-T24	5.23e+01 (1.83e+01)	5.37e+02 (7.42e+02) -	8.76e+01 (5.58e+01) -	5.38e+01 (1.64e+01) -	5.65e+01 (1.67e+01) -	5.87e+01 (2.25e+01) -
CEC19-MaTSO1-T25	4.64e+01 (3.05e-01)	1.10e+03 (1.40e+03) -	7.12e+01 (1.85e+01) -	5.43e+01 (1.96e+01) -	9.12e+02 (1.03e+03) -	5.93e+01 (1.61e+01) -
CEC19-MaTSO1-T26	4.67e+01 (6.94e-01)	2.75e+03 (3.97e+03) -	7.23e+01 (1.61e+01) -	6.41e+01 (2.88e+01) -	5.71e+01 (1.33e+01) -	6.25e+01 (3.21e+01) -
CEC19-MaTSO1-T27	4.98e+01 (1.30e+01)	7.47e+02 (1.09e+03) -	8.59e+01 (4.25e+01) -	5.57e+01 (1.80e+01) -	6.94e+02 (5.02e+02) -	6.54e+01 (5.09e+01) -
CEC19-MaTSO1-T28	4.69e+01 (5.13e-01)	1.82e+03 (4.23e+03) -	7.72e+01 (3.12e+01) -	6.77e+01 (2.77e+01) -	5.63e+01 (2.04e+01) -	7.21e+01 (3.61e+01) -
CEC19-MaTSO1-T29	5.57e+01 (2.18e+01)	3.35e+03 (8.18e+03) -	8.98e+01 (3.83e+01) -	6.97e+01 (3.61e+01) -	1.28e+03 (1.50e+03) -	6.22e+01 (2.61e+01) -
CEC19-MaTSO1-T30	4.97e+01 (1.40e+01)	7.82e+02 (9.45e+02) -	8.12e+01 (2.86e+01) -	1.00e+02 (1.01e+02) -	7.15e+01 (4.02e+01) -	6.26e+01 (3.05e+01) -
CEC19-MaTSO1-T31	4.66e+01 (4.77e-01)	7.70e+02 (1.13e+03) -	6.91e+01 (9.52e+00) -	6.42e+01 (3.11e+01) -	6.68e+02 (8.30e+02) -	5.12e+01 (2.86e+00) -
CEC19-MaTSO1-T32	5.87e+01 (2.44e+01)	1.53e+03 (1.87e+03) -	9.39e+01 (6.20e+01) -	5.82e+01 (2.58e+01) +	6.56e+01 (3.12e+01) -	6.40e+01 (2.44e+01) -
CEC19-MaTSO1-T33	4.64e+01 (3.58e-01)	8.72e+02 (1.33e+03) -	8.40e+01 (5.20e+01) -	6.15e+01 (2.45e+01) -	1.35e+03 (1.69e+03) -	7.07e+01 (3.63e+01) -
CEC19-MaTSO1-T34	4.64e+01 (6.21e-01)	5.18e+03 (1.98e+04) -	7.85e+01 (2.76e+01) -	5.56e+01 (2.48e+01) -	6.49e+01 (2.54e+01) -	5.62e+01 (1.29e+01) -
CEC19-MaTSO1-T35	4.96e+01 (1.29e+01)	8.14e+02 (1.09e+03) -	7.40e+01 (2.41e+01) -	6.09e+01 (2.76e+01) -	6.60e+02 (4.63e+02) -	5.83e+01 (2.12e+01) -
CEC19-MaTSO1-T36	5.61e+01 (2.24e+01)	1.25e+03 (2.37e+03) -	1.17e+02 (5.87e+01) -	6.15e+01 (2.60e+01) -	6.64e+01 (3.63e+01) -	5.60e+01 (8.67e+00) +
CEC19-MaTSO1-T37	5.57e+01 (2.16e+01)	9.51e+02 (1.23e+03) -	8.40e+01 (3.35e+01) -	6.05e+01 (2.27e+01) -	9.71e+02 (1.27e+03) -	6.65e+01 (3.59e+01) -
CEC19-MaTSO1-T38	5.84e+01 (2.44e+01)	1.77e+03 (3.11e+03) -	8.53e+01 (4.46e+01) -	6.65e+01 (4.28e+01) -	5.92e+01 (2.46e+01) -	5.62e+01 (1.78e+01) +
CEC19-MaTSO1-T39	4.94e+01 (1.28e+01)	1.57e+03 (4.68e+03) -	7.91e+01 (2.56e+01) -	5.47e+01 (1.40e+01) -	9.64e+02 (1.10e+03) -	5.33e+01 (4.76e+00) -
CEC19-MaTSO1-T40	4.94e+01 (1.29e+01)	9.57e+02 (2.66e+03) -	7.44e+01 (2.29e+01) -	6.10e+01 (2.88e+01) -	6.80e+01 (3.76e+01) -	5.95e+01 (1.94e+01) -
CEC19-MaTSO1-T41	4.65e+01 (3.56e-01)	1.12e+03 (3.06e+03) -	9.33e+01 (5.06e+01) -	6.18e+01 (3.07e+01) -	1.08e+03 (1.19e+03) -	5.55e+01 (1.49e+01) -
CEC19-MaTSO1-T42	4.67e+01 (5.77e-01)	6.34e+02 (8.38e+02) -	7.55e+01 (2.79e+01) -	5.19e+01 (6.33e+00) -	5.78e+01 (1.96e+01) -	5.82e+01 (1.58e+01) -
CEC19-MaTSO1-T43	4.70e+01 (7.69e-01)	2.32e+03 (5.07e+03) -	7.52e+01 (2.57e+01) -	5.53e+01 (1.71e+01) -	1.21e+03 (1.14e+03) -	5.70e+01 (1.10e+01) -
CEC19-MaTSO1-T44	4.97e+01 (1.39e+01)	1.84e+03 (2.66e+03) -	8.11e+01 (6.02e+01) -	6.09e+01 (3.55e+01) -	7.86e+01 (4.77e+01) -	6.67e+01 (3.41e+01) -
CEC19-MaTSO1-T45	4.66e+01 (2.99e-01)	2.35e+03 (4.02e+03) -	6.20e+01 (8.44e+00) -	5.10e+01 (3.88e+00) -	7.27e+02 (6.69e+02) -	5.76e+01 (1.69e+01) -
CEC19-MaTSO1-T46	4.94e+01 (1.27e+01)	8.97e+03 (2.74e+04) -	7.97e+01 (4.44e+01) -	6.54e+01 (3.30e+01) -	6.20e+01 (2.70e+01) -	5.92e+01 (2.31e+01) -
CEC19-MaTSO1-T47	5.55e+01 (2.22e+01)	4.74e+02 (8.14e+02) -	8.24e+01 (2.97e+01) -	7.28e+01 (3.79e+01) -	1.32e+03 (1.44e+03) -	5.80e+01 (2.38e+01) -
CEC19-MaTSO1-T48	6.18e+01 (2.73e+01)	4.03e+03 (1.42e+04) -	7.19e+01 (2.19e+01) -	8.52e+01 (5.45e+01) -	5.45e+01 (1.68e+01) +	5.88e+01 (2.43e+01) +
CEC19-MaTSO1-T49	4.68e+01 (3.25e-01)	1.94e+03 (4.61e+03) -	7.66e+01 (2.00e+01) -	5.10e+01 (4.24e+00) -	1.15e+03 (1.39e+03) -	7.02e+01 (3.24e+01) -
CEC19-MaTSO1-T50	4.65e+01 (3.42e-01)	9.71e+02 (1.32e+03) -	8.06e+01 (3.03e+01) -	7.46e+01 (3.44e+01) -	5.77e+01 (2.26e+01) -	5.29e+01 (3.43e+00) -
+/-/=	Base	0/50/0	0/50/0	2/47/1	1/49/0	4/45/1

TABLE S7

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO2 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO2 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
CEC19-MaTSO2-T1	1.13e-07 (5.94e-08)	1.09e+01 (7.58e+00) -	1.92e+01 (3.04e+00) -	1.68e+01 (7.04e+00) -	1.94e+01 (2.71e+00) -	2.01e+01 (1.89e-01) -
CEC19-MaTSO2-T2	1.63e-04 (7.27e-04)	1.10e+01 (7.56e+00) -	1.91e+01 (3.06e+00) -	1.70e+01 (6.56e+00) -	1.92e+01 (3.64e+00) -	1.98e+01 (1.24e+00) -
CEC19-MaTSO2-T3	1.56e-07 (6.33e-08)	1.08e+01 (7.71e+00) -	1.90e+01 (3.40e+00) -	1.70e+01 (6.62e+00) -	1.90e+01 (4.29e+00) -	2.02e+01 (1.09e-02) -
CEC19-MaTSO2-T4	9.74e-08 (6.34e-08)	8.89e+00 (7.08e+00) -	1.92e+01 (3.14e+00) -	1.67e+01 (7.29e+00) -	1.83e+01 (5.86e+00) -	1.92e+01 (3.83e+00) -
CEC19-MaTSO2-T5	1.35e-07 (5.09e-08)	9.00e+00 (7.16e+00) -	1.90e+01 (3.36e+00) -	1.65e+01 (6.77e+00) -	1.91e+01 (4.12e+00) -	1.77e+01 (5.15e+00) -
CEC19-MaTSO2-T6	1.12e-07 (6.38e-08)	9.27e+00 (6.93e+00) -	1.90e+01 (3.18e+00) -	1.60e+01 (7.49e+00) -	1.87e+01 (4.42e+00) -	1.91e+01 (4.05e+00) -
CEC19-MaTSO2-T7	5.85e-08 (3.53e-08)	8.72e+00 (7.28e+00) -	1.89e+01 (3.32e+00) -	1.56e+01 (7.68e+00) -	1.93e+01 (3.18e+00) -	2.01e+01 (1.21e-01) -
CEC19-MaTSO2-T8	9.93e-08 (4.45e-08)	8.66e+00 (6.97e+00) -	1.91e+01 (3.18e+00) -	1.60e+01 (7.67e+00) -	2.00e+01 (4.23e-01) -	2.01e+01 (3.73e-01) -
CEC19-MaTSO2-T9	7.07e-08 (3.24e-08)	1.02e+01 (6.95e+00) -	1.90e+01 (3.35e+00) -	1.70e+01 (6.66e+00) -	2.00e+01 (1.45e-02) -	1.83e+01 (5.55e+00) -
CEC19-MaTSO2-T10	1.76e-07 (6.52e-08)	8.99e+00 (6.81e+00) -	1.89e+01 (3.25e+00) -	1.50e+01 (7.88e+00) -	1.85e+01 (5.04e+00) -	1.84e+01 (5.41e+00) -
CEC19-MaTSO2-T11	9.81e-08 (4.77e-08)	9.83e+00 (7.09e+00) -	1.91e+01 (3.22e+00) -	1.66e+01 (7.32e+00) -	2.00e+01 (1.03e-02) -	1.92e+01 (4.03e+00) -
CEC19-MaTSO2-T12	1.18e-07 (5.23e-08)	1.02e+01 (7.20e+00) -	1.92e+01 (3.35e+00) -	1.55e+01 (7.72e+00) -	1.70e+01 (6.88e+00) -	2.01e+01 (1.95e-01) -
CEC19-MaTSO2-T13	1.76e-07 (1.04e-07)	9.94e+00 (6.86e+00) -	1.91e+01 (3.01e+00) -	1.52e+01 (7.98e+00) -	2.00e+01 (1.65e-01) -	1.92e+01 (3.78e+00) -
CEC19-MaTSO2-T14	1.70e-07 (7.35e-08)	8.73e+00 (7.00e+00) -	1.90e+01 (3.28e+00) -	1.48e+01 (8.50e+00) -	1.78e+01 (5.91e+00) -	1.92e+01 (4.48e+00) -
CEC19-MaTSO2-T15	1.09e-07 (6.46e-08)	9.91e+00 (7.41e+00) -	1.91e+01 (3.06e+00) -	1.62e+01 (7.32e+00) -	1.43e+01 (8.98e+00) -	1.97e+01 (2.02e+00) -
CEC19-MaTSO2-T16	9.62e-08 (5.40e-08)	9.47e+00 (7.07e+00) -	1.91e+01 (3.14e+00) -	1.70e+01 (6.68e+00) -	1.92e+01 (3.76e+00) -	1.98e+01 (1.28e+00) -
CEC19-MaTSO2-T17	1.20e-07 (6.96e-08)	8.12e+00 (6.97e+00) -	1.92e+01 (2.96e+00) -	1.62e+01 (7.39e+00) -	1.91e+01 (4.11e+00) -	1.84e+01 (5.20e+00) -
CEC19-MaTSO2-T18	1.60e-07 (8.72e-08)	9.87e+00 (7.02e+00) -	1.91e+01 (3.10e+00) -	1.52e+01 (7.98e+00) -	1.75e+01 (6.61e+00) -	1.83e+01 (5.87e+00) -
CEC19-MaTSO2-T19	1.63e-07 (8.35e-08)	9.47e+00 (6.93e+00) -	1.91e+01 (3.08e+00) -	1.70e+01 (6.60e+00) -	1.91e+01 (4.15e+00) -	1.85e+01 (4.73e+00) -
CEC19-MaTSO2-T20	1.12e-07 (6.03e-08)	8.56e+00 (6.97e+00) -	1.91e+01 (2.94e+00) -	1.51e+01 (7.88e+00) -	2.02e+01 (1.56e-02) -	2.01e+01 (2.11e-01) -
CEC19-MaTSO2-T21	1.18e-07 (4.71e-08)	8.84e+00 (6.75e+00) -	1.89e+01 (3.35e+00) -	1.50e+01 (7.80e+00) -	1.76e+01 (6.09e+00) -	1.87e+01 (4.72e+00) -
CEC19-MaTSO2-T22	1.55e-07 (6.50e-08)	9.71e+00 (7.09e+00) -	1.91e+01 (3.00e+00) -	1.34e+01 (8.72e+00) -	1.81e+01 (5.00e+00) -	1.92e+01 (4.44e+00) -
CEC19-MaTSO2-T23	1.51e-07 (7.81e-08)	9.21e+00 (7.01e+00) -	1.91e+01 (3.19e+00) -	1.42e+01 (8.62e+00) -	1.81e+01 (5.88e+00) -	1.93e+01 (3.89e+00) -
CEC19-MaTSO2-T24	1.63e-07 (8.00e-08)	9.33e+00 (6.91e+00) -	1.91e+01 (3.10e+00) -	1.70e+01 (6.63e+00) -	1.72e+01 (7.11e+00) -	1.86e+01 (3.68e+00) -
CEC19-MaTSO2-T25	6.57e-04 (2.94e-03)	9.78e+00 (7.05e+00) -	1.90e+01 (3.23e+00) -	1.60e+01 (7.60e+00) -	1.91e+01 (4.20e+00) -	1.94e+01 (2.86e+00) -
CEC19-MaTSO2-T26	1.77e-07 (5.60e-08)	9.90e+00 (7.11e+00) -	1.91e+01 (3.05e+00) -	1.61e+01 (7.48e+00) -	1.66e+01 (6.43e+00) -	1.98e+01 (1.04e+00) -
CEC19-MaTSO2-T27	1.58e-07 (7.37e-08)	1.06e+01 (7.16e+00) -	1.90e+01 (3.32e+00) -	1.40e+01 (8.81e+00) -	1.92e+01 (3.64e+00) -	1.78e+01 (5.93e+00) -
CEC19-MaTSO2-T28	7.24e-08 (3.27e-08)	9.29e+00 (6.71e+00) -	1.91e+01 (3.14e+00) -	1.65e+01 (6.99e+00) -	1.91e+01 (4.43e+00) -	1.87e+01 (3.79e+00) -
CEC19-MaTSO2-T29	1.18e-07 (6.94e-08)	9.50e+00 (7.23e+00) -	1.91e+01 (3.26e+00) -	1.62e+01 (6.92e+00) -	1.90e+01 (4.30e+00) -	1.75e+01 (6.53e+00) -
CEC19-MaTSO2-T30	8.29e-08 (2.97e-08)	9.65e+00 (6.83e+00) -	1.91e+01 (3.08e+00) -	1.60e+01 (6.91e+00) -	1.80e+01 (5.62e+00) -	1.83e+01 (5.75e+00) -
CEC19-MaTSO2-T31	1.05e-07 (5.34e-08)	9.24e+00 (6.92e+00) -	1.91e+01 (3.16e+00) -	1.60e+01 (7.65e+00) -	1.91e+01 (4.18e+00) -	1.77e+01 (6.18e+00) -
CEC19-MaTSO2-T32	1.66e-07 (5.64e-08)	9.83e+00 (6.85e+00) -	1.91e+01 (3.11e+00) -	1.62e+01 (7.20e+00) -	1.92e+01 (4.35e+00) -	1.84e+01 (5.40e+00) -
CEC19-MaTSO2-T33	1.83e-07 (9.33e-08)	9.15e+00 (6.71e+00) -	1.93e+01 (2.86e+00) -	1.56e+01 (7.52e+00) -	1.81e+01 (5.83e+00) -	1.79e+01 (5.71e+00) -
CEC19-MaTSO2-T34	1.66e-07 (6.63e-08)	9.79e+00 (7.19e+00) -	1.91e+01 (3.07e+00) -	1.59e+01 (7.40e+00) -	1.95e+01 (2.23e+00) -	1.85e+01 (4.77e+00) -
CEC19-MaTSO2-T35	9.78e-08 (5.56e-08)	9.20e+00 (7.02e+00) -	1.92e+01 (3.05e+00) -	1.57e+01 (7.72e+00) -	1.74e+01 (6.31e+00) -	2.01e+01 (2.84e-01) -
CEC19-MaTSO2-T36	1.05e-07 (4.33e-08)	8.63e+00 (7.44e+00) -	1.90e+01 (3.30e+00) -	1.66e+01 (6.90e+00) -	1.91e+01 (4.42e+00) -	2.02e+01 (1.71e-02) -
CEC19-MaTSO2-T37	1.04e-07 (4.83e-08)	9.64e+00 (7.33e+00) -	1.92e+01 (3.02e+00) -	1.62e+01 (7.25e+00) -	1.62e+01 (7.75e+00) -	1.92e+01 (4.15e+00) -
CEC19-MaTSO2-T38	1.39e-07 (5.87e-08)	8.99e+00 (7.12e+00) -	1.91e+01 (3.13e+00) -	1.65e+01 (7.58e+00) -	1.82e+01 (5.61e+00) -	1.74e+01 (6.50e+00) -
CEC19-MaTSO2-T39	1.14e-07 (5.29e-08)	9.40e+00 (7.07e+00) -	1.90e+01 (3.21e+00) -	1.59e+01 (7.47e+00) -	1.91e+01 (4.18e+00) -	1.85e+01 (5.10e+00) -
CEC19-MaTSO2-T40	1.55e-07 (6.96e-08)	9.40e+00 (6.98e+00) -	1.90e+01 (3.42e+00) -	1.64e+01 (6.97e+00) -	1.99e+01 (9.43e-01) -	1.87e+01 (4.29e+00) -
CEC19-MaTSO2-T41	7.72e-08 (4.10e-08)	9.81e+00 (6.91e+00) -	1.91e+01 (3.09e+00) -	1.71e+01 (6.56e+00) -	1.73e+01 (6.61e+00) -	1.71e+01 (6.56e+00) -
CEC19-MaTSO2-T42	1.55e-07 (7.26e-08)	9.47e+00 (7.30e+00) -	1.91e+01 (3.00e+00) -	1.68e+01 (7.00e+00) -	1.86e+01 (4.67e+00) -	1.93e+01 (3.27e+00) -
CEC19-MaTSO2-T43	1.64e-07 (7.91e-08)	1.02e+01 (6.91e+00) -	1.92e+01 (3.00e+00) -	1.62e+01 (7.36e+00) -	1.62e+01 (7.80e+00) -	1.92e+01 (4.43e+00) -
CEC19-MaTSO2-T44	1.60e-07 (7.92e-08)	9.77e+00 (7.10e+00) -	1.91e+01 (3.08e+00) -	1.70e+01 (6.70e+00) -	1.81e+01 (5.29e+00) -	1.94e+01 (3.39e+00) -
CEC19-MaTSO2-T45	2.53e-07 (1.03e-07)	1.01e+01 (7.14e+00) -	1.90e+01 (3.30e+00) -	1.61e+01 (7.30e+00) -	1.81e+01 (5.92e+00) -	2.00e+01 (8.58e-01) -
CEC19-MaTSO2-T46	2.10e-07 (1.73e-07)	9.40e+00 (6.85e+00) -	1.91e+01 (3.14e+00) -	1.57e+01 (7.98e+00) -	2.00e+01 (3.92e-01) -	1.74e+01 (6.50e+00) -
CEC19-MaTSO2-T47	8.23e-08 (4.11e-08)	1.00e+01 (6.85e+00) -	1.91e+01 (3.16e+00) -	1.52e+01 (8.02e+00) -	1.62e+01 (7.81e+00) -	2.01e+01 (3.18e-01) -
CEC19-MaTSO2-T48	1.30e-07 (5.93e-08)	9.94e+00 (7.37e+00) -	1.90e+01 (3.25e+00) -	1.71e+01 (6.53e+00) -	1.65e+01 (7.67e+00) -	1.87e+01 (3.95e+00) -
CEC19-MaTSO2-T49	1.63e-07 (5.35e-08)	9.72e+00 (7.19e+00) -	1.91e+01 (3.16e+00) -	1.67e+01 (7.17e+00) -	1.81e+01 (5.84e+00) -	1.84e+01 (5.47e+00) -
CEC19-MaTSO2-T50	1.23e-07 (7.98e-08)	9.05e+00 (7.24e+00) -	1.92e+01 (3.02e+00) -	1.65e+01 (6.77e+00) -	1.83e+01 (5.26e+00) -	2.01e+01 (4.97e-01) -
+/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S8

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO3 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/=-"), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO3 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MATDE	SBO	EMEA	DE
CEC19-MaTSO3-T1	3.92e+02 (1.35e+01)	1.97e+02 (1.04e+02) +	4.12e+02 (1.54e+01) -	3.95e+02 (1.49e+01) =	3.22e+02 (5.28e+01) +	4.08e+02 (1.58e+01) -
CEC19-MaTSO3-T2	3.99e+02 (1.32e+01)	2.32e+02 (1.22e+02) +	4.17e+02 (1.72e+01) -	3.99e+02 (2.02e+01) =	4.06e+02 (1.86e+01) =	4.07e+02 (1.59e+01) =
CEC19-MaTSO3-T3	3.95e+02 (1.36e+01)	2.11e+02 (1.31e+02) +	4.15e+02 (1.54e+01) -	4.05e+02 (1.26e+01) -	3.17e+02 (5.07e+01) +	4.05e+02 (1.72e+01) =
CEC19-MaTSO3-T4	3.98e+02 (1.35e+01)	2.60e+02 (1.05e+02) +	4.07e+02 (2.23e+01) -	4.01e+02 (1.43e+01) =	4.07e+02 (1.64e+01) =	4.10e+02 (1.33e+01) -
CEC19-MaTSO3-T5	3.90e+02 (1.67e+01)	2.22e+02 (1.13e+02) +	4.13e+02 (1.36e+01) -	4.00e+02 (1.60e+01) -	3.62e+02 (6.39e+01) =	4.04e+02 (1.55e+01) -
CEC19-MaTSO3-T6	3.90e+02 (8.89e+00)	2.27e+02 (9.20e+01) +	4.18e+02 (1.95e+01) -	4.09e+02 (1.82e+01) -	4.07e+02 (1.33e+01) -	4.01e+02 (1.71e+01) -
CEC19-MaTSO3-T7	3.89e+02 (1.69e+01)	2.28e+02 (1.07e+02) +	4.13e+02 (1.66e+01) -	4.05e+02 (1.49e+01) -	3.14e+02 (5.08e+01) +	4.09e+02 (1.51e+01) -
CEC19-MaTSO3-T8	3.96e+02 (1.10e+01)	1.94e+02 (8.82e+01) +	4.07e+02 (1.63e+01) -	4.04e+02 (2.06e+01) -	4.18e+02 (1.96e+01) -	4.13e+02 (1.36e+01) -
CEC19-MaTSO3-T9	3.91e+02 (1.54e+01)	2.11e+02 (1.05e+02) +	4.14e+02 (1.56e+01) -	4.01e+02 (1.59e+01) =	3.34e+02 (5.60e+01) +	4.11e+02 (1.33e+01) -
CEC19-MaTSO3-T10	3.89e+02 (1.91e+01)	2.16e+02 (1.11e+02) +	4.13e+02 (1.79e+01) -	4.04e+02 (1.97e+01) =	4.11e+02 (1.71e+01) =	4.12e+02 (1.62e+01) -
CEC19-MaTSO3-T11	3.90e+02 (1.46e+01)	1.76e+02 (1.08e+02) +	4.17e+02 (1.22e+01) -	4.09e+02 (1.40e+01) -	3.24e+02 (5.47e+01) +	4.01e+02 (1.60e+01) -
CEC19-MaTSO3-T12	3.95e+02 (1.41e+01)	2.16e+02 (1.02e+02) +	4.19e+02 (1.59e+01) -	4.04e+02 (1.36e+01) =	4.05e+02 (1.30e+01) -	4.15e+02 (1.40e+01) -
CEC19-MaTSO3-T13	3.86e+02 (1.74e+01)	2.28e+02 (9.85e+01) +	4.16e+02 (1.75e+01) -	3.96e+02 (1.24e+01) =	3.12e+02 (5.37e+01) +	4.07e+02 (1.57e+01) -
CEC19-MaTSO3-T14	3.99e+02 (1.37e+01)	2.06e+02 (9.70e+01) +	4.11e+02 (1.51e+01) -	4.04e+02 (1.51e+01) =	4.07e+02 (1.68e+01) =	4.07e+02 (1.41e+01) =
CEC19-MaTSO3-T15	3.88e+02 (1.84e+01)	2.58e+02 (1.45e+02) +	4.16e+02 (1.62e+01) -	4.09e+02 (1.41e+01) -	3.08e+02 (5.60e+01) +	4.04e+02 (1.28e+01) -
CEC19-MaTSO3-T16	3.94e+02 (1.85e+01)	2.09e+02 (1.05e+02) +	4.21e+02 (1.62e+01) -	4.09e+02 (1.48e+01) -	4.08e+02 (1.63e+01) -	4.13e+02 (1.77e+01) -
CEC19-MaTSO3-T17	3.93e+02 (1.52e+01)	2.26e+02 (1.10e+02) +	4.10e+02 (1.68e+01) -	4.00e+02 (1.53e+01) =	3.52e+02 (7.33e+01) +	4.13e+02 (1.03e+01) -
CEC19-MaTSO3-T18	3.95e+02 (1.56e+01)	2.13e+02 (1.22e+02) +	4.18e+02 (1.37e+01) -	4.05e+02 (1.63e+01) =	4.07e+02 (1.79e+01) =	4.09e+02 (1.67e+01) -
CEC19-MaTSO3-T19	3.95e+02 (1.33e+01)	2.02e+02 (8.77e+01) +	4.15e+02 (1.71e+01) -	4.09e+02 (1.65e+01) -	3.02e+02 (4.94e+01) +	4.14e+02 (1.49e+01) -
CEC19-MaTSO3-T20	3.89e+02 (1.82e+01)	2.17e+02 (1.04e+02) +	4.10e+02 (1.39e+01) -	4.01e+02 (2.14e+01) -	4.07e+02 (1.41e+01) -	4.06e+02 (1.66e+01) -
CEC19-MaTSO3-T21	3.92e+02 (1.52e+01)	1.78e+02 (8.59e+01) +	4.08e+02 (1.68e+01) -	4.06e+02 (1.57e+01) -	3.11e+02 (6.19e+01) +	4.16e+02 (1.62e+01) -
CEC19-MaTSO3-T22	3.88e+02 (1.37e+01)	2.45e+02 (1.12e+02) +	4.08e+02 (1.58e+01) -	4.07e+02 (1.69e+01) -	4.09e+02 (1.81e+01) -	4.06e+02 (1.36e+01) -
CEC19-MaTSO3-T23	3.92e+02 (1.86e+01)	2.49e+02 (1.37e+02) +	4.19e+02 (1.72e+01) -	4.06e+02 (9.49e+00) =	3.20e+02 (5.81e+01) +	4.11e+02 (1.55e+01) -
CEC19-MaTSO3-T24	3.94e+02 (1.19e+01)	2.03e+02 (8.35e+01) +	4.15e+02 (1.88e+01) -	4.04e+02 (1.47e+01) -	4.11e+02 (1.66e+01) =	4.07e+02 (1.71e+01) -
CEC19-MaTSO3-T25	3.95e+02 (1.27e+01)	1.98e+02 (1.08e+02) +	4.17e+02 (1.62e+01) -	4.01e+02 (1.59e+01) =	3.03e+02 (5.23e+01) +	4.17e+02 (1.66e+01) -
CEC19-MaTSO3-T26	3.91e+02 (1.45e+01)	2.52e+02 (1.41e+02) +	4.13e+02 (1.73e+01) -	4.09e+02 (1.78e+01) -	3.99e+02 (1.83e+01) =	4.06e+02 (1.48e+01) -
CEC19-MaTSO3-T27	3.97e+02 (1.29e+01)	2.42e+02 (1.16e+02) +	4.14e+02 (1.60e+01) -	4.01e+02 (1.74e+01) =	3.33e+02 (6.44e+01) +	4.07e+02 (1.14e+01) -
CEC19-MaTSO3-T28	3.96e+02 (1.81e+01)	2.50e+02 (1.22e+02) +	4.07e+02 (1.97e+01) =	4.02e+02 (1.43e+01) =	4.13e+02 (1.96e+01) -	4.10e+02 (1.85e+01) -
CEC19-MaTSO3-T29	3.93e+02 (1.66e+01)	2.18e+02 (1.22e+02) +	4.08e+02 (1.61e+01) -	4.04e+02 (2.99e+01) -	3.38e+02 (5.78e+01) +	4.09e+02 (2.25e+01) -
CEC19-MaTSO3-T30	3.98e+02 (1.22e+01)	2.16e+02 (8.66e+01) +	4.14e+02 (1.94e+01) -	4.04e+02 (1.54e+01) =	4.06e+02 (2.02e+01) =	4.09e+02 (1.95e+01) -
CEC19-MaTSO3-T31	3.94e+02 (1.71e+01)	2.35e+02 (8.24e+01) +	4.07e+02 (1.96e+01) -	4.07e+02 (1.54e+01) -	3.25e+02 (5.36e+01) +	4.07e+02 (1.32e+01) -
CEC19-MaTSO3-T32	3.94e+02 (1.31e+01)	2.05e+02 (1.11e+02) +	4.17e+02 (1.83e+01) -	4.05e+02 (1.37e+01) =	4.10e+02 (1.90e+01) -	4.02e+02 (1.87e+01) =
CEC19-MaTSO3-T33	3.89e+02 (1.95e+01)	2.34e+02 (1.07e+02) +	4.19e+02 (1.77e+01) -	4.02e+02 (1.74e+01) -	3.40e+02 (6.19e+01) +	4.06e+02 (1.35e+01) -
CEC19-MaTSO3-T34	3.97e+02 (1.54e+01)	1.98e+02 (1.13e+02) +	4.14e+02 (1.67e+01) -	4.06e+02 (1.90e+01) =	4.15e+02 (1.07e+01) -	4.11e+02 (1.20e+01) -
CEC19-MaTSO3-T35	3.88e+02 (2.30e+01)	2.18e+02 (1.02e+02) +	4.08e+02 (1.64e+01) -	4.10e+02 (1.24e+01) -	3.43e+02 (6.52e+01) +	4.11e+02 (1.69e+01) -
CEC19-MaTSO3-T36	3.90e+02 (1.84e+01)	1.91e+02 (8.90e+01) +	4.13e+02 (1.86e+01) -	4.04e+02 (2.01e+01) -	4.09e+02 (1.86e+01) -	4.05e+02 (1.55e+01) -
CEC19-MaTSO3-T37	3.93e+02 (1.63e+01)	2.33e+02 (1.04e+02) +	4.19e+02 (1.65e+01) -	4.06e+02 (1.08e+01) -	3.09e+02 (6.52e+01) +	4.13e+02 (1.53e+01) -
CEC19-MaTSO3-T38	3.96e+02 (1.54e+01)	2.55e+02 (1.20e+02) +	4.16e+02 (1.53e+01) -	4.06e+02 (1.71e+01) =	3.99e+02 (1.69e+01) =	4.12e+02 (1.53e+01) -
CEC19-MaTSO3-T39	3.97e+02 (1.24e+01)	2.17e+02 (1.12e+02) +	4.12e+02 (1.48e+01) -	4.06e+02 (1.50e+01) =	3.44e+02 (6.87e+01) +	4.03e+02 (1.15e+01) =
CEC19-MaTSO3-T40	3.98e+02 (1.51e+01)	2.18e+02 (1.18e+02) +	4.17e+02 (1.52e+01) -	4.05e+02 (1.13e+01) =	4.04e+02 (1.56e+01) =	4.04e+02 (1.70e+01) =
CEC19-MaTSO3-T41	3.90e+02 (2.10e+01)	1.98e+02 (9.05e+01) +	4.18e+02 (1.33e+01) -	4.07e+02 (1.63e+01) -	3.05e+02 (4.59e+01) +	4.13e+02 (1.49e+01) -
CEC19-MaTSO3-T42	3.92e+02 (1.59e+01)	2.44e+02 (1.28e+02) +	4.10e+02 (1.71e+01) -	4.00e+02 (1.48e+01) =	4.04e+02 (2.40e+01) -	4.07e+02 (1.47e+01) -
CEC19-MaTSO3-T43	3.90e+02 (1.23e+01)	2.05e+02 (1.01e+02) +	4.15e+02 (1.53e+01) -	4.10e+02 (1.11e+01) -	3.22e+02 (6.70e+01) +	4.11e+02 (1.51e+01) -
CEC19-MaTSO3-T44	3.87e+02 (1.81e+01)	1.76e+02 (8.32e+01) +	4.08e+02 (1.94e+01) -	4.04e+02 (2.12e+01) -	4.15e+02 (1.30e+01) -	4.06e+02 (1.57e+01) -
CEC19-MaTSO3-T45	3.94e+02 (1.64e+01)	2.18e+02 (1.15e+02) +	4.17e+02 (1.44e+01) -	4.03e+02 (1.73e+01) =	3.37e+02 (7.23e+01) +	4.10e+02 (1.66e+01) -
CEC19-MaTSO3-T46	3.91e+02 (1.75e+01)	2.22e+02 (1.08e+02) +	4.15e+02 (1.86e+01) -	4.03e+02 (1.90e+01) -	4.01e+02 (1.98e+01) =	4.04e+02 (1.51e+01) -
CEC19-MaTSO3-T47	3.95e+02 (1.58e+01)	2.07e+02 (9.67e+01) +	4.10e+02 (1.86e+01) -	3.95e+02 (1.96e+01) =	3.29e+02 (6.13e+01) +	4.07e+02 (1.88e+01) -
CEC19-MaTSO3-T48	3.92e+02 (1.54e+01)	2.24e+02 (1.13e+02) +	4.08e+02 (1.55e+01) -	4.05e+02 (1.58e+01) -	4.06e+02 (1.58e+01) -	4.08e+02 (1.84e+01) -
CEC19-MaTSO3-T49	3.96e+02 (2.00e+01)	2.42e+02 (1.16e+02) +	4.15e+02 (1.75e+01) -	4.01e+02 (1.43e+01) =	3.10e+02 (4.90e+01) +	4.11e+02 (1.78e+01) -
CEC19-MaTSO3-T50	3.91e+02 (1.65e+01)	1.75e+02 (7.41e+01) +	4.11e+02 (2.20e+01) -	4.02e+02 (1.73e+01) -	4.09e+02 (1.48e+01) -	4.06e+02 (1.19e+01) -
+/=-	Base	50/0/0	0/49/1	0/28/22	24/17/9	0/44/6

TABLE S9

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO4 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON’S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY (“+/-/=”), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO4 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
CEC19-MaTSO4-T1	1.22e-06 (7.14e-07)	1.99e-02 (3.90e-02) -	1.22e-02 (5.65e-03) -	5.63e-04 (1.66e-03) -	1.82e-01 (4.22e-02) -	3.89e-03 (1.16e-03) -
CEC19-MaTSO4-T2	9.26e-07 (7.27e-07)	1.86e-02 (3.40e-02) -	1.25e-02 (3.31e-03) -	2.11e-03 (7.87e-04) -	3.64e-03 (1.31e-03) -	4.34e-03 (1.55e-03) -
CEC19-MaTSO4-T3	3.72e-04 (1.65e-03)	2.11e-02 (2.77e-02) -	1.29e-02 (4.59e-03) -	2.25e-03 (8.44e-04) -	1.76e-01 (4.37e-02) -	4.50e-03 (1.93e-03) -
CEC19-MaTSO4-T4	1.28e-06 (7.76e-07)	2.93e-02 (5.51e-02) -	1.30e-02 (4.30e-03) -	2.13e-03 (1.14e-03) -	4.25e-03 (2.03e-03) -	4.74e-03 (1.84e-03) -
CEC19-MaTSO4-T5	1.62e-06 (1.03e-06)	3.57e-02 (5.17e-02) -	1.20e-02 (4.92e-03) -	2.31e-03 (9.71e-04) -	1.70e-01 (3.83e-02) -	3.65e-03 (1.25e-03) -
CEC19-MaTSO4-T6	1.66e-06 (1.07e-06)	3.11e-02 (5.63e-02) -	1.43e-02 (4.13e-03) -	2.84e-03 (1.43e-03) -	4.84e-03 (2.04e-03) -	4.66e-03 (9.90e-04) -
CEC19-MaTSO4-T7	2.27e-06 (1.36e-06)	3.54e-02 (5.98e-02) -	1.33e-02 (4.47e-03) -	4.14e-03 (8.85e-03) -	1.64e-01 (3.99e-02) -	3.89e-03 (9.30e-04) -
CEC19-MaTSO4-T8	2.39e-06 (1.26e-06)	3.68e-02 (4.71e-02) -	1.42e-02 (6.76e-03) -	2.35e-03 (1.92e-03) -	5.06e-03 (1.91e-03) -	4.20e-03 (1.36e-03) -
CEC19-MaTSO4-T9	2.43e-06 (1.46e-06)	1.92e-02 (2.53e-02) -	1.26e-02 (4.20e-03) -	2.57e-03 (1.80e-03) -	1.64e-01 (3.45e-02) -	4.12e-03 (1.76e-03) -
CEC19-MaTSO4-T10	1.38e-06 (9.07e-07)	4.52e-02 (1.05e-01) -	1.15e-02 (2.01e-03) -	2.01e-03 (1.09e-03) -	5.07e-03 (2.20e-03) -	4.22e-03 (1.36e-03) -
CEC19-MaTSO4-T11	1.81e-06 (1.44e-06)	1.79e-02 (3.29e-02) -	1.16e-02 (3.25e-03) -	1.92e-03 (9.45e-04) -	1.68e-01 (3.20e-02) -	4.80e-03 (1.60e-03) -
CEC19-MaTSO4-T12	1.41e-06 (7.73e-07)	3.43e-02 (8.39e-02) -	1.45e-02 (4.57e-03) -	2.10e-03 (1.03e-03) -	4.87e-03 (2.29e-03) -	5.63e-03 (3.27e-03) -
CEC19-MaTSO4-T13	2.58e-06 (1.88e-06)	2.12e-02 (3.13e-02) -	1.10e-02 (4.78e-03) -	2.21e-03 (1.51e-03) -	1.82e-01 (3.97e-02) -	4.24e-03 (1.41e-03) -
CEC19-MaTSO4-T14	8.09e-07 (3.50e-07)	3.44e-02 (7.65e-02) -	1.11e-02 (4.57e-03) -	1.80e-03 (6.88e-04) -	4.40e-03 (1.25e-03) -	4.93e-03 (1.82e-03) -
CEC19-MaTSO4-T15	3.72e-04 (1.65e-03)	5.20e-02 (1.05e-01) -	1.21e-02 (3.36e-03) -	2.31e-03 (7.30e-04) -	1.67e-01 (3.82e-02) -	4.89e-03 (1.77e-03) -
CEC19-MaTSO4-T16	2.99e-06 (2.72e-06)	1.34e-02 (1.36e-02) -	1.27e-02 (5.52e-03) -	2.20e-03 (1.03e-03) -	4.43e-03 (1.59e-03) -	5.80e-03 (2.72e-03) -
CEC19-MaTSO4-T17	1.50e-06 (1.11e-06)	2.59e-02 (8.02e-02) -	1.26e-02 (5.31e-03) -	2.12e-03 (1.40e-03) -	1.70e-01 (5.25e-02) -	4.21e-03 (1.46e-03) -
CEC19-MaTSO4-T18	1.65e-06 (1.04e-06)	2.69e-02 (6.00e-02) -	1.38e-02 (6.07e-03) -	1.85e-03 (6.73e-04) -	4.82e-03 (1.82e-03) -	4.39e-03 (1.61e-03) -
CEC19-MaTSO4-T19	2.23e-06 (1.46e-06)	2.28e-02 (2.44e-02) -	1.20e-02 (3.95e-03) -	1.86e-03 (7.20e-04) -	1.69e-01 (3.18e-02) -	4.46e-03 (1.17e-03) -
CEC19-MaTSO4-T20	1.42e-06 (7.07e-07)	2.47e-02 (2.78e-02) -	1.29e-02 (4.05e-03) -	1.91e-03 (7.45e-04) -	4.81e-03 (1.51e-03) -	4.52e-03 (2.08e-03) -
CEC19-MaTSO4-T21	1.72e-06 (8.11e-07)	1.31e-02 (1.17e-02) -	1.27e-02 (6.40e-03) -	2.13e-03 (1.17e-03) -	4.17e-03 (1.22e-03) -	4.33e-03 (1.29e-03) -
CEC19-MaTSO4-T22	8.64e-04 (2.69e-03)	2.86e-02 (5.19e-02) -	1.35e-02 (3.51e-03) -	2.25e-03 (9.42e-04) -	4.14e-03 (1.70e-03) -	3.97e-03 (1.29e-03) -
CEC19-MaTSO4-T23	3.71e-04 (1.65e-03)	2.59e-02 (3.23e-02) -	1.22e-02 (3.59e-03) -	2.30e-03 (1.17e-03) -	1.81e-01 (3.14e-02) -	4.67e-03 (1.55e-03) -
CEC19-MaTSO4-T24	1.31e-06 (8.94e-07)	3.00e-02 (3.49e-02) -	1.33e-02 (4.10e-03) -	1.89e-03 (6.02e-04) -	4.17e-03 (1.22e-03) -	4.55e-03 (1.68e-03) -
CEC19-MaTSO4-T25	1.75e-06 (1.18e-06)	1.31e-02 (1.16e-02) -	1.17e-02 (4.89e-03) -	2.66e-03 (2.05e-03) -	1.69e-01 (4.09e-02) -	4.82e-03 (1.63e-03) -
CEC19-MaTSO4-T26	1.74e-06 (8.62e-07)	6.62e-02 (1.44e-01) -	1.29e-02 (4.01e-03) -	2.29e-03 (1.54e-03) -	4.02e-03 (1.43e-03) -	4.38e-03 (1.68e-03) -
CEC19-MaTSO4-T27	1.12e-06 (5.67e-07)	6.52e-02 (1.40e-01) -	1.17e-02 (3.46e-03) -	2.45e-03 (1.19e-03) -	1.59e-01 (3.97e-02) -	4.40e-03 (1.46e-03) -
CEC19-MaTSO4-T28	2.30e-06 (1.20e-06)	2.91e-02 (8.25e-02) -	1.30e-02 (5.47e-03) -	3.60e-03 (4.94e-03) -	4.59e-03 (1.90e-03) -	4.39e-03 (1.79e-03) -
CEC19-MaTSO4-T29	1.77e-06 (1.12e-06)	3.46e-02 (3.43e-02) -	1.38e-02 (6.17e-03) -	2.32e-03 (1.06e-03) -	1.59e-01 (4.02e-02) -	4.68e-03 (1.83e-03) -
CEC19-MaTSO4-T30	2.31e-06 (1.01e-06)	1.71e-02 (2.22e-02) -	1.25e-02 (6.17e-03) -	2.48e-03 (8.42e-04) -	5.31e-03 (1.86e-03) -	5.52e-03 (1.63e-03) -
CEC19-MaTSO4-T31	1.64e-06 (1.04e-06)	3.31e-02 (4.41e-02) -	1.21e-02 (4.15e-03) -	2.51e-03 (1.28e-03) -	1.51e-01 (3.97e-02) -	4.49e-03 (1.49e-03) -
CEC19-MaTSO4-T32	1.33e-06 (8.60e-07)	1.47e-02 (1.97e-02) -	1.24e-02 (4.08e-03) -	3.00e-03 (1.87e-03) -	4.58e-03 (1.91e-03) -	4.28e-03 (1.06e-03) -
CEC19-MaTSO4-T33	8.86e-07 (6.00e-07)	6.57e-02 (1.05e-01) -	1.41e-02 (4.02e-03) -	2.50e-03 (1.29e-03) -	1.70e-01 (4.80e-02) -	4.76e-03 (1.36e-03) -
CEC19-MaTSO4-T34	1.13e-06 (6.68e-07)	4.00e-02 (9.99e-02) -	1.34e-02 (4.95e-03) -	2.27e-03 (9.87e-04) -	4.74e-03 (1.50e-03) -	5.17e-03 (2.00e-03) -
CEC19-MaTSO4-T35	1.40e-06 (9.40e-07)	2.68e-02 (5.18e-02) -	1.38e-02 (6.57e-03) -	2.63e-03 (2.29e-03) -	1.78e-01 (4.35e-02) -	4.49e-03 (1.52e-03) -
CEC19-MaTSO4-T36	1.87e-06 (1.28e-06)	4.83e-02 (8.04e-02) -	1.38e-02 (6.07e-03) -	2.95e-03 (2.52e-03) -	4.61e-03 (1.76e-03) -	5.16e-03 (3.14e-03) -
CEC19-MaTSO4-T37	1.37e-06 (8.09e-07)	2.18e-02 (5.32e-02) -	1.07e-02 (4.23e-03) -	2.49e-03 (1.76e-03) -	1.67e-01 (4.35e-02) -	4.07e-03 (1.46e-03) -
CEC19-MaTSO4-T38	1.80e-06 (8.71e-07)	2.70e-02 (5.86e-02) -	1.40e-02 (6.19e-03) -	3.41e-03 (4.66e-03) -	4.17e-03 (1.59e-03) -	4.09e-03 (1.71e-03) -
CEC19-MaTSO4-T39	3.72e-04 (1.65e-03)	5.24e-02 (8.13e-02) -	1.38e-02 (6.02e-03) -	2.56e-03 (1.93e-03) -	1.77e-01 (4.00e-02) -	4.65e-03 (1.65e-03) -
CEC19-MaTSO4-T40	1.14e-06 (7.57e-07)	1.84e-02 (2.75e-02) -	1.09e-02 (4.61e-03) -	2.50e-03 (1.53e-03) -	4.38e-03 (1.59e-03) -	4.71e-03 (1.47e-03) -
CEC19-MaTSO4-T41	1.34e-06 (9.06e-07)	2.32e-02 (3.05e-02) -	1.45e-02 (5.58e-03) -	2.15e-03 (8.94e-04) -	1.62e-01 (4.15e-02) -	3.86e-03 (1.46e-03) -
CEC19-MaTSO4-T42	9.15e-07 (5.59e-07)	3.74e-02 (4.26e-02) -	1.33e-02 (5.00e-03) -	1.97e-03 (6.21e-04) -	4.50e-03 (1.03e-03) -	4.81e-03 (1.67e-03) -
CEC19-MaTSO4-T43	1.96e-06 (1.10e-06)	2.27e-02 (2.54e-02) -	1.27e-02 (3.35e-03) -	2.37e-03 (9.46e-04) -	1.78e-01 (5.23e-02) -	4.04e-03 (1.31e-03) -
CEC19-MaTSO4-T44	2.08e-06 (1.03e-06)	4.10e-02 (7.60e-02) -	1.29e-02 (5.52e-03) -	2.33e-03 (9.80e-04) -	4.90e-03 (1.71e-03) -	4.99e-03 (3.04e-03) -
CEC19-MaTSO4-T45	1.34e-06 (8.50e-07)	1.50e-02 (2.78e-02) -	1.25e-02 (3.90e-03) -	2.53e-03 (1.69e-03) -	1.77e-01 (3.19e-02) -	5.35e-03 (3.58e-03) -
CEC19-MaTSO4-T46	2.02e-06 (1.34e-06)	2.78e-02 (4.68e-02) -	1.19e-02 (3.27e-03) -	3.22e-03 (2.09e-03) -	4.12e-03 (1.56e-03) -	5.11e-03 (2.60e-03) -
CEC19-MaTSO4-T47	1.01e-06 (9.65e-07)	1.42e-02 (1.65e-02) -	1.12e-02 (4.44e-03) -	2.89e-03 (2.32e-03) -	1.64e-01 (3.29e-02) -	4.16e-03 (1.39e-03) -
CEC19-MaTSO4-T48	2.70e-06 (1.48e-06)	2.00e-02 (2.36e-02) -	1.50e-02 (6.46e-03) -	2.71e-03 (1.40e-03) -	5.31e-03 (1.69e-03) -	5.44e-03 (2.81e-03) -
CEC19-MaTSO4-T49	2.14e-06 (1.56e-06)	2.24e-02 (2.68e-02) -	1.40e-02 (5.40e-03) -	2.51e-03 (1.13e-03) -	1.66e-01 (3.67e-02) -	4.68e-03 (1.54e-03) -
CEC19-MaTSO4-T50	3.71e-04 (1.65e-03)	3.95e-02 (5.38e-02) -	1.16e-02 (4.22e-03) -	2.49e-03 (1.03e-03) -	4.72e-03 (2.51e-03) -	4.41e-03 (1.84e-03) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S10

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO5 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO5 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
CEC19-MaTSO5-T1	8.08e-02 (2.17e-01)	1.05e+00 (8.70e-01) -	2.14e+00 (3.65e-01) -	5.20e-01 (1.30e-01) -	1.33e+00 (1.83e-01) -	1.37e+00 (1.84e-01) -
CEC19-MaTSO5-T2	4.48e-02 (7.75e-03)	1.21e+00 (6.65e-01) -	2.05e+00 (2.67e-01) -	1.16e+00 (2.19e-01) -	1.27e+00 (1.95e-01) -	1.33e+00 (2.36e-01) -
CEC19-MaTSO5-T3	3.65e-02 (1.16e-02)	1.05e+00 (5.06e-01) -	2.13e+00 (3.22e-01) -	1.13e+00 (2.08e-01) -	1.42e+00 (1.54e-01) -	1.49e+00 (2.61e-01) -
CEC19-MaTSO5-T4	2.51e-02 (9.27e-03)	1.04e+00 (5.74e-01) -	2.13e+00 (2.51e-01) -	1.17e+00 (3.95e-01) -	1.37e+00 (2.77e-01) -	1.32e+00 (2.74e-01) -
CEC19-MaTSO5-T5	3.82e-02 (1.05e-02)	1.13e+00 (5.73e-01) -	2.15e+00 (3.05e-01) -	1.09e+00 (3.53e-01) -	1.34e+00 (1.69e-01) -	1.42e+00 (2.48e-01) -
CEC19-MaTSO5-T6	4.20e-02 (1.30e-02)	1.31e+00 (6.31e-01) -	2.24e+00 (3.30e-01) -	1.11e+00 (1.72e-01) -	1.27e+00 (1.92e-01) -	1.45e+00 (2.90e-01) -
CEC19-MaTSO5-T7	6.05e-02 (1.17e-01)	1.10e+00 (5.73e-01) -	2.14e+00 (5.18e-01) -	1.21e+00 (2.98e-01) -	1.38e+00 (2.08e-01) -	1.27e+00 (2.40e-01) -
CEC19-MaTSO5-T8	1.16e-01 (2.21e-01)	1.55e+00 (1.04e+00) -	2.16e+00 (3.71e-01) -	1.25e+00 (2.53e-01) -	1.31e+00 (2.05e-01) -	1.33e+00 (2.42e-01) -
CEC19-MaTSO5-T9	5.47e-02 (1.99e-02)	1.25e+00 (5.91e-01) -	2.09e+00 (2.83e-01) -	1.28e+00 (3.44e-01) -	1.34e+00 (1.59e-01) -	1.38e+00 (2.45e-01) -
CEC19-MaTSO5-T10	3.23e-02 (6.65e-03)	1.47e+00 (8.64e-01) -	2.05e+00 (3.01e-01) -	1.14e+00 (2.54e-01) -	1.37e+00 (2.54e-01) -	1.30e+00 (2.09e-01) -
CEC19-MaTSO5-T11	1.35e-01 (2.78e-01)	1.12e+00 (9.08e-01) -	2.21e+00 (3.42e-01) -	1.14e+00 (2.93e-01) -	1.30e+00 (1.87e-01) -	1.36e+00 (2.65e-01) -
CEC19-MaTSO5-T12	8.16e-02 (1.97e-01)	1.45e+00 (1.04e+00) -	2.10e+00 (3.44e-01) -	1.18e+00 (1.87e-01) -	1.40e+00 (3.07e-01) -	1.39e+00 (2.07e-01) -
CEC19-MaTSO5-T13	4.58e-02 (1.55e-02)	1.29e+00 (5.48e-01) -	2.22e+00 (3.33e-01) -	1.27e+00 (2.83e-01) -	1.39e+00 (1.72e-01) -	1.35e+00 (2.43e-01) -
CEC19-MaTSO5-T14	8.14e-02 (1.99e-01)	1.42e+00 (8.66e-01) -	2.08e+00 (3.65e-01) -	1.19e+00 (2.68e-01) -	1.33e+00 (2.16e-01) -	1.30e+00 (2.24e-01) -
CEC19-MaTSO5-T15	3.98e-02 (1.80e-02)	9.87e-01 (6.59e-01) -	2.12e+00 (4.18e-01) -	1.23e+00 (2.34e-01) -	1.33e+00 (1.76e-01) -	1.28e+00 (1.96e-01) -
CEC19-MaTSO5-T16	3.36e-02 (1.33e-02)	9.73e-01 (7.36e-01) -	2.11e+00 (3.51e-01) -	1.22e+00 (2.13e-01) -	1.35e+00 (2.72e-01) -	1.32e+00 (1.73e-01) -
CEC19-MaTSO5-T17	8.95e-02 (1.97e-01)	1.12e+00 (6.30e-01) -	2.13e+00 (3.11e-01) -	1.36e+00 (3.63e-01) -	1.39e+00 (1.36e-01) -	1.32e+00 (2.08e-01) -
CEC19-MaTSO5-T18	3.61e-02 (1.51e-02)	1.05e+00 (4.53e-01) -	2.14e+00 (3.17e-01) -	1.19e+00 (3.38e-01) -	1.27e+00 (1.70e-01) -	1.29e+00 (2.10e-01) -
CEC19-MaTSO5-T19	3.57e-02 (1.19e-02)	9.61e-01 (6.22e-01) -	2.00e+00 (2.69e-01) -	1.11e+00 (2.70e-01) -	1.36e+00 (1.54e-01) -	1.33e+00 (2.20e-01) -
CEC19-MaTSO5-T20	4.12e-02 (1.59e-02)	1.22e+00 (6.55e-01) -	2.12e+00 (2.60e-01) -	1.08e+00 (3.83e-01) -	1.38e+00 (2.56e-01) -	1.40e+00 (2.47e-01) -
CEC19-MaTSO5-T21	4.66e-02 (1.49e-02)	1.22e+00 (6.23e-01) -	2.19e+00 (3.63e-01) -	1.16e+00 (2.54e-01) -	1.35e+00 (1.58e-01) -	1.37e+00 (1.97e-01) -
CEC19-MaTSO5-T22	3.60e-02 (1.13e-02)	1.12e+00 (7.43e-01) -	2.21e+00 (2.99e-01) -	1.20e+00 (2.61e-01) -	1.25e+00 (2.11e-01) -	1.27e+00 (1.74e-01) -
CEC19-MaTSO5-T23	4.39e-02 (1.69e-02)	1.28e+00 (5.56e-01) -	2.22e+00 (3.93e-01) -	1.28e+00 (4.85e-01) -	1.30e+00 (2.13e-01) -	1.23e+00 (2.40e-01) -
CEC19-MaTSO5-T24	3.24e-02 (7.96e-03)	1.23e+00 (5.25e-01) -	2.13e+00 (2.88e-01) -	1.10e+00 (2.67e-01) -	1.33e+00 (2.97e-01) -	1.28e+00 (2.91e-01) -
CEC19-MaTSO5-T25	4.25e-02 (1.05e-02)	1.06e+00 (5.52e-01) -	2.05e+00 (2.96e-01) -	1.10e+00 (2.44e-01) -	1.31e+00 (1.56e-01) -	1.34e+00 (2.31e-01) -
CEC19-MaTSO5-T26	4.32e-02 (1.28e-02)	1.54e+00 (9.52e-01) -	2.04e+00 (3.07e-01) -	1.18e+00 (2.81e-01) -	1.39e+00 (2.38e-01) -	1.27e+00 (1.98e-01) -
CEC19-MaTSO5-T27	1.12e-01 (2.21e-01)	1.19e+00 (5.40e-01) -	2.14e+00 (2.45e-01) -	1.35e+00 (4.32e-01) -	1.33e+00 (1.74e-01) -	1.39e+00 (1.87e-01) -
CEC19-MaTSO5-T28	4.21e-02 (1.19e-02)	1.03e+00 (5.92e-01) -	2.18e+00 (2.98e-01) -	1.22e+00 (2.60e-01) -	1.27e+00 (2.27e-01) -	1.31e+00 (2.98e-01) -
CEC19-MaTSO5-T29	1.42e-01 (3.08e-01)	1.11e+00 (6.33e-01) -	2.12e+00 (3.37e-01) -	1.20e+00 (2.68e-01) -	1.37e+00 (1.65e-01) -	1.31e+00 (1.96e-01) -
CEC19-MaTSO5-T30	3.84e-02 (1.37e-02)	1.31e+00 (7.32e-01) -	2.13e+00 (3.72e-01) -	1.26e+00 (3.26e-01) -	1.36e+00 (2.33e-01) -	1.33e+00 (2.28e-01) -
CEC19-MaTSO5-T31	8.53e-02 (2.17e-01)	1.25e+00 (7.55e-01) -	2.07e+00 (3.15e-01) -	1.23e+00 (2.84e-01) -	1.34e+00 (1.37e-01) -	1.42e+00 (2.49e-01) -
CEC19-MaTSO5-T32	5.12e-02 (1.60e-02)	1.24e+00 (7.06e-01) -	2.16e+00 (2.49e-01) -	1.27e+00 (4.29e-01) -	1.34e+00 (1.82e-01) -	1.30e+00 (2.83e-01) -
CEC19-MaTSO5-T33	3.78e-02 (1.51e-02)	1.20e+00 (7.04e-01) -	2.23e+00 (6.30e-01) -	1.11e+00 (3.42e-01) -	1.32e+00 (2.07e-01) -	1.29e+00 (1.13e-01) -
CEC19-MaTSO5-T34	4.74e-02 (1.79e-02)	1.35e+00 (9.44e-01) -	2.05e+00 (3.41e-01) -	1.14e+00 (2.42e-01) -	1.37e+00 (2.90e-01) -	1.34e+00 (2.35e-01) -
CEC19-MaTSO5-T35	4.44e-02 (1.38e-02)	1.28e+00 (7.72e-01) -	2.26e+00 (2.82e-01) -	1.26e+00 (3.08e-01) -	1.35e+00 (1.02e-01) -	1.26e+00 (2.24e-01) -
CEC19-MaTSO5-T36	1.25e-01 (2.75e-01)	1.27e+00 (7.43e-01) -	2.18e+00 (3.24e-01) -	1.19e+00 (2.72e-01) -	1.36e+00 (1.90e-01) -	1.32e+00 (2.41e-01) -
CEC19-MaTSO5-T37	4.20e-02 (1.42e-02)	1.22e+00 (5.37e-01) -	2.21e+00 (4.25e-01) -	1.14e+00 (3.42e-01) -	1.36e+00 (1.55e-01) -	1.29e+00 (2.09e-01) -
CEC19-MaTSO5-T38	2.61e-02 (9.22e-03)	1.36e+00 (8.99e-01) -	2.06e+00 (3.29e-01) -	1.28e+00 (3.51e-01) -	1.23e+00 (1.94e-01) -	1.34e+00 (2.68e-01) -
CEC19-MaTSO5-T39	8.27e-02 (1.95e-01)	1.25e+00 (5.73e-01) -	2.16e+00 (2.68e-01) -	1.15e+00 (2.35e-01) -	1.29e+00 (1.48e-01) -	1.31e+00 (2.41e-01) -
CEC19-MaTSO5-T40	3.39e-02 (9.53e-03)	1.23e+00 (6.21e-01) -	2.12e+00 (3.15e-01) -	1.25e+00 (2.54e-01) -	1.32e+00 (1.97e-01) -	1.42e+00 (2.51e-01) -
CEC19-MaTSO5-T41	9.97e-02 (2.18e-01)	1.20e+00 (6.53e-01) -	2.15e+00 (2.40e-01) -	1.26e+00 (2.93e-01) -	1.33e+00 (1.54e-01) -	1.33e+00 (2.55e-01) -
CEC19-MaTSO5-T42	9.08e-02 (2.03e-01)	1.15e+00 (7.80e-01) -	2.00e+00 (3.47e-01) -	1.15e+00 (2.20e-01) -	1.29e+00 (2.28e-01) -	1.32e+00 (2.50e-01) -
CEC19-MaTSO5-T43	2.95e-02 (9.62e-03)	1.31e+00 (8.74e-01) -	2.12e+00 (3.82e-01) -	1.28e+00 (2.99e-01) -	1.32e+00 (1.96e-01) -	1.33e+00 (2.71e-01) -
CEC19-MaTSO5-T44	4.54e-02 (1.37e-02)	1.33e+00 (7.18e-01) -	2.20e+00 (4.74e-01) -	1.16e+00 (2.37e-01) -	1.26e+00 (1.77e-01) -	1.29e+00 (2.28e-01) -
CEC19-MaTSO5-T45	3.08e-02 (1.20e-02)	1.50e+00 (8.06e-01) -	2.17e+00 (2.91e-01) -	1.13e+00 (1.89e-01) -	1.37e+00 (1.80e-01) -	1.31e+00 (1.97e-01) -
CEC19-MaTSO5-T46	4.34e-02 (1.40e-02)	1.34e+00 (1.06e+00) -	1.94e+00 (2.37e-01) -	1.18e+00 (3.09e-01) -	1.34e+00 (1.70e-01) -	1.33e+00 (2.57e-01) -
CEC19-MaTSO5-T47	8.76e-02 (1.98e-01)	1.46e+00 (9.19e-01) -	2.13e+00 (3.39e-01) -	1.17e+00 (2.57e-01) -	1.27e+00 (1.94e-01) -	1.30e+00 (2.28e-01) -
CEC19-MaTSO5-T48	6.19e-02 (2.24e-02)	1.12e+00 (5.11e-01) -	2.14e+00 (3.42e-01) -	1.15e+00 (2.43e-01) -	1.34e+00 (1.71e-01) -	1.34e+00 (2.06e-01) -
CEC19-MaTSO5-T49	3.12e-02 (8.71e-03)	1.39e+00 (7.10e-01) -	2.20e+00 (3.25e-01) -	1.09e+00 (2.24e-01) -	1.36e+00 (1.94e-01) -	1.45e+00 (2.95e-01) -
CEC19-MaTSO5-T50	4.19e-02 (9.19e-03)	1.23e+00 (9.01e-01) -	2.06e+00 (2.72e-01) -	1.23e+00 (2.57e-01) -	1.34e+00 (1.89e-01) -	1.36e+00 (2.86e-01) -
+/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S11

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO6 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO6 IN TEST SUITE 3.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
CEC19-MaTSO6-T1	7.96e+03 (1.30e+03)	1.05e+03 (3.65e+02) +	5.00e+01 (2.49e+01) +	1.10e+04 (5.91e+02) -	2.68e+03 (3.54e+02) +	1.13e+04 (7.21e+02) -
CEC19-MaTSO6-T2	8.54e+03 (2.37e+03)	9.64e+02 (3.28e+02) +	3.79e+01 (1.62e+01) +	1.27e+04 (9.00e+02) -	1.23e+04 (8.97e+02) -	1.27e+04 (6.74e+02) -
CEC19-MaTSO6-T3	8.36e+03 (1.13e+03)	1.06e+03 (4.13e+02) +	4.85e+01 (3.92e+01) +	1.19e+04 (7.22e+02) -	2.72e+03 (3.87e+02) +	1.20e+04 (5.33e+02) -
CEC19-MaTSO6-T4	7.14e+03 (2.11e+03)	1.08e+03 (4.25e+02) +	4.81e+01 (1.95e+01) +	1.13e+04 (8.89e+02) -	1.12e+04 (7.61e+02) -	1.13e+04 (6.76e+02) -
CEC19-MaTSO6-T5	7.22e+03 (9.62e+02)	1.02e+03 (3.49e+02) +	4.97e+01 (1.99e+01) +	1.07e+04 (1.04e+03) -	2.54e+03 (4.42e+02) +	1.10e+04 (6.25e+02) -
CEC19-MaTSO6-T6	7.76e+03 (1.15e+03)	1.08e+03 (3.51e+02) +	7.20e+01 (4.50e+01) +	1.17e+04 (7.53e+02) -	1.17e+04 (5.27e+02) -	1.16e+04 (4.77e+02) -
CEC19-MaTSO6-T7	6.43e+03 (1.74e+03)	1.04e+03 (3.75e+02) +	6.89e+01 (6.94e+01) +	1.06e+04 (9.81e+02) -	2.79e+03 (4.80e+02) +	1.02e+04 (8.91e+02) -
CEC19-MaTSO6-T8	8.73e+03 (2.22e+03)	9.75e+02 (3.31e+02) +	3.78e+01 (1.40e+01) +	1.28e+04 (5.38e+02) -	1.29e+04 (6.30e+02) -	1.28e+04 (5.42e+02) -
CEC19-MaTSO6-T9	9.48e+03 (1.25e+03)	9.50e+02 (3.24e+02) +	3.96e+01 (2.93e+01) +	1.31e+04 (5.68e+02) -	2.84e+03 (3.47e+02) +	1.26e+04 (6.39e+02) -
CEC19-MaTSO6-T10	5.75e+03 (8.65e+02)	1.08e+03 (3.62e+02) +	6.59e+01 (5.81e+01) +	9.82e+03 (9.63e+02) -	9.51e+03 (1.08e+03) -	9.58e+03 (1.21e+03) -
CEC19-MaTSO6-T11	6.72e+03 (4.32e+03)	9.68e+02 (3.88e+02) +	2.80e+01 (1.27e+01) +	1.36e+04 (5.20e+02) -	2.77e+03 (4.07e+02) +	1.39e+04 (5.13e+02) -
CEC19-MaTSO6-T12	7.48e+03 (1.95e+03)	1.04e+03 (3.22e+02) +	6.14e+01 (2.53e+01) +	1.11e+04 (1.00e+03) -	1.14e+04 (7.85e+02) -	1.14e+04 (1.09e+03) -
CEC19-MaTSO6-T13	7.54e+03 (1.08e+03)	1.08e+03 (3.55e+02) +	5.74e+01 (4.66e+01) +	1.14e+04 (9.25e+02) -	2.68e+03 (4.20e+02) +	1.15e+04 (7.41e+02) -
CEC19-MaTSO6-T14	9.02e+03 (1.22e+03)	9.42e+02 (3.86e+02) +	4.14e+01 (2.72e+01) +	1.26e+04 (6.51e+02) -	1.24e+04 (8.35e+02) -	1.25e+04 (5.50e+02) -
CEC19-MaTSO6-T15	8.69e+03 (9.06e+02)	9.91e+02 (3.68e+02) +	3.98e+01 (1.78e+01) +	1.23e+04 (7.09e+02) -	2.97e+03 (4.43e+02) +	1.27e+04 (6.00e+02) -
CEC19-MaTSO6-T16	6.59e+03 (1.74e+03)	9.67e+02 (3.27e+02) +	4.72e+01 (2.04e+01) +	1.04e+04 (9.42e+02) -	1.05e+04 (1.03e+03) -	1.07e+04 (6.94e+02) -
CEC19-MaTSO6-T17	8.29e+03 (8.06e+02)	1.08e+03 (4.03e+02) +	5.50e+01 (3.00e+01) +	1.19e+04 (7.59e+02) -	2.75e+03 (3.62e+02) +	1.17e+04 (8.01e+02) -
CEC19-MaTSO6-T18	7.18e+03 (1.52e+03)	1.00e+03 (2.62e+02) +	4.92e+01 (4.29e+01) +	1.12e+04 (8.87e+02) -	1.10e+04 (1.05e+03) -	1.10e+04 (7.73e+02) -
CEC19-MaTSO6-T19	8.03e+03 (8.32e+02)	9.94e+02 (3.05e+02) +	7.08e+01 (4.84e+01) +	1.15e+04 (5.28e+02) -	2.55e+03 (3.81e+02) +	1.14e+04 (8.88e+02) -
CEC19-MaTSO6-T20	5.75e+03 (9.92e+02)	1.01e+03 (3.81e+02) +	9.08e+01 (5.66e+01) +	9.07e+03 (1.22e+03) -	8.76e+03 (1.05e+03) -	8.95e+03 (6.74e+02) -
CEC19-MaTSO6-T21	7.22e+03 (1.51e+03)	1.08e+03 (3.29e+02) +	4.74e+01 (2.13e+01) +	1.14e+04 (6.57e+02) -	2.81e+03 (2.85e+02) +	1.15e+04 (6.22e+02) -
CEC19-MaTSO6-T22	8.36e+03 (1.09e+03)	9.51e+02 (3.76e+02) +	3.20e+01 (2.16e+01) +	1.17e+04 (8.86e+02) -	1.19e+04 (7.63e+02) -	1.15e+04 (1.09e+03) -
CEC19-MaTSO6-T23	8.26e+03 (9.02e+02)	9.89e+02 (3.91e+02) +	3.88e+01 (1.94e+01) +	1.21e+04 (5.53e+02) -	2.89e+03 (4.39e+02) +	1.18e+04 (6.51e+02) -
CEC19-MaTSO6-T24	7.65e+03 (1.71e+03)	1.04e+03 (2.96e+02) +	4.00e+01 (2.24e+01) +	1.17e+04 (6.40e+02) -	1.16e+04 (8.01e+02) -	1.13e+04 (7.92e+02) -
CEC19-MaTSO6-T25	7.43e+03 (2.02e+03)	9.72e+02 (3.49e+02) +	4.76e+01 (3.19e+01) +	1.18e+04 (7.30e+02) -	2.86e+03 (5.42e+02) +	1.15e+04 (7.10e+02) -
CEC19-MaTSO6-T26	8.59e+03 (2.69e+03)	1.09e+03 (3.25e+02) +	4.63e+01 (5.83e+01) +	1.34e+04 (7.69e+02) -	1.35e+04 (5.11e+02) -	1.35e+04 (4.92e+02) -
CEC19-MaTSO6-T27	8.72e+03 (1.11e+03)	1.10e+03 (4.14e+02) +	7.01e+01 (5.17e+01) +	1.22e+04 (7.92e+02) -	2.64e+03 (4.50e+02) +	1.20e+04 (9.66e+02) -
CEC19-MaTSO6-T28	6.48e+03 (1.07e+03)	9.86e+02 (4.17e+02) +	6.91e+01 (5.10e+01) +	1.01e+04 (1.06e+03) -	1.03e+04 (8.13e+02) -	1.03e+04 (1.02e+03) -
CEC19-MaTSO6-T29	7.60e+03 (1.32e+03)	9.91e+02 (3.76e+02) +	6.57e+01 (3.91e+01) +	1.13e+04 (8.10e+02) -	2.70e+03 (3.60e+02) +	1.12e+04 (8.89e+02) -
CEC19-MaTSO6-T30	7.46e+03 (1.89e+03)	1.04e+03 (4.28e+02) +	6.87e+01 (5.27e+01) +	1.14e+04 (1.03e+03) -	1.15e+04 (6.47e+02) -	1.16e+04 (6.25e+02) -
CEC19-MaTSO6-T31	7.89e+03 (1.09e+03)	1.08e+03 (4.09e+02) +	5.05e+01 (2.97e+01) +	1.17e+04 (8.27e+02) -	2.72e+03 (5.58e+02) +	1.15e+04 (8.64e+02) -
CEC19-MaTSO6-T32	8.28e+03 (2.27e+03)	1.06e+03 (4.00e+02) +	4.04e+01 (2.20e+01) +	1.25e+04 (5.22e+02) -	1.25e+04 (7.59e+02) -	1.27e+04 (7.75e+02) -
CEC19-MaTSO6-T33	8.18e+03 (1.88e+03)	1.01e+03 (3.45e+02) +	5.28e+01 (3.36e+01) +	1.21e+04 (4.94e+02) -	2.51e+03 (3.01e+02) +	1.21e+04 (7.39e+02) -
CEC19-MaTSO6-T34	9.28e+03 (1.65e+03)	9.82e+02 (2.81e+02) +	4.18e+01 (2.44e+01) +	1.31e+04 (4.33e+02) -	1.29e+04 (6.53e+02) -	1.30e+04 (5.17e+02) -
CEC19-MaTSO6-T35	8.42e+03 (1.11e+03)	1.05e+03 (4.02e+02) +	5.40e+01 (2.72e+01) +	1.21e+04 (7.54e+02) -	2.75e+03 (3.88e+02) +	1.22e+04 (5.91e+02) -
CEC19-MaTSO6-T36	6.90e+03 (8.10e+02)	1.10e+03 (4.17e+02) +	6.58e+01 (5.32e+01) +	1.05e+04 (9.25e+02) -	1.01e+04 (9.75e+02) -	9.93e+03 (7.62e+02) -
CEC19-MaTSO6-T37	8.28e+03 (1.18e+03)	9.79e+02 (3.83e+02) +	3.48e+01 (1.79e+01) +	1.22e+04 (6.19e+02) -	2.83e+03 (5.32e+02) +	1.20e+04 (8.92e+02) -
CEC19-MaTSO6-T38	8.27e+03 (1.06e+03)	1.02e+03 (3.06e+02) +	5.01e+01 (4.23e+01) +	1.23e+04 (6.38e+02) -	1.20e+04 (8.12e+02) -	1.20e+04 (7.46e+02) -
CEC19-MaTSO6-T39	8.79e+03 (1.00e+03)	1.03e+03 (3.51e+02) +	5.61e+01 (3.08e+01) +	1.22e+04 (7.16e+02) -	2.62e+03 (2.88e+02) +	1.20e+04 (6.25e+02) -
CEC19-MaTSO6-T40	7.99e+03 (2.34e+03)	9.97e+02 (3.59e+02) +	5.46e+01 (3.33e+01) +	1.25e+04 (7.51e+02) -	1.22e+04 (7.47e+02) -	1.23e+04 (6.53e+02) -
CEC19-MaTSO6-T41	7.56e+03 (2.30e+03)	1.05e+03 (3.98e+02) +	7.40e+01 (4.48e+01) +	1.12e+04 (1.11e+03) -	2.58e+03 (4.58e+02) +	1.14e+04 (8.03e+02) -
CEC19-MaTSO6-T42	8.95e+03 (2.51e+03)	9.59e+02 (3.28e+02) +	3.31e+01 (1.76e+01) +	1.31e+04 (5.33e+02) -	1.30e+04 (6.31e+02) -	1.30e+04 (6.40e+02) -
CEC19-MaTSO6-T43	7.11e+03 (1.46e+03)	1.09e+03 (4.21e+02) +	6.48e+01 (6.50e+01) +	1.12e+04 (8.60e+02) -	2.73e+03 (4.43e+02) +	1.14e+04 (5.28e+02) -
CEC19-MaTSO6-T44	8.17e+03 (8.70e+02)	1.01e+03 (3.21e+02) +	4.12e+01 (1.99e+01) +	1.21e+04 (8.69e+02) -	1.18e+04 (7.45e+02) -	1.19e+04 (6.21e+02) -
CEC19-MaTSO6-T45	7.03e+03 (9.48e+02)	9.61e+02 (4.04e+02) +	6.23e+01 (3.37e+01) +	1.09e+04 (8.60e+02) -	2.54e+03 (3.43e+02) +	1.06e+04 (6.03e+02) -
CEC19-MaTSO6-T46	6.76e+03 (1.23e+03)	1.04e+03 (3.30e+02) +	6.32e+01 (2.71e+01) +	1.06e+04 (9.55e+02) -	1.06e+04 (9.57e+02) -	1.06e+04 (9.12e+02) -
CEC19-MaTSO6-T47	9.10e+03 (2.91e+03)	9.84e+02 (3.73e+02) +	8.07e+01 (7.19e+01) +	1.29e+04 (6.58e+02) -	2.69e+03 (4.39e+02) +	1.32e+04 (6.18e+02) -
CEC19-MaTSO6-T48	8.09e+03 (9.76e+02)	1.01e+03 (4.06e+02) +	7.32e+01 (6.61e+01) +	1.18e+04 (7.06e+02) -	1.20e+04 (6.29e+02) -	1.15e+04 (7.60e+02) -
CEC19-MaTSO6-T49	8.08e+03 (8.35e+02)	1.08e+03 (3.72e+02) +	1.31e+02 (1.46e+02) +	1.16e+04 (6.25e+02) -	2.53e+03 (3.87e+02) +	1.10e+04 (8.43e+02) -
CEC19-MaTSO6-T50	7.93e+03 (1.60e+03)	1.05e+03 (3.43e+02) +	4.60e+01 (2.61e+01) +	1.15e+04 (8.83e+02) -	1.18e+04 (6.90e+02) -	1.17e+04 (6.61e+02) -
+/-/=	Base	50/0/0	50/0/0	0/50/0	25/25/0	0/50/0

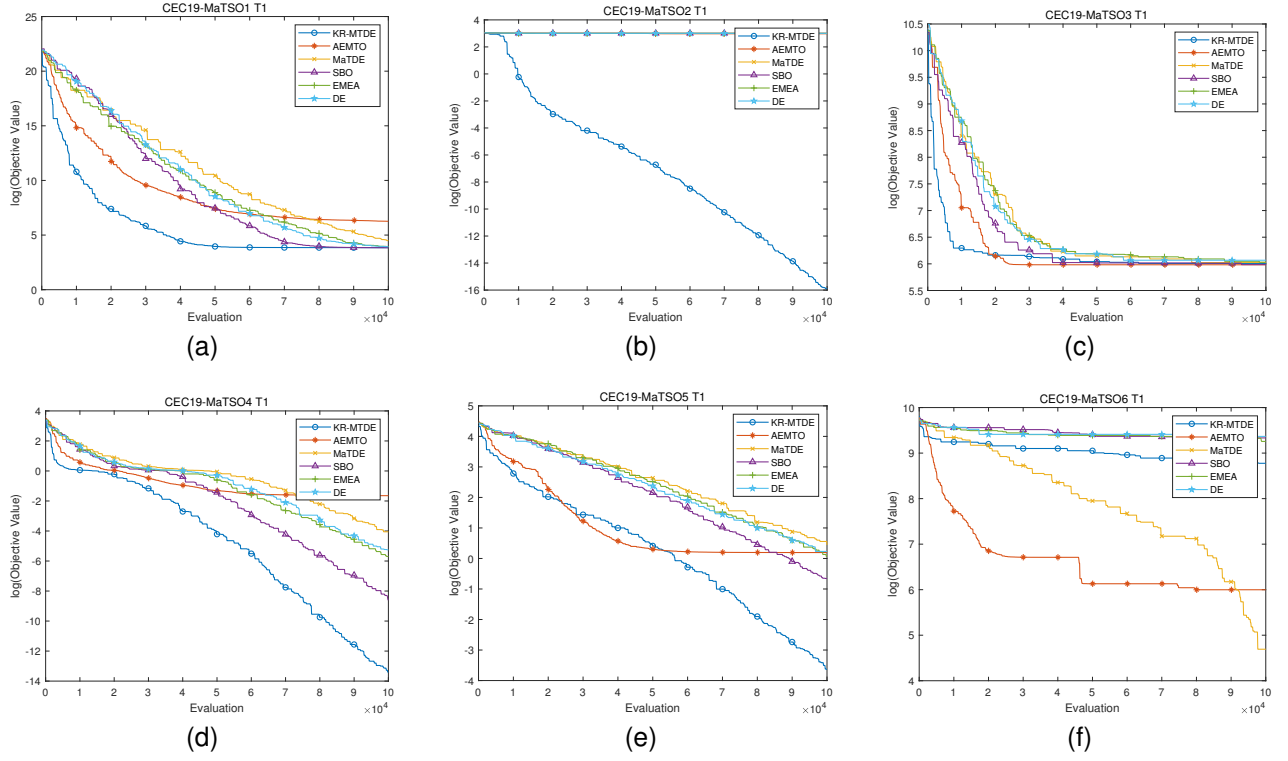


Fig. S2. Average convergence trends of six compared methods, i.e., KR-MTDE, AEMTO, MaTDE, SBO, EMEA, and single-tasking DE on CEC19-MaTSO.

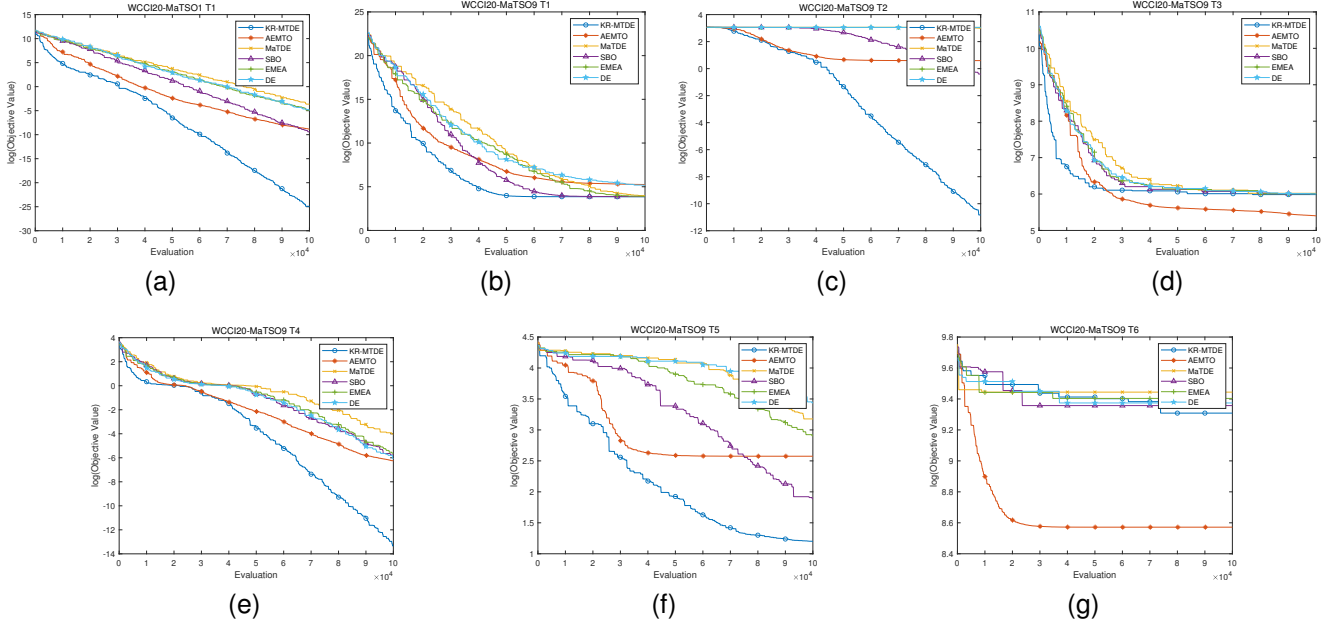


Fig. S3. Average convergence trends of six compared methods, i.e., KR-MTDE, AEMTO, MaTDE, SBO, EMEA, and single-tasking DE on WCCI20-MaTSO.

TABLE S12

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO1 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO1 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO1-T1	3.72e-11 (2.53e-11)	6.04e-02 (9.73e-02) -	2.35e-02 (1.38e-02) -	1.34e-04 (8.33e-05) -	5.18e-03 (2.95e-03) -	6.69e-03 (3.49e-03) -
WCCI20-MaTSO1-T2	6.75e-11 (6.94e-11)	7.76e-01 (3.20e+00) -	2.04e-02 (1.08e-02) -	1.11e-02 (3.72e-02) -	5.12e-03 (1.99e-03) -	5.47e-03 (2.72e-03) -
WCCI20-MaTSO1-T3	1.10e-11 (9.96e-12)	1.81e-01 (3.66e-01) -	2.17e-02 (9.55e-03) -	5.48e-03 (8.10e-03) -	5.18e-03 (2.35e-03) -	5.41e-03 (2.49e-03) -
WCCI20-MaTSO1-T4	3.30e-11 (5.22e-11)	3.28e-01 (8.62e-01) -	2.31e-02 (9.71e-03) -	4.52e-03 (5.56e-03) -	4.68e-03 (2.41e-03) -	4.91e-03 (2.86e-03) -
WCCI20-MaTSO1-T5	3.17e-11 (1.84e-11)	5.42e-01 (1.28e+00) -	2.09e-02 (7.98e-03) -	2.71e-03 (2.01e-03) -	5.36e-03 (2.18e-03) -	4.92e-03 (2.00e-03) -
WCCI20-MaTSO1-T6	3.25e-11 (2.01e-11)	7.41e-02 (1.98e-01) -	2.35e-02 (1.44e-02) -	3.09e-03 (1.59e-03) -	5.85e-03 (2.26e-03) -	5.45e-03 (2.09e-03) -
WCCI20-MaTSO1-T7	6.24e-11 (4.64e-11)	1.35e-01 (3.53e-01) -	2.36e-02 (1.17e-02) -	2.81e-03 (2.31e-03) -	5.49e-03 (1.94e-03) -	5.48e-03 (2.81e-03) -
WCCI20-MaTSO1-T8	6.63e-11 (7.10e-11)	1.80e-01 (6.55e-01) -	2.65e-02 (1.09e-02) -	6.59e-03 (1.33e-02) -	5.67e-03 (2.59e-03) -	5.21e-03 (2.95e-03) -
WCCI20-MaTSO1-T9	1.17e-11 (6.52e-12)	1.79e-01 (4.57e-01) -	2.64e-02 (1.15e-02) -	4.49e-03 (5.98e-03) -	4.94e-03 (2.43e-03) -	5.40e-03 (2.45e-03) -
WCCI20-MaTSO1-T10	1.24e-11 (1.74e-11)	2.61e-01 (6.80e-01) -	2.23e-02 (1.02e-02) -	3.62e-03 (3.99e-03) -	5.26e-03 (2.48e-03) -	4.78e-03 (1.91e-03) -
WCCI20-MaTSO1-T11	1.17e-10 (1.37e-10)	1.57e-01 (5.18e-01) -	2.02e-02 (9.59e-03) -	4.72e-03 (3.78e-03) -	6.08e-03 (2.52e-03) -	5.19e-03 (2.34e-03) -
WCCI20-MaTSO1-T12	6.63e-11 (4.13e-11)	2.27e-01 (4.19e-01) -	2.60e-02 (1.07e-02) -	3.04e-03 (2.53e-03) -	4.93e-03 (3.32e-03) -	5.91e-03 (2.53e-03) -
WCCI20-MaTSO1-T13	3.57e-11 (2.89e-11)	4.58e-01 (1.15e+00) -	1.87e-02 (8.14e-03) -	2.92e-03 (2.06e-03) -	4.73e-03 (1.60e-03) -	5.41e-03 (2.37e-03) -
WCCI20-MaTSO1-T14	7.70e-11 (4.53e-11)	3.97e-01 (1.35e+00) -	2.08e-02 (1.03e-02) -	3.22e-03 (1.74e-03) -	5.97e-03 (3.29e-03) -	5.02e-03 (2.47e-03) -
WCCI20-MaTSO1-T15	4.53e-11 (3.33e-11)	5.16e-01 (1.85e+00) -	2.62e-02 (1.09e-02) -	5.00e-03 (4.69e-03) -	5.20e-03 (2.62e-03) -	4.84e-03 (2.43e-03) -
WCCI20-MaTSO1-T16	8.96e-11 (1.82e-10)	3.92e-01 (1.26e+00) -	1.90e-02 (1.10e-02) -	3.19e-03 (2.29e-03) -	5.03e-03 (2.23e-03) -	4.97e-03 (1.96e-03) -
WCCI20-MaTSO1-T17	3.26e-11 (7.80e-11)	2.12e-01 (7.49e-01) -	1.83e-02 (8.31e-03) -	5.76e-03 (8.18e-03) -	4.94e-03 (1.43e-03) -	5.80e-03 (3.09e-03) -
WCCI20-MaTSO1-T18	2.80e-11 (2.52e-11)	1.13e-01 (1.54e-01) -	2.14e-02 (9.38e-03) -	3.48e-03 (2.11e-03) -	5.19e-03 (2.72e-03) -	5.24e-03 (2.37e-03) -
WCCI20-MaTSO1-T19	1.42e-11 (1.38e-11)	1.30e-01 (2.96e-01) -	2.02e-02 (8.69e-03) -	4.58e-03 (7.05e-03) -	5.92e-03 (2.67e-03) -	4.76e-03 (2.11e-03) -
WCCI20-MaTSO1-T20	2.82e-11 (1.68e-11)	4.31e-01 (8.20e-01) -	1.99e-02 (8.10e-03) -	5.52e-03 (5.47e-03) -	4.24e-03 (1.81e-03) -	4.57e-03 (1.85e-03) -
WCCI20-MaTSO1-T21	3.45e-11 (2.16e-11)	2.28e-01 (3.68e-01) -	1.98e-02 (7.81e-03) -	5.19e-03 (4.90e-03) -	5.32e-03 (2.13e-03) -	5.23e-03 (2.31e-03) -
WCCI20-MaTSO1-T22	2.59e-11 (1.68e-11)	6.37e-01 (1.90e+00) -	1.92e-02 (7.84e-03) -	2.90e-03 (1.69e-03) -	4.81e-03 (1.90e-03) -	4.79e-03 (2.57e-03) -
WCCI20-MaTSO1-T23	1.34e-11 (1.41e-11)	4.61e-01 (1.34e+00) -	2.10e-02 (7.81e-03) -	5.66e-03 (6.59e-03) -	5.05e-03 (2.39e-03) -	4.63e-03 (2.74e-03) -
WCCI20-MaTSO1-T24	3.02e-11 (1.90e-11)	6.95e-02 (1.18e-01) -	1.95e-02 (1.15e-02) -	2.99e-03 (1.92e-03) -	5.52e-03 (2.09e-03) -	5.11e-03 (1.85e-03) -
WCCI20-MaTSO1-T25	1.71e-10 (3.88e-10)	1.05e-01 (2.76e-01) -	2.06e-02 (1.25e-02) -	3.06e-03 (2.04e-03) -	6.01e-03 (3.75e-03) -	5.54e-03 (2.87e-03) -
WCCI20-MaTSO1-T26	1.94e-11 (1.70e-11)	2.06e-01 (7.03e-01) -	1.84e-02 (9.27e-03) -	3.92e-03 (3.25e-03) -	5.54e-03 (2.52e-03) -	4.94e-03 (2.47e-03) -
WCCI20-MaTSO1-T27	1.43e-11 (1.54e-11)	1.82e-02 (4.33e-02) -	1.95e-02 (9.58e-03) -	3.02e-03 (2.71e-03) -	5.16e-03 (2.64e-03) -	4.54e-03 (1.55e-03) -
WCCI20-MaTSO1-T28	6.47e-11 (5.35e-11)	1.07e+00 (3.47e+00) -	2.85e-02 (2.37e-02) -	4.31e-03 (2.87e-03) -	5.30e-03 (2.05e-03) -	5.86e-03 (2.58e-03) -
WCCI20-MaTSO1-T29	2.01e-11 (1.45e-11)	1.81e-01 (4.64e-01) -	2.32e-02 (1.33e-02) -	5.97e-03 (7.71e-03) -	6.30e-03 (2.33e-03) -	4.12e-03 (1.89e-03) -
WCCI20-MaTSO1-T30	4.82e-11 (5.70e-11)	7.00e-02 (1.27e-01) -	1.88e-02 (9.90e-03) -	3.65e-03 (3.87e-03) -	5.77e-03 (2.98e-03) -	5.02e-03 (2.59e-03) -
WCCI20-MaTSO1-T31	1.99e-11 (2.12e-11)	6.10e-02 (8.66e-02) -	1.86e-02 (9.29e-03) -	4.06e-03 (4.43e-03) -	6.26e-03 (2.76e-03) -	4.50e-03 (1.21e-03) -
WCCI20-MaTSO1-T32	3.36e-11 (4.26e-11)	1.66e-01 (3.01e-01) -	1.97e-02 (7.62e-03) -	8.71e-03 (2.07e-02) -	5.16e-03 (2.58e-03) -	5.94e-03 (2.77e-03) -
WCCI20-MaTSO1-T33	3.44e-11 (2.69e-11)	2.22e-01 (5.40e-01) -	1.99e-02 (8.16e-03) -	2.70e-03 (1.77e-03) -	4.34e-03 (1.28e-03) -	4.87e-03 (3.00e-03) -
WCCI20-MaTSO1-T34	3.20e-11 (3.59e-11)	1.10e+00 (3.96e+00) -	1.99e-02 (6.71e-03) -	2.92e-03 (1.31e-03) -	5.64e-03 (2.86e-03) -	5.30e-03 (2.03e-03) -
WCCI20-MaTSO1-T35	8.70e-11 (6.89e-11)	4.69e-02 (8.66e-02) -	2.59e-02 (1.50e-02) -	2.91e-03 (1.46e-03) -	5.90e-03 (2.71e-03) -	5.38e-03 (2.26e-03) -
WCCI20-MaTSO1-T36	2.48e-12 (2.04e-12)	1.03e-01 (2.41e-01) -	1.94e-02 (6.03e-03) -	4.25e-03 (3.99e-03) -	5.31e-03 (1.97e-03) -	4.60e-03 (1.83e-03) -
WCCI20-MaTSO1-T37	3.88e-11 (6.41e-11)	1.35e-01 (2.28e-01) -	2.27e-02 (1.12e-02) -	5.55e-03 (8.94e-03) -	6.10e-03 (2.54e-03) -	6.31e-03 (3.16e-03) -
WCCI20-MaTSO1-T38	2.72e-11 (1.77e-11)	2.05e-01 (3.42e-01) -	2.22e-02 (9.13e-03) -	2.56e-03 (1.10e-03) -	5.99e-03 (2.75e-03) -	4.93e-03 (1.66e-03) -
WCCI20-MaTSO1-T39	7.04e-11 (4.74e-11)	4.36e-01 (6.69e-01) -	2.19e-02 (8.39e-03) -	2.95e-03 (1.96e-03) -	5.61e-03 (2.88e-03) -	4.26e-03 (1.63e-03) -
WCCI20-MaTSO1-T40	1.73e-10 (1.27e-10)	1.85e-01 (4.56e-01) -	2.20e-02 (1.19e-02) -	4.98e-03 (6.64e-03) -	5.29e-03 (2.03e-03) -	5.23e-03 (2.88e-03) -
WCCI20-MaTSO1-T41	2.32e-11 (2.93e-11)	2.74e-01 (1.03e+00) -	2.31e-02 (1.16e-02) -	4.72e-03 (5.56e-03) -	5.45e-03 (2.80e-03) -	5.32e-03 (2.18e-03) -
WCCI20-MaTSO1-T42	1.45e-11 (1.26e-11)	9.52e-01 (3.32e+00) -	2.15e-02 (8.56e-03) -	3.60e-03 (2.37e-03) -	5.10e-03 (2.43e-03) -	4.61e-03 (1.43e-03) -
WCCI20-MaTSO1-T43	3.18e-11 (3.25e-11)	4.23e-02 (7.69e-02) -	2.22e-02 (1.48e-02) -	3.06e-03 (1.48e-03) -	5.97e-03 (2.41e-03) -	4.87e-03 (1.98e-03) -
WCCI20-MaTSO1-T44	9.17e-11 (7.25e-11)	6.22e-02 (1.63e-01) -	2.23e-02 (9.13e-03) -	4.63e-03 (4.21e-03) -	4.97e-03 (2.42e-03) -	4.54e-03 (1.85e-03) -
WCCI20-MaTSO1-T45	4.92e-11 (3.70e-11)	2.61e-01 (4.98e-01) -	1.86e-02 (9.00e-03) -	5.13e-03 (6.21e-03) -	5.60e-03 (2.02e-03) -	5.47e-03 (3.23e-03) -
WCCI20-MaTSO1-T46	9.79e-11 (7.53e-11)	3.33e-02 (8.65e-02) -	2.17e-02 (7.32e-03) -	5.30e-03 (8.27e-03) -	5.84e-03 (2.44e-03) -	5.04e-03 (2.04e-03) -
WCCI20-MaTSO1-T47	6.38e-11 (6.76e-11)	6.25e-01 (1.61e+00) -	2.00e-02 (6.98e-03) -	7.02e-03 (1.43e-02) -	4.52e-03 (1.68e-03) -	5.80e-03 (2.26e-03) -
WCCI20-MaTSO1-T48	4.14e-11 (2.73e-11)	1.66e-01 (3.59e-01) -	1.77e-02 (8.59e-03) -	5.01e-03 (5.84e-03) -	5.22e-03 (1.96e-03) -	4.60e-03 (1.80e-03) -
WCCI20-MaTSO1-T49	1.90e-11 (1.80e-11)	5.38e-01 (1.22e+00) -	2.16e-02 (8.93e-03) -	5.10e-03 (6.44e-03) -	5.01e-03 (2.60e-03) -	4.41e-03 (2.11e-03) -
WCCI20-MaTSO1-T50	2.80e-11 (3.04e-11)	2.36e-02 (4.91e-02) -	1.65e-02 (7.86e-03) -	5.44e-03 (8.55e-03) -	5.57e-03 (2.33e-03) -	5.67e-03 (2.54e-03) -
+/=/	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S13

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO2 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO2 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO2-T1	4.76e+01 (5.88e-01)	1.20e+02 (9.94e+01) -	9.69e+01 (6.04e+01) -	6.64e+02 (1.79e+03) -	8.43e+02 (1.82e+03) -	5.79e+02 (1.09e+03) -
WCCI20-MaTSO2-T2	1.06e+02 (4.73e+01)	2.77e+02 (4.52e+02) =	2.73e+02 (2.69e+02) -	6.35e+03 (2.64e+04) -	3.78e+02 (4.51e+02) =	1.11e+03 (1.76e+03) -
WCCI20-MaTSO2-T3	4.77e+01 (7.20e-01)	1.44e+02 (1.11e+02) -	1.61e+02 (1.03e+02) -	2.92e+03 (8.44e+03) -	6.29e+02 (1.66e+03) -	6.79e+02 (1.79e+03) -
WCCI20-MaTSO2-T4	4.73e+01 (1.07e+00)	2.39e+02 (3.14e+02) -	1.12e+02 (1.07e+02) -	7.53e+02 (1.70e+03) -	5.57e+02 (1.08e+03) -	3.83e+02 (6.77e+02) -
WCCI20-MaTSO2-T5	6.02e+01 (2.59e+01)	1.67e+02 (1.44e+02) -	1.92e+02 (1.61e+02) -	4.87e+02 (7.89e+02) -	1.68e+03 (5.11e+03) -	6.84e+02 (1.17e+03) -
WCCI20-MaTSO2-T6	5.11e+01 (1.31e+01)	2.24e+02 (3.27e+02) -	1.07e+02 (1.15e+02) -	5.71e+03 (2.27e+04) -	5.25e+02 (9.35e+02) -	2.58e+02 (4.22e+02) -
WCCI20-MaTSO2-T7	4.77e+01 (4.99e-01)	1.30e+02 (1.05e+02) -	1.64e+02 (1.93e+02) -	9.43e+03 (4.11e+04) -	6.00e+02 (1.54e+03) -	1.28e+03 (1.91e+03) -
WCCI20-MaTSO2-T8	5.69e+01 (2.88e+01)	1.14e+02 (7.99e+01) -	1.21e+02 (8.46e+01) -	9.29e+03 (3.88e+04) -	3.58e+02 (6.20e+02) -	1.59e+02 (1.37e+02) -
WCCI20-MaTSO2-T9	4.78e+01 (8.95e-01)	2.25e+02 (3.58e+02) -	4.04e+02 (5.68e+02) -	1.68e+03 (3.09e+03) -	4.21e+02 (1.02e+03) -	7.46e+02 (1.21e+03) -
WCCI20-MaTSO2-T10	4.75e+01 (7.00e-01)	1.99e+02 (2.78e+02) -	1.85e+02 (2.79e+02) -	3.55e+03 (1.36e+04) -	8.98e+02 (2.18e+03) -	5.36e+02 (9.68e+02) -
WCCI20-MaTSO2-T11	4.78e+01 (7.87e-01)	2.51e+02 (3.21e+02) -	7.06e+01 (4.55e+01) -	5.81e+03 (2.28e+04) -	4.57e+02 (1.58e+03) -	3.96e+02 (8.73e+02) -
WCCI20-MaTSO2-T12	4.84e+01 (6.65e-01)	1.53e+02 (2.01e+02) -	1.48e+02 (1.46e+02) -	2.09e+03 (5.38e+03) -	8.39e+02 (1.47e+03) -	3.43e+02 (8.85e+02) -
WCCI20-MaTSO2-T13	5.13e+01 (1.41e+01)	1.95e+02 (2.29e+02) -	1.76e+02 (2.26e+02) -	3.08e+03 (1.01e+04) -	4.02e+02 (8.31e+02) -	1.61e+02 (2.22e+02) -
WCCI20-MaTSO2-T14	4.76e+01 (7.24e-01)	1.91e+02 (2.28e+02) -	1.19e+02 (1.21e+02) -	3.77e+03 (1.19e+04) -	4.73e+02 (8.79e+02) -	7.02e+02 (1.69e+03) -
WCCI20-MaTSO2-T15	5.75e+01 (2.47e+01)	2.96e+02 (5.09e+02) -	2.40e+02 (2.73e+02) -	1.10e+03 (3.06e+03) -	5.72e+02 (1.37e+03) -	6.77e+02 (1.09e+03) -
WCCI20-MaTSO2-T16	4.77e+01 (9.55e-01)	1.34e+02 (1.23e+02) -	1.69e+02 (3.21e+02) -	4.15e+03 (1.36e+04) -	4.36e+02 (6.47e+02) -	6.59e+02 (1.82e+03) -
WCCI20-MaTSO2-T17	4.78e+01 (7.16e-01)	1.13e+02 (6.80e+01) -	1.10e+02 (1.33e+02) -	5.16e+02 (8.13e+02) -	7.87e+02 (1.44e+03) -	5.07e+02 (1.14e+03) -
WCCI20-MaTSO2-T18	5.10e+01 (1.45e+01)	1.62e+02 (1.63e+02) -	1.57e+02 (1.67e+02) -	1.36e+03 (2.52e+03) -	4.52e+02 (7.54e+02) -	9.01e+02 (1.37e+03) -
WCCI20-MaTSO2-T19	4.75e+01 (4.83e-01)	1.41e+02 (1.04e+02) -	1.01e+02 (1.16e+02) -	7.93e+02 (1.88e+03) -	4.79e+02 (9.71e+02) -	6.76e+02 (1.08e+03) -
WCCI20-MaTSO2-T20	4.80e+01 (9.18e-01)	1.95e+02 (2.49e+02) -	1.26e+02 (1.34e+02) -	1.20e+03 (4.38e+03) -	1.24e+02 (9.67e+01) -	7.35e+02 (1.11e+03) -
WCCI20-MaTSO2-T21	4.79e+01 (7.39e-01)	1.44e+02 (7.36e+01) -	1.21e+02 (1.14e+02) -	3.19e+03 (9.15e+03) -	5.89e+02 (1.16e+03) -	5.64e+02 (1.48e+03) -
WCCI20-MaTSO2-T22	4.73e+01 (7.74e-01)	2.31e+02 (3.07e+02) -	9.45e+01 (9.85e+01) -	6.55e+03 (2.40e+04) -	1.81e+03 (2.57e+03) -	5.67e+02 (1.20e+03) -
WCCI20-MaTSO2-T23	5.39e+01 (1.90e+01)	1.62e+02 (1.55e+02) -	1.49e+02 (1.71e+02) -	9.12e+02 (1.88e+03) -	3.85e+02 (8.95e+02) -	7.06e+02 (1.65e+03) -
WCCI20-MaTSO2-T24	4.75e+01 (8.40e-01)	1.54e+02 (1.40e+02) -	1.25e+02 (1.52e+02) -	3.78e+03 (1.45e+04) -	4.33e+02 (1.05e+03) -	2.22e+02 (2.48e+02) -
WCCI20-MaTSO2-T25	5.07e+01 (1.39e+01)	2.15e+02 (3.83e+02) =	9.28e+01 (9.82e+01) -	5.97e+02 (1.11e+03) -	5.80e+02 (8.73e+02) -	2.85e+02 (4.13e+02) -
WCCI20-MaTSO2-T26	4.80e+01 (6.77e-01)	1.22e+02 (7.61e+01) -	1.01e+02 (1.11e+02) -	5.52e+02 (1.93e+03) -	3.57e+02 (4.90e+02) -	9.82e+02 (2.16e+03) -
WCCI20-MaTSO2-T27	5.42e+01 (1.94e+01)	1.59e+02 (2.27e+02) -	1.29e+02 (7.81e+01) -	1.32e+03 (2.20e+03) -	7.08e+02 (1.04e+03) -	9.37e+02 (1.66e+03) -
WCCI20-MaTSO2-T28	4.81e+01 (5.16e-01)	3.10e+02 (5.96e+02) -	2.17e+02 (3.08e+02) -	4.11e+03 (1.62e+04) -	1.78e+02 (1.94e+02) -	3.72e+02 (6.97e+02) -
WCCI20-MaTSO2-T29	4.76e+01 (6.93e-01)	1.83e+02 (3.23e+02) -	8.86e+01 (5.22e+01) -	3.56e+03 (1.47e+04) -	5.83e+02 (1.37e+03) -	4.79e+02 (9.84e+02) -
WCCI20-MaTSO2-T30	5.43e+01 (1.92e+01)	3.91e+02 (5.96e+02) -	1.70e+02 (1.39e+02) -	1.32e+03 (2.46e+03) -	4.02e+02 (8.73e+02) -	6.75e+02 (1.19e+03) -
WCCI20-MaTSO2-T31	5.12e+01 (1.40e+01)	1.91e+02 (2.60e+02) -	3.13e+02 (5.17e+02) -	2.85e+03 (1.04e+04) -	2.94e+02 (5.23e+02) -	4.57e+02 (7.41e+02) -
WCCI20-MaTSO2-T32	4.77e+01 (6.73e-01)	1.44e+02 (1.30e+02) -	1.52e+02 (8.59e+01) -	7.61e+02 (1.57e+03) -	7.43e+02 (1.42e+03) -	4.07e+02 (7.39e+02) -
WCCI20-MaTSO2-T33	4.80e+01 (6.20e-01)	1.23e+02 (1.06e+02) -	9.40e+01 (6.74e+01) -	1.14e+03 (3.63e+03) -	1.65e+02 (4.05e+02) -	4.82e+02 (1.50e+03) -
WCCI20-MaTSO2-T34	4.76e+01 (8.21e-01)	2.06e+02 (2.69e+02) -	1.38e+02 (1.38e+02) -	5.37e+03 (1.81e+04) -	9.02e+02 (2.36e+03) -	1.41e+03 (3.68e+03) -
WCCI20-MaTSO2-T35	4.76e+01 (6.74e-01)	1.02e+02 (9.63e+01) -	9.82e+01 (6.76e+01) -	5.95e+03 (2.50e+04) -	7.02e+02 (1.56e+03) -	2.53e+02 (4.25e+02) -
WCCI20-MaTSO2-T36	4.75e+01 (1.05e+00)	2.41e+02 (5.37e+02) -	1.34e+02 (1.21e+02) -	5.85e+03 (2.42e+04) -	1.67e+03 (3.83e+03) -	6.64e+02 (1.45e+03) -
WCCI20-MaTSO2-T37	4.78e+01 (7.03e-01)	1.42e+02 (1.84e+02) -	1.32e+02 (1.47e+02) -	1.44e+03 (4.32e+03) -	3.01e+02 (5.71e+02) -	6.00e+02 (1.41e+03) -
WCCI20-MaTSO2-T38	6.39e+01 (3.93e+01)	2.05e+02 (2.74e+02) -	1.47e+02 (1.14e+02) -	9.75e+02 (3.18e+03) -	5.11e+02 (9.82e+02) -	5.37e+02 (8.03e+02) -
WCCI20-MaTSO2-T39	4.74e+01 (6.09e-01)	4.32e+02 (6.33e+02) -	3.36e+02 (4.98e+02) -	3.93e+03 (1.25e+04) -	3.99e+02 (3.85e+02) -	2.10e+02 (2.60e+02) -
WCCI20-MaTSO2-T40	5.10e+01 (1.41e+01)	2.44e+02 (3.66e+02) -	1.95e+02 (3.13e+02) -	4.29e+03 (1.65e+04) -	3.03e+02 (4.43e+02) -	9.72e+02 (2.07e+03) -
WCCI20-MaTSO2-T41	1.21e+02 (8.26e+01)	1.91e+02 (1.67e+02) =	2.17e+02 (2.00e+02) -	1.38e+03 (4.66e+03) -	5.71e+02 (1.56e+03) =	4.98e+02 (1.03e+03) -
WCCI20-MaTSO2-T42	4.82e+01 (7.21e-01)	3.45e+02 (5.19e+02) -	1.12e+02 (1.06e+02) -	1.45e+03 (2.87e+03) -	2.12e+02 (4.31e+02) -	3.93e+02 (8.17e+02) -
WCCI20-MaTSO2-T43	4.78e+01 (8.55e-01)	1.16e+02 (7.72e+01) -	9.61e+01 (1.01e+02) -	4.80e+03 (1.76e+04) -	5.17e+02 (8.39e+02) -	3.04e+02 (2.96e+02) -
WCCI20-MaTSO2-T44	4.79e+01 (9.10e-01)	2.08e+02 (2.81e+02) -	1.35e+02 (8.82e+01) -	1.08e+03 (2.31e+03) -	8.91e+02 (2.20e+03) -	6.15e+02 (1.20e+03) -
WCCI20-MaTSO2-T45	5.93e+01 (2.36e+01)	3.19e+02 (4.66e+02) -	3.18e+02 (4.98e+02) -	4.30e+03 (1.66e+04) -	5.17e+02 (8.19e+02) -	2.26e+02 (3.17e+02) -
WCCI20-MaTSO2-T46	6.54e+01 (3.22e+01)	2.36e+02 (2.42e+02) -	1.22e+02 (8.82e+01) -	5.40e+03 (2.08e+04) -	5.50e+02 (8.20e+02) -	6.01e+02 (9.66e+02) -
WCCI20-MaTSO2-T47	7.70e+01 (3.37e+01)	1.72e+02 (1.69e+02) -	2.35e+02 (3.13e+02) -	1.35e+03 (3.63e+03) -	2.02e+03 (3.61e+03) -	4.83e+02 (8.57e+02) -
WCCI20-MaTSO2-T48	4.71e+01 (9.24e-01)	3.55e+02 (5.90e+02) -	2.63e+02 (4.43e+02) -	1.66e+03 (2.89e+03) -	3.71e+02 (6.80e+02) -	1.05e+02 (9.49e+01) -
WCCI20-MaTSO2-T49	4.76e+01 (1.04e+00)	2.63e+02 (4.37e+02) -	2.38e+02 (3.29e+02) -	4.80e+03 (1.69e+04) -	3.09e+02 (6.44e+02) -	7.53e+02 (1.70e+03) -
WCCI20-MaTSO2-T50	4.80e+01 (6.65e-01)	1.30e+02 (1.14e+02) -	1.87e+02 (2.84e+02) -	8.61e+02 (2.33e+03) -	1.88e+02 (2.01e+02) -	6.11e+02 (1.05e+03) -
+/-/=	Base	0/47/3	0/50/0	0/50/0	0/48/2	0/50/0

TABLE S14

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO3 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO3 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO3-T1	3.85e+02 (2.08e+01)	1.95e+02 (1.15e+02) +	4.15e+02 (1.46e+01) -	4.01e+02 (1.13e+01) -	4.08e+02 (1.58e+01) -	4.14e+02 (1.35e+01) -
WCCI20-MaTSO3-T2	3.84e+02 (1.66e+01)	1.84e+02 (1.01e+02) +	4.13e+02 (1.91e+01) -	4.08e+02 (1.58e+01) -	4.13e+02 (1.31e+01) -	4.05e+02 (1.75e+01) -
WCCI20-MaTSO3-T3	3.85e+02 (2.04e+01)	1.68e+02 (7.48e+01) +	4.18e+02 (1.95e+01) -	4.05e+02 (1.96e+01) -	4.08e+02 (1.91e+01) -	4.08e+02 (2.01e+01) -
WCCI20-MaTSO3-T4	3.89e+02 (1.58e+01)	1.93e+02 (1.11e+02) +	4.09e+02 (1.66e+01) -	4.00e+02 (1.93e+01) =	3.98e+02 (1.51e+01) =	4.11e+02 (1.51e+01) -
WCCI20-MaTSO3-T5	3.91e+02 (1.72e+01)	1.85e+02 (9.66e+01) +	4.07e+02 (1.24e+01) -	4.01e+02 (2.32e+01) =	4.03e+02 (1.75e+01) -	4.07e+02 (1.51e+01) -
WCCI20-MaTSO3-T6	3.84e+02 (1.66e+01)	2.01e+02 (1.15e+02) +	4.10e+02 (1.52e+01) -	3.99e+02 (1.91e+01) -	4.11e+02 (1.81e+01) -	4.12e+02 (1.37e+01) -
WCCI20-MaTSO3-T7	3.87e+02 (1.76e+01)	1.55e+02 (7.11e+01) +	4.14e+02 (1.76e+01) -	4.00e+02 (1.97e+01) -	4.12e+02 (1.91e+01) -	4.11e+02 (1.14e+01) -
WCCI20-MaTSO3-T8	3.86e+02 (1.49e+01)	1.92e+02 (1.24e+02) +	4.13e+02 (1.69e+01) -	4.05e+02 (1.73e+01) -	4.08e+02 (8.95e+00) -	4.01e+02 (2.29e+01) -
WCCI20-MaTSO3-T9	3.84e+02 (1.40e+01)	1.74e+02 (1.04e+02) +	4.13e+02 (1.24e+01) -	4.02e+02 (1.32e+01) -	4.10e+02 (1.78e+01) -	4.12e+02 (1.48e+01) -
WCCI20-MaTSO3-T10	3.87e+02 (1.34e+01)	1.96e+02 (1.05e+02) +	4.17e+02 (1.56e+01) -	4.02e+02 (2.24e+01) -	4.09e+02 (2.24e+01) -	4.07e+02 (1.46e+01) -
WCCI20-MaTSO3-T11	3.78e+02 (1.79e+01)	1.73e+02 (1.08e+02) +	4.12e+02 (1.83e+01) -	4.06e+02 (1.41e+01) -	4.10e+02 (1.47e+01) -	4.03e+02 (1.91e+01) -
WCCI20-MaTSO3-T12	3.87e+02 (8.58e+00)	1.71e+02 (7.73e+01) +	4.11e+02 (1.81e+01) -	4.05e+02 (1.20e+01) -	4.14e+02 (1.81e+01) -	4.02e+02 (1.24e+01) -
WCCI20-MaTSO3-T13	3.92e+02 (1.75e+01)	2.02e+02 (1.03e+02) +	4.13e+02 (1.94e+01) -	3.97e+02 (1.81e+01) =	4.11e+02 (1.44e+01) -	4.08e+02 (1.42e+01) -
WCCI20-MaTSO3-T14	3.85e+02 (2.13e+01)	1.88e+02 (1.03e+02) +	4.09e+02 (2.14e+01) -	4.07e+02 (1.46e+01) -	4.14e+02 (1.45e+01) -	4.06e+02 (1.28e+01) -
WCCI20-MaTSO3-T15	3.86e+02 (1.48e+01)	2.26e+02 (9.11e+01) +	4.10e+02 (1.38e+01) -	4.02e+02 (1.82e+01) -	4.09e+02 (1.49e+01) -	4.04e+02 (1.74e+01) -
WCCI20-MaTSO3-T16	3.89e+02 (1.06e+01)	2.19e+02 (1.09e+02) +	4.04e+02 (1.55e+01) -	4.06e+02 (1.83e+01) -	4.08e+02 (1.45e+01) -	4.11e+02 (1.34e+01) -
WCCI20-MaTSO3-T17	3.89e+02 (1.22e+01)	1.94e+02 (8.57e+01) +	4.10e+02 (1.60e+01) -	4.02e+02 (1.60e+01) -	4.14e+02 (1.90e+01) -	4.06e+02 (1.97e+01) -
WCCI20-MaTSO3-T18	3.86e+02 (1.48e+01)	1.96e+02 (1.12e+02) +	4.10e+02 (1.93e+01) -	4.03e+02 (1.34e+01) -	4.05e+02 (2.22e+01) -	4.01e+02 (1.72e+01) -
WCCI20-MaTSO3-T19	3.89e+02 (1.90e+01)	1.68e+02 (1.21e+02) +	4.09e+02 (1.66e+01) -	4.06e+02 (1.58e+01) -	4.00e+02 (1.40e+01) -	4.08e+02 (1.20e+01) -
WCCI20-MaTSO3-T20	3.83e+02 (1.85e+01)	2.11e+02 (9.75e+01) +	4.13e+02 (1.45e+01) -	4.06e+02 (2.09e+01) -	4.10e+02 (1.39e+01) -	4.04e+02 (2.16e+01) -
WCCI20-MaTSO3-T21	3.85e+02 (1.07e+01)	1.78e+02 (1.05e+02) +	4.15e+02 (1.86e+01) -	4.07e+02 (1.54e+01) -	4.07e+02 (2.51e+01) -	4.03e+02 (1.99e+01) -
WCCI20-MaTSO3-T22	3.87e+02 (1.77e+01)	1.89e+02 (9.36e+01) +	4.14e+02 (1.61e+01) -	4.06e+02 (1.55e+01) -	4.02e+02 (1.98e+01) -	4.09e+02 (1.56e+01) -
WCCI20-MaTSO3-T23	3.91e+02 (1.47e+01)	2.05e+02 (1.04e+02) +	4.11e+02 (1.53e+01) -	4.01e+02 (1.26e+01) -	4.14e+02 (1.52e+01) -	4.05e+02 (2.47e+01) -
WCCI20-MaTSO3-T24	3.87e+02 (1.69e+01)	2.11e+02 (1.27e+02) +	4.05e+02 (2.01e+01) -	4.06e+02 (1.58e+01) -	4.08e+02 (1.38e+01) -	4.09e+02 (1.65e+01) -
WCCI20-MaTSO3-T25	3.86e+02 (1.13e+01)	1.86e+02 (1.08e+02) +	4.08e+02 (1.65e+01) -	4.08e+02 (1.42e+01) -	4.06e+02 (1.79e+01) -	4.09e+02 (1.74e+01) -
WCCI20-MaTSO3-T26	3.80e+02 (1.85e+01)	1.83e+02 (1.10e+02) +	4.15e+02 (1.28e+01) -	4.03e+02 (1.60e+01) -	4.15e+02 (1.41e+01) -	4.09e+02 (1.62e+01) -
WCCI20-MaTSO3-T27	3.87e+02 (1.66e+01)	1.92e+02 (1.11e+02) +	4.07e+02 (2.02e+01) -	4.04e+02 (2.21e+01) -	4.08e+02 (1.91e+01) -	4.01e+02 (1.70e+01) -
WCCI20-MaTSO3-T28	3.82e+02 (1.73e+01)	1.91e+02 (1.04e+02) +	4.15e+02 (1.84e+01) -	4.02e+02 (1.83e+01) -	4.09e+02 (1.48e+01) -	4.08e+02 (1.50e+01) -
WCCI20-MaTSO3-T29	3.87e+02 (1.48e+01)	1.84e+02 (9.02e+01) +	4.17e+02 (1.34e+01) -	4.07e+02 (1.36e+01) -	4.04e+02 (1.39e+01) -	4.06e+02 (1.25e+01) -
WCCI20-MaTSO3-T30	3.84e+02 (1.75e+01)	1.78e+02 (8.21e+01) +	4.06e+02 (2.13e+01) -	4.04e+02 (1.35e+01) -	4.07e+02 (1.39e+01) -	4.14e+02 (1.87e+01) -
WCCI20-MaTSO3-T31	3.82e+02 (1.59e+01)	2.14e+02 (1.02e+02) +	4.12e+02 (1.21e+01) -	4.07e+02 (1.96e+01) -	4.04e+02 (1.85e+01) -	4.08e+02 (1.46e+01) -
WCCI20-MaTSO3-T32	3.87e+02 (1.42e+01)	2.15e+02 (1.11e+02) +	4.12e+02 (1.92e+01) -	4.08e+02 (2.09e+01) -	4.11e+02 (1.81e+01) -	4.07e+02 (1.85e+01) -
WCCI20-MaTSO3-T33	3.86e+02 (2.52e+01)	1.76e+02 (9.48e+01) +	4.09e+02 (2.21e+01) -	4.03e+02 (1.81e+01) -	4.05e+02 (1.58e+01) -	4.08e+02 (1.81e+01) -
WCCI20-MaTSO3-T34	3.83e+02 (1.39e+01)	1.60e+02 (1.05e+02) +	4.15e+02 (1.52e+01) -	4.04e+02 (1.72e+01) -	4.07e+02 (1.53e+01) -	4.14e+02 (1.47e+01) -
WCCI20-MaTSO3-T35	3.90e+02 (1.52e+01)	2.03e+02 (1.00e+02) +	4.13e+02 (1.81e+01) -	4.00e+02 (1.97e+01) -	4.01e+02 (1.96e+01) =	4.11e+02 (1.73e+01) -
WCCI20-MaTSO3-T36	3.83e+02 (1.89e+01)	1.80e+02 (1.10e+02) +	4.14e+02 (1.38e+01) -	4.03e+02 (1.71e+01) -	4.12e+02 (1.72e+01) -	4.05e+02 (1.48e+01) -
WCCI20-MaTSO3-T37	3.87e+02 (1.32e+01)	1.84e+02 (1.17e+02) +	4.14e+02 (1.45e+01) -	4.13e+02 (1.41e+01) -	4.14e+02 (1.60e+01) -	4.12e+02 (1.30e+01) -
WCCI20-MaTSO3-T38	3.86e+02 (1.71e+01)	1.81e+02 (9.03e+01) +	4.10e+02 (2.05e+01) -	3.97e+02 (2.17e+01) -	3.97e+02 (2.11e+01) -	4.05e+02 (1.38e+01) -
WCCI20-MaTSO3-T39	3.87e+02 (1.05e+01)	2.06e+02 (1.32e+02) +	4.06e+02 (1.98e+01) -	4.13e+02 (1.17e+01) -	4.10e+02 (1.32e+01) -	4.03e+02 (1.56e+01) -
WCCI20-MaTSO3-T40	3.85e+02 (1.74e+01)	1.90e+02 (7.75e+01) +	4.15e+02 (1.40e+01) -	3.99e+02 (2.27e+01) -	4.06e+02 (2.08e+01) -	4.04e+02 (1.92e+01) -
WCCI20-MaTSO3-T41	3.88e+02 (1.08e+01)	1.85e+02 (1.15e+02) +	4.16e+02 (1.81e+01) -	3.98e+02 (2.13e+01) -	4.03e+02 (1.94e+01) -	4.03e+02 (1.76e+01) -
WCCI20-MaTSO3-T42	3.80e+02 (1.26e+01)	2.07e+02 (9.49e+01) +	4.10e+02 (1.61e+01) -	4.03e+02 (1.78e+01) -	4.13e+02 (1.24e+01) -	4.04e+02 (1.75e+01) -
WCCI20-MaTSO3-T43	3.84e+02 (1.57e+01)	1.69e+02 (8.52e+01) +	4.06e+02 (1.97e+01) -	4.05e+02 (1.65e+01) -	4.00e+02 (1.71e+01) -	4.07e+02 (1.53e+01) -
WCCI20-MaTSO3-T44	3.79e+02 (1.34e+01)	1.96e+02 (1.19e+02) +	4.09e+02 (1.23e+01) -	4.05e+02 (1.81e+01) -	4.10e+02 (1.87e+01) -	4.08e+02 (1.64e+01) -
WCCI20-MaTSO3-T45	3.81e+02 (1.30e+01)	1.63e+02 (1.09e+02) +	4.16e+02 (1.25e+01) -	4.03e+02 (1.53e+01) -	4.04e+02 (1.38e+01) -	4.02e+02 (1.30e+01) -
WCCI20-MaTSO3-T46	3.83e+02 (1.39e+01)	1.97e+02 (9.96e+01) +	4.17e+02 (2.11e+01) -	4.09e+02 (1.23e+01) -	4.06e+02 (2.08e+01) -	4.09e+02 (1.60e+01) -
WCCI20-MaTSO3-T47	3.86e+02 (1.73e+01)	2.06e+02 (1.01e+02) +	4.12e+02 (1.79e+01) -	4.03e+02 (1.47e+01) -	4.05e+02 (2.40e+01) -	4.10e+02 (1.49e+01) -
WCCI20-MaTSO3-T48	3.88e+02 (1.88e+01)	2.11e+02 (1.03e+02) +	4.12e+02 (2.16e+01) -	3.94e+02 (2.20e+01) =	4.18e+02 (1.34e+01) -	4.03e+02 (1.77e+01) -
WCCI20-MaTSO3-T49	3.84e+02 (1.64e+01)	1.82e+02 (1.09e+02) +	4.13e+02 (1.38e+01) -	4.04e+02 (1.75e+01) -	4.07e+02 (1.67e+01) -	4.15e+02 (9.35e+00) -
WCCI20-MaTSO3-T50	3.86e+02 (1.29e+01)	1.86e+02 (1.08e+02) +	4.13e+02 (1.25e+01) -	4.09e+02 (1.79e+01) -	4.10e+02 (1.37e+01) -	4.10e+02 (1.46e+01) -
+/-/=	Base	50/0/0	0/50/0	0/46/4	0/48/2	0/50/0

TABLE S15

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO4 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO4 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO4-T1	8.70e-11 (1.03e-10)	4.58e+00 (1.28e+01) -	2.73e-02 (9.32e-03) -	4.49e-05 (2.42e-05) -	5.10e-03 (2.12e-03) -	4.18e-03 (1.39e-03) -
WCCI20-MaTSO4-T2	6.32e+01 (6.74e+01)	1.45e+02 (1.24e+02) -	3.55e+02 (7.16e+02) -	1.55e+02 (1.98e+02) -	5.39e+02 (1.59e+03) -	9.20e+02 (1.73e+03) -
WCCI20-MaTSO4-T3	6.36e-06 (3.24e-06)	2.14e+00 (8.18e-01) -	1.65e-01 (7.19e-02) -	5.06e-02 (2.55e-02) -	6.35e+00 (6.82e+00) -	5.94e+00 (6.46e+00) -
WCCI20-MaTSO4-T4	2.03e-10 (1.73e-10)	1.28e+00 (3.02e+00) -	2.43e-02 (1.10e-02) -	2.29e-03 (1.37e-03) -	4.95e-03 (2.57e-03) -	5.09e-03 (1.77e-03) -
WCCI20-MaTSO4-T5	4.81e+01 (6.77e-01)	2.18e+02 (1.86e+02) -	5.22e+02 (1.09e+03) -	5.29e+02 (1.38e+03) -	3.72e+02 (7.80e+02) -	2.48e+02 (4.90e+02) -
WCCI20-MaTSO4-T6	5.88e-06 (4.17e-06)	2.03e+00 (7.83e-01) -	1.70e-01 (6.07e-02) -	4.99e-02 (2.89e-02) -	9.19e+00 (7.40e+00) -	7.85e+00 (7.40e+00) -
WCCI20-MaTSO4-T7	5.61e-10 (7.61e-10)	1.00e+01 (3.45e+01) -	2.55e-02 (1.03e-02) -	2.89e-03 (1.98e-03) -	5.42e-03 (2.38e-03) -	4.77e-03 (1.78e-03) -
WCCI20-MaTSO4-T8	6.36e+01 (3.22e+01)	6.01e+02 (9.25e+02) -	1.09e+03 (1.92e+03) -	5.88e+02 (9.89e+02) -	7.10e+02 (1.36e+03) -	5.94e+02 (1.53e+03) -
WCCI20-MaTSO4-T9	7.99e-06 (3.66e-06)	2.50e+00 (7.31e-01) -	1.84e-01 (7.75e-02) -	8.11e-02 (6.08e-02) -	7.02e+00 (6.77e+00) -	1.16e+01 (8.88e+00) -
WCCI20-MaTSO4-T10	1.52e-10 (2.27e-10)	2.01e+00 (7.05e+00) -	3.29e-02 (1.41e-02) -	3.03e-03 (2.93e-03) -	5.23e-03 (2.47e-03) -	4.74e-03 (2.73e-03) -
WCCI20-MaTSO4-T11	4.79e+01 (8.25e-01)	2.30e+02 (2.09e+02) -	3.92e+02 (1.26e+03) -	4.04e+02 (8.16e+02) -	6.92e+02 (1.31e+03) -	4.06e+02 (7.77e+02) -
WCCI20-MaTSO4-T12	1.14e-05 (7.83e-06)	2.20e+00 (4.15e-01) -	1.63e-01 (6.17e-02) -	6.30e-02 (5.20e-02) -	8.11e+00 (8.20e+00) -	6.50e+00 (6.10e+00) -
WCCI20-MaTSO4-T13	1.51e-10 (1.53e-10)	4.89e+00 (1.85e+01) -	2.60e-02 (1.47e-02) -	3.19e-03 (3.12e-03) -	5.30e-03 (2.15e-03) -	4.60e-03 (2.21e-03) -
WCCI20-MaTSO4-T14	1.28e+02 (8.93e+01)	6.93e+02 (9.02e+02) -	6.66e+02 (1.10e+03) =	1.13e+03 (2.02e+03) -	7.63e+02 (1.53e+03) =	2.51e+03 (9.19e+03) -
WCCI20-MaTSO4-T15	5.55e-06 (2.93e-06)	2.59e+00 (5.87e-01) -	1.36e-01 (3.99e-02) -	5.46e-02 (4.13e-02) -	9.69e+00 (8.33e+00) -	9.52e+00 (7.35e+00) -
WCCI20-MaTSO4-T16	3.75e-10 (5.42e-10)	7.06e-01 (1.61e+00) -	3.20e-02 (1.26e-02) -	3.10e-03 (1.19e-03) -	5.77e-03 (2.89e-03) -	5.72e-03 (2.64e-03) -
WCCI20-MaTSO4-T17	9.11e+01 (6.88e+01)	2.81e+03 (1.02e+04) -	4.58e+02 (6.50e+02) -	6.59e+02 (1.55e+03) -	2.82e+02 (6.23e+02) -	2.20e+02 (3.41e+02) -
WCCI20-MaTSO4-T18	7.59e-06 (3.65e-06)	2.19e+00 (9.01e-01) -	1.61e-01 (4.65e-02) -	6.29e-02 (4.44e-02) -	1.01e+01 (8.48e+00) -	1.02e+01 (7.71e+00) -
WCCI20-MaTSO4-T19	7.19e-11 (7.45e-11)	1.50e+00 (3.56e+00) -	2.84e-02 (1.42e-02) -	2.07e-03 (1.22e-03) -	5.30e-03 (2.37e-03) -	5.57e-03 (2.42e-03) -
WCCI20-MaTSO4-T20	5.41e+01 (2.10e+01)	3.57e+02 (4.39e+02) -	1.32e+04 (5.57e+04) -	4.20e+02 (7.59e+02) -	6.46e+02 (2.16e+03) -	1.82e+03 (4.15e+03) -
WCCI20-MaTSO4-T21	4.15e-06 (1.81e-06)	2.19e+00 (5.45e-01) -	1.74e-01 (5.36e-02) -	6.38e-02 (4.54e-02) -	1.01e+01 (8.17e+00) -	7.67e+00 (8.50e+00) -
WCCI20-MaTSO4-T22	4.39e-10 (4.20e-10)	7.09e-01 (1.25e+00) -	3.14e-02 (1.56e-02) -	2.14e-03 (8.29e-04) -	4.78e-03 (1.66e-03) -	5.16e-03 (1.76e-03) -
WCCI20-MaTSO4-T23	1.65e+02 (1.36e+02)	2.75e+02 (1.69e+02) -	1.01e+03 (1.54e+03) -	9.27e+02 (1.61e+03) =	1.51e+03 (3.04e+03) =	4.75e+02 (1.03e+03) =
WCCI20-MaTSO4-T24	1.21e-05 (6.30e-06)	2.22e+00 (8.09e-01) -	1.84e-01 (6.07e-02) -	6.74e-02 (6.75e-02) -	9.56e+00 (8.54e+00) -	7.42e+00 (6.88e+00) -
WCCI20-MaTSO4-T25	5.04e-11 (5.38e-11)	4.14e+00 (8.38e+00) -	3.50e-02 (1.85e-02) -	2.68e-03 (1.61e-03) -	5.14e-03 (2.36e-03) -	4.44e-03 (2.79e-03) -
WCCI20-MaTSO4-T26	5.85e+01 (2.56e+01)	3.46e+02 (4.73e+02) -	1.76e+02 (2.44e+02) -	1.91e+02 (3.66e+02) -	3.23e+02 (7.94e+02) -	6.55e+02 (1.55e+03) -
WCCI20-MaTSO4-T27	3.90e-06 (2.25e-06)	2.29e+00 (7.68e-01) -	1.80e-01 (5.73e-02) -	7.83e-02 (6.34e-02) -	8.66e+00 (7.17e+00) -	8.25e+00 (7.96e+00) -
WCCI20-MaTSO4-T28	3.07e-10 (2.97e-10)	1.92e+00 (4.06e+00) -	2.89e-02 (9.53e-03) -	2.52e-03 (1.14e-03) -	5.50e-03 (2.07e-03) -	5.65e-03 (2.58e-03) -
WCCI20-MaTSO4-T29	1.47e+02 (1.15e+02)	2.22e+03 (8.22e+03) -	5.55e+02 (1.01e+03) -	3.98e+02 (8.47e+02) =	1.22e+03 (2.48e+03) =	6.71e+02 (1.00e+03) -
WCCI20-MaTSO4-T30	9.40e-06 (4.43e-06)	1.88e+00 (8.42e-01) -	1.73e-01 (6.70e-02) -	5.53e-02 (2.45e-02) -	1.08e+01 (8.29e+00) -	1.11e+01 (8.79e+00) -
WCCI20-MaTSO4-T31	2.25e-10 (2.02e-10)	3.39e+00 (9.78e+00) -	2.99e-02 (1.13e-02) -	2.67e-03 (1.09e-03) -	5.09e-03 (1.71e-03) -	6.56e-03 (3.69e-03) -
WCCI20-MaTSO4-T32	4.92e+02 (6.64e+02)	1.30e+03 (1.03e+03) -	1.25e+03 (1.44e+03) =	3.35e+02 (7.88e+02) =	9.27e+02 (1.60e+03) =	1.58e+03 (4.06e+03) =
WCCI20-MaTSO4-T33	8.21e-06 (2.62e-06)	2.14e+00 (6.11e-01) -	1.54e-01 (5.51e-02) -	6.72e-02 (4.41e-02) -	8.60e+00 (6.84e+00) -	9.81e+00 (8.09e+00) -
WCCI20-MaTSO4-T34	2.62e-10 (1.69e-10)	2.19e+00 (6.94e+00) -	2.74e-02 (1.08e-02) -	2.40e-03 (1.51e-03) -	5.24e-03 (3.24e-03) -	4.97e-03 (2.58e-03) -
WCCI20-MaTSO4-T35	4.84e+02 (6.29e+02)	1.07e+03 (9.24e+02) -	7.22e+02 (1.17e+03) =	6.41e+02 (1.04e+03) =	4.99e+02 (9.55e+02) =	9.64e+02 (1.67e+03) =
WCCI20-MaTSO4-T36	7.08e-06 (3.28e-06)	2.19e+00 (7.55e-01) -	1.70e-01 (5.47e-02) -	7.54e-02 (5.25e-02) -	9.06e+00 (7.45e+00) -	7.50e+00 (7.01e+00) -
WCCI20-MaTSO4-T37	1.16e-10 (1.35e-10)	6.32e-01 (1.68e+00) -	2.70e-02 (1.42e-02) -	2.42e-03 (1.47e-03) -	5.61e-03 (2.24e-03) -	5.08e-03 (2.90e-03) -
WCCI20-MaTSO4-T38	1.92e+02 (3.62e+02)	9.11e+02 (9.15e+02) -	1.12e+03 (2.10e+03) -	1.39e+03 (3.25e+03) -	9.50e+02 (1.71e+03) -	1.54e+03 (3.68e+03) -
WCCI20-MaTSO4-T39	5.60e-06 (2.05e-06)	2.34e+00 (6.95e-01) -	1.84e-01 (5.94e-02) -	7.04e-02 (3.61e-02) -	8.41e+00 (8.59e+00) -	8.49e+00 (8.15e+00) -
WCCI20-MaTSO4-T40	4.76e-10 (3.56e-10)	7.48e+00 (2.64e+01) -	3.06e-02 (1.67e-02) -	2.54e-03 (1.19e-03) -	5.25e-03 (2.02e-03) -	4.90e-03 (2.69e-03) -
WCCI20-MaTSO4-T41	5.81e+01 (2.42e+01)	3.39e+02 (4.40e+02) -	4.03e+02 (7.95e+02) -	2.95e+02 (4.89e+02) -	3.61e+02 (5.04e+02) -	3.15e+03 (1.16e+04) -
WCCI20-MaTSO4-T42	4.68e-06 (3.07e-06)	2.16e+00 (7.73e-01) -	1.61e-01 (5.71e-02) -	5.88e-02 (4.17e-02) -	1.04e+01 (8.94e+00) -	7.68e+00 (8.06e+00) -
WCCI20-MaTSO4-T43	4.23e-11 (3.83e-11)	2.09e+00 (5.69e+00) -	3.31e-02 (1.89e-02) -	2.04e-03 (1.22e-03) -	4.39e-03 (2.34e-03) -	4.95e-03 (3.33e-03) -
WCCI20-MaTSO4-T44	6.88e+01 (4.60e+01)	4.75e+02 (5.48e+02) -	1.04e+03 (1.50e+03) -	3.91e+02 (7.70e+02) -	7.51e+02 (2.02e+03) -	1.89e+03 (3.72e+03) -
WCCI20-MaTSO4-T45	4.75e-06 (2.86e-06)	2.66e+00 (7.43e-01) -	1.90e-01 (7.43e-02) -	7.58e-02 (6.95e-02) -	9.53e+00 (8.95e+00) -	1.03e+01 (9.10e+00) -
WCCI20-MaTSO4-T46	5.07e-10 (5.41e-10)	1.05e+00 (1.97e+00) -	2.70e-02 (1.11e-02) -	2.43e-03 (1.06e-03) -	4.92e-03 (1.61e-03) -	5.64e-03 (2.73e-03) -
WCCI20-MaTSO4-T47	4.92e+01 (4.89e+00)	1.92e+02 (2.53e+02) -	1.45e+02 (1.69e+02) -	8.32e+03 (3.63e+04) -	5.53e+02 (9.76e+02) -	4.97e+02 (1.22e+03) -
WCCI20-MaTSO4-T48	7.46e-06 (3.88e-06)	2.21e+00 (6.22e-01) -	1.71e-01 (5.37e-02) -	7.93e-02 (7.70e-02) -	4.85e+00 (5.42e+00) -	9.64e+00 (8.21e+00) -
WCCI20-MaTSO4-T49	5.54e-10 (8.83e-10)	3.88e+00 (1.22e+01) -	3.05e-02 (1.27e-02) -	2.25e-03 (1.02e-03) -	4.98e-03 (1.72e-03) -	4.97e-03 (1.67e-03) -
WCCI20-MaTSO4-T50	9.08e+01 (4.84e+01)	8.82e+02 (1.01e+03) -	1.99e+02 (1.48e+02) -	8.41e+02 (1.42e+03) -	1.42e+03 (2.88e+03) -	9.02e+02 (1.51e+03) -
+/-/=	Base	0/50/0	0/47/3	0/46/4	0/45/5	0/47/3

TABLE S16

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO5 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO5 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO5-T1	3.82e+02 (1.28e+01)	2.55e+02 (1.15e+02) +	4.16e+02 (1.47e+01) -	3.93e+02 (9.13e+00) -	4.10e+02 (1.48e+01) -	4.05e+02 (1.80e+01) -
WCCI20-MaTSO5-T2	3.71e-04 (1.65e-03)	3.49e-02 (4.21e-02) -	1.23e-02 (3.47e-03) -	2.22e-03 (1.11e-03) -	4.62e-03 (1.62e-03) -	4.54e-03 (1.86e-03) -
WCCI20-MaTSO5-T3	5.65e-01 (8.12e-01)	1.32e+01 (5.34e+00) -	5.42e+00 (1.30e+00) -	3.30e+00 (1.10e+00) -	2.35e+01 (1.18e+01) -	2.31e+01 (1.31e+01) -
WCCI20-MaTSO5-T4	3.86e+02 (1.33e+01)	2.30e+02 (9.77e+01) +	4.09e+02 (1.36e+01) -	3.97e+02 (1.93e+01) =	4.07e+02 (1.51e+01) -	4.11e+02 (1.40e+01) -
WCCI20-MaTSO5-T5	1.39e-06 (9.17e-07)	2.11e-02 (4.21e-02) -	1.53e-02 (6.16e-03) -	2.59e-03 (1.00e-03) -	4.04e-03 (1.33e-03) -	5.50e-03 (2.44e-03) -
WCCI20-MaTSO5-T6	3.69e-01 (3.65e-01)	1.22e+01 (3.44e+00) -	5.30e+00 (9.70e-01) -	3.20e+00 (9.25e-01) -	2.01e+01 (1.03e+01) -	2.06e+01 (1.13e+01) -
WCCI20-MaTSO5-T7	3.80e+02 (1.71e+01)	2.42e+02 (1.63e+02) +	4.12e+02 (1.26e+01) -	4.00e+02 (1.31e+01) -	4.08e+02 (1.56e+01) -	4.10e+02 (1.63e+01) -
WCCI20-MaTSO5-T8	2.70e-06 (1.56e-06)	5.15e-02 (1.31e-01) -	1.50e-02 (6.30e-03) -	1.94e-03 (6.56e-04) -	4.27e-03 (1.25e-03) -	5.29e-03 (2.56e-03) -
WCCI20-MaTSO5-T9	6.06e-01 (6.73e-01)	1.38e+01 (6.37e+00) -	5.02e+00 (8.31e-01) -	2.95e+00 (9.69e-01) -	2.36e+01 (1.11e+01) -	1.89e+01 (1.14e+01) -
WCCI20-MaTSO5-T10	3.83e+02 (1.42e+01)	2.33e+02 (9.65e+01) +	4.14e+02 (2.15e+01) -	4.03e+02 (1.23e+01) -	4.09e+02 (1.23e+01) -	4.11e+02 (1.33e+01) -
WCCI20-MaTSO5-T11	1.59e-06 (8.84e-07)	3.98e-02 (4.76e-02) -	1.42e-02 (5.19e-03) -	2.27e-03 (1.09e-03) -	4.87e-03 (2.71e-03) -	4.97e-03 (1.22e-03) -
WCCI20-MaTSO5-T12	7.50e-01 (7.55e-01)	1.23e+01 (3.49e+00) -	5.08e+00 (8.03e-01) -	3.53e+00 (1.30e+00) -	2.39e+01 (1.07e+01) -	2.67e+01 (1.31e+01) -
WCCI20-MaTSO5-T13	3.80e+02 (1.37e+01)	2.51e+02 (1.60e+02) +	4.14e+02 (1.49e+01) -	4.06e+02 (1.49e+01) -	4.03e+02 (1.67e+01) -	4.06e+02 (1.51e+01) -
WCCI20-MaTSO5-T14	1.36e-06 (9.71e-07)	4.79e-02 (1.40e-01) -	1.41e-02 (6.04e-03) -	2.30e-03 (9.12e-04) -	6.09e-03 (2.23e-03) -	4.63e-03 (1.47e-03) -
WCCI20-MaTSO5-T15	9.47e-01 (1.31e+00)	1.29e+01 (4.75e+00) -	5.55e+00 (1.48e+00) -	2.95e+00 (8.55e-01) -	2.01e+01 (9.35e+00) -	2.88e+01 (1.49e+01) -
WCCI20-MaTSO5-T16	3.84e+02 (1.26e+01)	2.66e+02 (1.19e+02) +	4.08e+02 (2.01e+01) -	4.03e+02 (1.66e+01) -	4.10e+02 (2.01e+01) -	4.08e+02 (1.77e+01) -
WCCI20-MaTSO5-T17	3.73e-04 (1.65e-03)	3.69e-02 (7.99e-02) -	1.52e-02 (4.33e-03) -	2.02e-03 (1.30e-03) -	3.89e-03 (1.16e-03) -	4.71e-03 (2.14e-03) -
WCCI20-MaTSO5-T18	5.00e-01 (6.48e-01)	1.28e+01 (4.84e+00) -	4.73e+00 (8.73e-01) -	2.88e+00 (1.04e+00) -	1.99e+01 (7.52e+00) -	2.10e+01 (1.22e+01) -
WCCI20-MaTSO5-T19	3.83e+02 (1.94e+01)	2.66e+02 (1.08e+02) +	4.08e+02 (1.60e+01) -	4.10e+02 (1.48e+01) -	4.02e+02 (1.36e+01) -	4.03e+02 (1.54e+01) -
WCCI20-MaTSO5-T20	1.86e-06 (2.02e-06)	1.14e-01 (2.27e-01) -	1.37e-02 (5.07e-03) -	2.29e-03 (1.00e-03) -	5.12e-03 (1.81e-03) -	4.21e-03 (1.53e-03) -
WCCI20-MaTSO5-T21	9.20e-01 (8.22e-01)	1.21e+01 (2.51e+00) -	5.13e+00 (1.52e+00) -	3.02e+00 (8.57e-01) -	1.97e+01 (1.02e+01) -	2.79e+01 (1.56e+01) -
WCCI20-MaTSO5-T22	3.86e+02 (1.56e+01)	2.98e+02 (1.57e+02) +	4.13e+02 (1.56e+01) -	4.04e+02 (1.62e+01) -	4.08e+02 (1.77e+01) -	4.13e+02 (1.32e+01) -
WCCI20-MaTSO5-T23	2.57e-06 (1.75e-06)	7.10e-02 (2.14e-01) -	1.41e-02 (5.18e-03) -	2.14e-03 (8.85e-04) -	4.46e-03 (1.51e-03) -	4.88e-03 (2.35e-03) -
WCCI20-MaTSO5-T24	4.90e-01 (5.57e-01)	1.30e+01 (3.53e+00) -	5.65e+00 (9.79e-01) -	3.46e+00 (1.13e+00) -	2.84e+01 (1.37e+01) -	2.24e+01 (1.39e+01) -
WCCI20-MaTSO5-T25	3.81e+02 (1.29e+01)	2.27e+02 (1.11e+02) +	4.12e+02 (1.87e+01) -	4.06e+02 (1.34e+01) -	4.01e+02 (2.35e+01) -	4.05e+02 (1.87e+01) -
WCCI20-MaTSO5-T26	1.95e-06 (9.31e-07)	1.04e-01 (2.36e-01) -	1.36e-02 (3.82e-03) -	2.07e-03 (1.07e-03) -	4.41e-03 (3.11e-03) -	4.91e-03 (2.76e-03) -
WCCI20-MaTSO5-T27	7.41e-01 (1.18e+00)	1.42e+01 (3.29e+00) -	6.04e+00 (1.37e+00) -	3.47e+00 (1.06e+00) -	2.40e+01 (1.07e+01) -	2.52e+01 (1.31e+01) -
WCCI20-MaTSO5-T28	3.82e+02 (1.32e+01)	2.53e+02 (9.22e+01) +	4.13e+02 (1.50e+01) -	3.96e+02 (1.38e+01) -	4.02e+02 (1.77e+01) -	4.07e+02 (1.73e+01) -
WCCI20-MaTSO5-T29	3.73e-04 (1.65e-03)	2.52e-02 (3.72e-02) -	1.34e-02 (4.09e-03) -	2.24e-03 (8.28e-04) -	4.89e-03 (1.67e-03) -	5.54e-03 (2.61e-03) -
WCCI20-MaTSO5-T30	7.16e-01 (7.25e-01)	1.34e+01 (5.31e+00) -	5.27e+00 (6.46e-01) -	3.24e+00 (1.26e+00) -	2.83e+01 (1.20e+01) -	2.52e+01 (1.34e+01) -
WCCI20-MaTSO5-T31	3.80e+02 (1.65e+01)	2.65e+02 (1.25e+02) +	4.15e+02 (1.49e+01) -	4.03e+02 (2.10e+01) -	4.12e+02 (1.09e+01) -	4.12e+02 (1.25e+01) -
WCCI20-MaTSO5-T32	9.28e-07 (3.92e-07)	4.38e-02 (9.70e-02) -	1.43e-02 (5.71e-03) -	2.21e-03 (1.35e-03) -	4.54e-03 (1.38e-03) -	4.35e-03 (1.30e-03) -
WCCI20-MaTSO5-T33	4.49e-01 (5.08e-01)	1.43e+01 (7.85e+00) -	5.17e+00 (1.11e+00) -	2.94e+00 (5.45e-01) -	2.38e+01 (9.59e+00) -	1.63e+01 (5.66e+00) -
WCCI20-MaTSO5-T34	3.80e+02 (1.92e+01)	2.16e+02 (8.56e+01) +	4.07e+02 (1.59e+01) -	4.02e+02 (2.02e+01) -	4.11e+02 (1.61e+01) -	4.04e+02 (1.42e+01) -
WCCI20-MaTSO5-T35	1.87e-06 (6.93e-07)	8.22e-02 (1.41e-01) -	1.25e-02 (4.39e-03) -	2.11e-03 (1.09e-03) -	4.80e-03 (1.77e-03) -	4.22e-03 (1.87e-03) -
WCCI20-MaTSO5-T36	4.88e-01 (4.50e-01)	1.00e+01 (2.86e+00) -	4.68e+00 (6.07e-01) -	2.79e+00 (6.70e-01) -	2.38e+01 (1.52e+01) -	2.47e+01 (1.35e+01) -
WCCI20-MaTSO5-T37	3.73e+02 (1.43e+01)	2.45e+02 (1.07e+02) +	4.15e+02 (2.42e+01) -	4.10e+02 (1.27e+01) -	4.06e+02 (1.43e+01) -	3.98e+02 (2.67e+01) -
WCCI20-MaTSO5-T38	2.30e-06 (2.08e-06)	1.06e-01 (2.62e-01) -	1.22e-02 (3.70e-03) -	1.91e-03 (8.26e-04) -	4.07e-03 (1.33e-03) -	4.61e-03 (2.13e-03) -
WCCI20-MaTSO5-T39	4.24e-01 (5.40e-01)	1.63e+01 (6.90e+00) -	5.63e+00 (8.13e-01) -	3.50e+00 (1.39e+00) -	2.32e+01 (1.25e+01) -	1.99e+01 (1.05e+01) -
WCCI20-MaTSO5-T40	3.80e+02 (1.82e+01)	2.60e+02 (1.00e+02) +	4.15e+02 (1.39e+01) -	4.09e+02 (1.43e+01) -	4.07e+02 (1.75e+01) -	4.04e+02 (1.69e+01) -
WCCI20-MaTSO5-T41	2.37e-06 (1.23e-06)	1.79e-02 (2.28e-02) -	1.43e-02 (3.39e-03) -	1.81e-03 (7.27e-04) -	4.94e-03 (1.58e-03) -	4.43e-03 (1.47e-03) -
WCCI20-MaTSO5-T42	3.39e-01 (4.46e-01)	1.23e+01 (5.14e+00) -	5.08e+00 (7.70e-01) -	3.38e+00 (1.03e+00) -	2.12e+01 (1.05e+01) -	2.09e+01 (8.51e+00) -
WCCI20-MaTSO5-T43	3.73e+02 (1.99e+01)	2.73e+02 (1.39e+02) +	4.11e+02 (2.37e+01) -	3.98e+02 (1.20e+01) -	4.15e+02 (1.72e+01) -	4.03e+02 (1.46e+01) -
WCCI20-MaTSO5-T44	3.72e-04 (1.65e-03)	2.74e-02 (3.81e-02) -	1.57e-02 (6.79e-03) -	2.44e-03 (8.41e-04) -	4.61e-03 (1.63e-03) -	5.25e-03 (2.13e-03) -
WCCI20-MaTSO5-T45	5.12e-01 (6.08e-01)	1.19e+01 (4.28e+00) -	5.28e+00 (9.09e-01) -	3.31e+00 (1.47e+00) -	2.69e+01 (1.51e+01) -	2.23e+01 (9.60e+00) -
WCCI20-MaTSO5-T46	3.79e+02 (1.44e+01)	2.93e+02 (1.27e+02) +	4.10e+02 (1.60e+01) -	4.06e+02 (1.47e+01) -	4.02e+02 (1.45e+01) -	4.03e+02 (1.75e+01) -
WCCI20-MaTSO5-T47	1.67e-06 (1.10e-06)	4.94e-02 (5.24e-02) -	1.34e-02 (4.88e-03) -	1.94e-03 (8.03e-04) -	5.11e-03 (1.85e-03) -	5.00e-03 (2.19e-03) -
WCCI20-MaTSO5-T48	8.81e-01 (1.28e+00)	1.15e+01 (3.39e+00) -	4.86e+00 (9.00e-01) -	3.23e+00 (7.72e-01) -	2.60e+01 (1.31e+01) -	2.47e+01 (1.28e+01) -
WCCI20-MaTSO5-T49	3.76e+02 (1.34e+01)	2.18e+02 (1.07e+02) +	4.11e+02 (1.32e+01) -	4.09e+02 (1.30e+01) -	4.04e+02 (1.55e+01) -	4.12e+02 (2.18e+01) -
WCCI20-MaTSO5-T50	1.81e-06 (9.06e-07)	7.64e-02 (1.26e-01) -	1.42e-02 (6.64e-03) -	2.78e-03 (1.20e-03) -	5.29e-03 (2.31e-03) -	4.86e-03 (1.60e-03) -
+/!=	Base	17/33/0	0/50/0	0/49/1	0/50/0	0/50/0

TABLE S17

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO6 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO6 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO6-T1	1.01e+02 (1.37e+02)	6.63e+02 (1.03e+03) -	3.75e+02 (7.04e+02) -	3.82e+02 (1.12e+03) =	5.14e+02 (9.49e+02) -	1.47e+03 (2.01e+03) -
WCCI20-MaTSO6-T2	7.39e-04 (3.30e-03)	3.77e-02 (9.04e-02) -	1.52e-02 (5.78e-03) -	2.07e-03 (9.52e-04) -	4.19e-03 (1.55e-03) -	4.56e-03 (1.78e-03) -
WCCI20-MaTSO6-T3	1.14e+04 (2.89e+03)	1.06e+04 (2.85e+03) =	1.28e+04 (6.27e+02) -	1.27e+04 (5.78e+02) =	1.26e+04 (5.51e+02) =	1.28e+04 (5.16e+02) =
WCCI20-MaTSO6-T4	4.77e+01 (9.88e-01)	1.00e+03 (1.73e+03) -	3.78e+02 (9.55e+02) -	3.36e+02 (6.15e+02) -	1.17e+03 (1.80e+03) -	9.08e+02 (3.35e+03) -
WCCI20-MaTSO6-T5	4.12e-07 (3.32e-07)	3.45e-02 (5.13e-02) -	1.60e-02 (4.87e-03) -	2.20e-03 (1.47e-03) -	4.86e-03 (1.61e-03) -	4.03e-03 (1.38e-03) -
WCCI20-MaTSO6-T6	1.10e+04 (3.15e+03)	1.10e+04 (3.11e+03) =	1.28e+04 (4.31e+02) -	1.29e+04 (4.11e+02) -	1.26e+04 (5.34e+02) -	1.29e+04 (4.32e+02) -
WCCI20-MaTSO6-T7	7.60e+01 (7.52e+01)	3.73e+02 (4.42e+02) -	4.39e+02 (6.46e+02) -	1.06e+03 (3.26e+03) -	5.13e+02 (1.20e+03) -	7.78e+02 (1.54e+03) -
WCCI20-MaTSO6-T8	4.69e-07 (3.76e-07)	7.45e-02 (1.12e-01) -	1.25e-02 (4.30e-03) -	1.84e-03 (7.99e-04) -	4.64e-03 (1.55e-03) -	4.18e-03 (1.19e-03) -
WCCI20-MaTSO6-T9	1.09e+04 (3.01e+03)	1.14e+04 (2.80e+03) =	1.28e+04 (5.13e+02) -	1.28e+04 (4.79e+02) -	1.28e+04 (4.44e+02) -	1.27e+04 (7.72e+02) -
WCCI20-MaTSO6-T10	8.73e+01 (1.48e+02)	4.22e+02 (6.29e+02) -	4.24e+02 (7.54e+02) -	5.49e+02 (1.14e+03) -	6.48e+02 (1.38e+03) -	6.19e+02 (1.37e+03) -
WCCI20-MaTSO6-T11	3.59e-07 (3.98e-07)	4.59e-02 (6.48e-02) -	1.42e-02 (4.84e-03) -	1.95e-03 (7.97e-04) -	4.57e-03 (1.48e-03) -	4.93e-03 (1.89e-03) -
WCCI20-MaTSO6-T12	1.03e+04 (3.52e+03)	1.07e+04 (2.33e+03) =	1.29e+04 (4.38e+02) -	1.30e+04 (4.10e+02) -	1.27e+04 (5.35e+02) -	1.28e+04 (3.93e+02) -
WCCI20-MaTSO6-T13	5.54e+01 (2.42e+01)	2.44e+02 (2.49e+02) -	2.59e+02 (4.59e+02) -	3.82e+02 (1.31e+03) -	7.76e+02 (2.27e+03) -	2.19e+02 (2.91e+02) -
WCCI20-MaTSO6-T14	3.70e-04 (1.65e-03)	2.49e-02 (3.56e-02) -	1.50e-02 (5.69e-03) -	2.55e-03 (1.24e-03) -	4.36e-03 (1.56e-03) -	4.21e-03 (1.79e-03) -
WCCI20-MaTSO6-T15	9.82e+03 (4.00e+03)	1.03e+04 (3.30e+03) =	1.27e+04 (5.48e+02) -	1.28e+04 (5.85e+02) -	1.28e+04 (3.94e+02) -	1.28e+04 (4.12e+02) -
WCCI20-MaTSO6-T16	5.54e+01 (2.29e+01)	6.82e+02 (7.70e+02) -	7.70e+02 (9.46e+02) -	4.02e+02 (6.90e+02) -	3.11e+02 (6.17e+02) -	2.93e+02 (6.13e+02) -
WCCI20-MaTSO6-T17	3.34e-07 (2.13e-07)	5.56e-02 (1.01e-01) -	1.46e-02 (5.19e-03) -	1.98e-03 (1.01e-03) -	4.48e-03 (1.77e-03) -	5.32e-03 (2.02e-03) -
WCCI20-MaTSO6-T18	1.17e+04 (2.38e+03)	1.14e+04 (2.72e+03) =	1.30e+04 (4.63e+02) -	1.29e+04 (3.24e+02) -	1.29e+04 (3.98e+02) -	1.26e+04 (6.08e+02) =
WCCI20-MaTSO6-T19	4.81e+01 (6.83e-01)	2.85e+02 (5.17e+02) -	3.11e+03 (1.34e+04) -	3.42e+02 (7.91e+02) -	9.74e+02 (1.71e+03) -	2.93e+02 (6.13e+02) -
WCCI20-MaTSO6-T20	3.68e-07 (3.25e-07)	6.00e-02 (1.21e-01) -	1.36e-02 (5.12e-03) -	2.23e-03 (8.04e-04) -	5.88e-03 (4.21e-03) -	4.52e-03 (1.44e-03) -
WCCI20-MaTSO6-T21	9.89e+03 (4.26e+03)	1.20e+04 (1.85e+03) =	1.28e+04 (4.29e+02) -	1.29e+04 (5.26e+02) -	1.26e+04 (4.26e+02) =	1.28e+04 (3.14e+02) -
WCCI20-MaTSO6-T22	1.61e+02 (2.49e+02)	4.82e+02 (8.64e+02) -	7.16e+02 (9.78e+02) -	4.16e+02 (8.60e+02) -	1.51e+03 (2.77e+03) -	1.20e+03 (1.90e+03) -
WCCI20-MaTSO6-T23	3.70e-04 (1.65e-03)	7.29e-02 (1.47e-01) -	1.33e-02 (4.59e-03) -	2.12e-03 (8.62e-04) -	4.71e-03 (1.57e-03) -	5.59e-03 (1.62e-03) -
WCCI20-MaTSO6-T24	1.20e+04 (1.60e+03)	1.08e+04 (2.98e+03) =	1.28e+04 (4.80e+02) -	1.28e+04 (5.12e+02) -	1.28e+04 (5.85e+02) -	1.28e+04 (5.30e+02) -
WCCI20-MaTSO6-T25	7.47e+01 (6.55e+01)	4.85e+02 (5.84e+02) -	5.17e+02 (1.01e+03) -	3.27e+02 (9.01e+02) -	2.72e+02 (6.02e+02) -	4.43e+02 (8.15e+02) -
WCCI20-MaTSO6-T26	4.94e-04 (2.21e-03)	7.62e-02 (1.29e-01) -	1.50e-02 (5.09e-03) -	2.46e-03 (1.05e-03) -	4.27e-03 (1.48e-03) -	5.16e-03 (2.01e-03) -
WCCI20-MaTSO6-T27	8.55e+03 (4.40e+03)	1.13e+04 (2.57e+03) =	1.28e+04 (4.95e+02) -	1.28e+04 (7.02e+02) -	1.26e+04 (4.42e+02) -	1.25e+04 (5.66e+02) -
WCCI20-MaTSO6-T28	7.24e+01 (3.64e+01)	5.26e+02 (8.66e+02) -	6.67e+02 (1.77e+03) -	2.02e+02 (2.97e+02) -	5.21e+02 (1.01e+03) -	6.92e+02 (1.77e+03) -
WCCI20-MaTSO6-T29	4.19e-07 (3.66e-07)	5.88e-02 (9.90e-02) -	1.36e-02 (4.14e-03) -	2.17e-03 (1.11e-03) -	4.13e-03 (1.29e-03) -	4.29e-03 (2.04e-03) -
WCCI20-MaTSO6-T30	1.16e+04 (2.10e+03)	1.06e+04 (2.81e+03) =	1.28e+04 (2.88e+02) -	1.30e+04 (4.66e+02) -	1.28e+04 (4.64e+02) -	1.26e+04 (4.65e+02) =
WCCI20-MaTSO6-T31	7.15e+01 (4.79e+01)	7.70e+02 (1.55e+03) -	4.70e+02 (7.15e+02) -	7.64e+02 (1.59e+03) -	2.74e+02 (3.44e+02) -	9.06e+02 (1.63e+03) -
WCCI20-MaTSO6-T32	3.84e-07 (2.59e-07)	7.04e-02 (1.59e-01) -	1.22e-02 (4.53e-03) -	2.67e-03 (1.82e-03) -	5.51e-03 (1.94e-03) -	5.19e-03 (4.40e-03) -
WCCI20-MaTSO6-T33	9.99e+03 (3.69e+03)	1.15e+04 (2.74e+03) =	1.28e+04 (5.18e+02) -	1.27e+04 (5.67e+02) -	1.24e+04 (7.75e+02) -	1.28e+04 (4.89e+02) -
WCCI20-MaTSO6-T34	5.09e+01 (1.32e+01)	5.86e+02 (1.62e+03) -	1.48e+02 (1.52e+02) -	3.15e+02 (7.00e+02) -	4.44e+02 (8.76e+02) -	1.41e+03 (2.56e+03) -
WCCI20-MaTSO6-T35	3.61e-07 (2.08e-07)	5.93e-02 (1.25e-01) -	1.41e-02 (5.14e-03) -	2.13e-03 (1.02e-03) -	4.61e-03 (2.07e-03) -	5.16e-03 (2.52e-03) -
WCCI20-MaTSO6-T36	1.09e+04 (2.92e+03)	1.11e+04 (2.95e+03) =	1.30e+04 (3.70e+02) -	1.29e+04 (4.72e+02) -	1.29e+04 (3.02e+02) -	1.27e+04 (5.83e+02) -
WCCI20-MaTSO6-T37	6.82e+01 (5.60e+01)	3.57e+02 (4.68e+02) -	6.63e+03 (2.87e+04) -	7.51e+02 (1.31e+03) -	2.01e+03 (5.00e+03) -	6.85e+02 (1.72e+03) -
WCCI20-MaTSO6-T38	2.94e-07 (2.78e-07)	4.69e-02 (7.42e-02) -	1.47e-02 (6.31e-03) -	1.94e-03 (9.01e-04) -	5.51e-03 (1.44e-03) -	4.54e-03 (1.65e-03) -
WCCI20-MaTSO6-T39	1.18e+04 (2.54e+03)	1.12e+04 (3.46e+03) =	1.28e+04 (4.66e+02) =	1.29e+04 (3.19e+02) -	1.27e+04 (4.95e+02) =	1.28e+04 (5.22e+02) =
WCCI20-MaTSO6-T40	2.93e+02 (4.22e+02)	1.41e+03 (1.33e+03) -	4.81e+02 (6.80e+02) =	4.12e+02 (6.72e+02) =	1.29e+03 (2.53e+03) =	4.20e+02 (1.03e+03) =
WCCI20-MaTSO6-T41	3.09e-07 (2.16e-07)	6.65e-02 (1.41e-01) -	1.26e-02 (5.06e-03) -	2.10e-03 (1.24e-03) -	4.15e-03 (1.68e-03) -	5.19e-03 (1.93e-03) -
WCCI20-MaTSO6-T42	1.08e+04 (2.95e+03)	1.07e+04 (2.51e+03) =	1.29e+04 (3.73e+02) -	1.28e+04 (4.77e+02) -	1.28e+04 (4.37e+02) -	1.27e+04 (4.29e+02) -
WCCI20-MaTSO6-T43	2.19e+02 (3.48e+02)	1.45e+03 (3.06e+03) -	4.75e+02 (9.28e+02) =	6.52e+02 (1.99e+03) =	4.57e+02 (9.63e+02) =	1.06e+03 (1.92e+03) -
WCCI20-MaTSO6-T44	7.83e-07 (6.74e-07)	2.07e-02 (3.52e-02) -	1.44e-02 (6.94e-03) -	1.96e-03 (7.40e-04) -	5.41e-03 (2.18e-03) -	4.46e-03 (1.84e-03) -
WCCI20-MaTSO6-T45	1.21e+04 (1.81e+03)	1.15e+04 (2.63e+03) =	1.27e+04 (4.44e+02) =	1.28e+04 (4.96e+02) -	1.26e+04 (5.23e+02) =	1.28e+04 (4.34e+02) -
WCCI20-MaTSO6-T46	5.62e+02 (8.47e+02)	1.92e+03 (2.14e+03) -	1.00e+03 (1.86e+03) =	8.82e+02 (1.16e+03) =	7.52e+02 (1.52e+03) =	8.45e+02 (2.12e+03) =
WCCI20-MaTSO6-T47	4.67e-07 (5.32e-07)	6.30e-02 (1.05e-01) -	1.37e-02 (3.96e-03) -	2.50e-03 (1.22e-03) -	4.50e-03 (1.88e-03) -	5.32e-03 (1.44e-03) -
WCCI20-MaTSO6-T48	1.16e+04 (2.15e+03)	1.21e+04 (2.90e+03) =	1.28e+04 (4.65e+02) -	1.29e+04 (6.37e+02) -	1.29e+04 (4.17e+02) -	1.30e+04 (4.16e+02) -
WCCI20-MaTSO6-T49	1.12e+02 (7.93e+01)	5.19e+02 (5.13e+02) -	5.10e+02 (1.05e+03) -	5.17e+02 (1.22e+03) =	4.75e+02 (8.86e+02) -	5.33e+02 (1.22e+03) =
WCCI20-MaTSO6-T50	3.70e-04 (1.65e-03)	1.01e-01 (2.35e-01) -	1.50e-02 (8.99e-03) -	2.50e-03 (1.40e-03) -	4.34e-03 (1.36e-03) -	4.54e-03 (1.79e-03) -
+/-/=	Base	0/35/15	0/45/5	0/44/6	0/43/7	0/43/7

TABLE S18

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO7 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO7 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO7-T1	6.64e-06 (3.09e-06)	2.50e+00 (1.00e+00) -	2.09e-01 (6.67e-02) -	5.92e-03 (1.61e-03) -	1.27e+01 (9.03e+00) -	9.84e+00 (7.96e+00) -
WCCI20-MaTSO7-T2	3.85e+02 (1.50e+01)	2.57e+02 (1.05e+02) +	4.16e+02 (2.00e+01) -	4.03e+02 (1.16e+01) -	4.09e+02 (1.58e+01) -	4.05e+02 (1.82e+01) -
WCCI20-MaTSO7-T3	4.83e-01 (5.44e-01)	1.37e+01 (2.79e+00) -	6.37e+00 (2.09e+00) -	3.52e+00 (9.59e-01) -	2.63e+01 (1.42e+01) -	2.35e+01 (1.37e+01) -
WCCI20-MaTSO7-T4	4.01e-06 (2.31e-06)	2.41e+00 (9.10e-01) -	1.82e-01 (5.62e-02) -	7.25e-02 (8.59e-02) -	1.10e+01 (8.25e+00) -	8.66e+00 (8.64e+00) -
WCCI20-MaTSO7-T5	3.85e+02 (1.31e+01)	2.91e+02 (1.44e+02) +	4.10e+02 (1.89e+01) -	3.99e+02 (1.56e+01) -	4.07e+02 (1.34e+01) -	4.04e+02 (1.95e+01) -
WCCI20-MaTSO7-T6	7.57e-01 (5.81e-01)	1.41e+01 (8.51e+00) -	5.52e+00 (8.08e-01) -	3.06e+00 (6.93e-01) -	2.26e+01 (1.29e+01) -	2.50e+01 (1.03e+01) -
WCCI20-MaTSO7-T7	8.43e-06 (5.24e-06)	2.75e+00 (1.49e+00) -	1.96e-01 (8.03e-02) -	7.15e-02 (8.26e-02) -	9.03e+00 (8.09e+00) -	1.03e+01 (7.89e+00) -
WCCI20-MaTSO7-T8	3.78e+02 (1.78e+01)	2.74e+02 (1.08e+02) +	4.12e+02 (2.15e+01) -	4.01e+02 (1.92e+01) -	4.06e+02 (1.42e+01) -	4.07e+02 (2.06e+01) -
WCCI20-MaTSO7-T9	6.25e-01 (7.12e-01)	1.33e+01 (4.46e+00) -	5.90e+00 (1.19e+00) -	3.35e+00 (1.13e+00) -	2.04e+01 (1.38e+01) -	2.55e+01 (1.49e+01) -
WCCI20-MaTSO7-T10	7.81e-06 (3.52e-06)	2.57e+00 (9.35e-01) -	1.76e-01 (8.67e-02) -	4.57e-02 (2.08e-02) -	4.84e+00 (8.15e+00) -	8.11e+00 (8.15e+00) -
WCCI20-MaTSO7-T11	3.73e+02 (1.88e+01)	2.39e+02 (1.29e+02) +	4.16e+02 (1.91e+01) -	4.01e+02 (2.18e+01) -	4.12e+02 (1.60e+01) -	4.07e+02 (2.38e+01) -
WCCI20-MaTSO7-T12	4.74e-01 (5.39e-01)	1.50e+01 (5.74e+00) -	6.32e+00 (1.38e+00) -	2.99e+00 (8.07e-01) -	2.39e+01 (8.59e+00) -	2.37e+01 (1.46e+01) -
WCCI20-MaTSO7-T13	1.30e-05 (5.66e-06)	2.01e+00 (7.69e-01) -	1.76e-01 (8.41e-02) -	3.79e-02 (1.28e-02) -	9.59e+00 (8.46e+00) -	1.33e+01 (8.72e+00) -
WCCI20-MaTSO7-T14	3.86e+02 (1.35e+01)	2.91e+02 (1.61e+02) =	4.17e+02 (1.57e+01) -	4.10e+02 (1.22e+01) -	4.08e+02 (1.88e+01) -	4.03e+02 (1.72e+01) -
WCCI20-MaTSO7-T15	3.93e-01 (6.96e-01)	1.60e+01 (5.59e+00) -	6.06e+00 (1.08e+00) -	3.35e+00 (1.79e+00) -	2.52e+01 (1.46e+01) -	2.40e+01 (1.39e+01) -
WCCI20-MaTSO7-T16	3.95e-06 (2.18e-06)	2.45e+00 (8.78e-01) -	1.91e-01 (7.66e-02) -	4.77e-02 (2.48e-02) -	1.33e+01 (8.99e+00) -	1.15e+01 (8.02e+00) -
WCCI20-MaTSO7-T17	3.84e+02 (1.35e+01)	2.02e+02 (9.17e+01) +	4.11e+02 (1.31e+01) -	4.02e+02 (1.18e+01) -	4.09e+02 (1.21e+01) -	4.09e+02 (1.56e+01) -
WCCI20-MaTSO7-T18	7.12e-01 (8.93e-01)	1.36e+01 (6.28e+00) -	5.91e+00 (1.30e+00) -	3.48e+00 (1.25e+00) -	2.37e+01 (1.06e+01) -	2.88e+01 (1.64e+01) -
WCCI20-MaTSO7-T19	9.31e-06 (5.14e-06)	2.07e+00 (6.17e-01) -	2.13e-01 (9.28e-02) -	3.95e-02 (2.11e-02) -	1.02e+01 (8.19e+00) -	5.01e+00 (5.55e+00) -
WCCI20-MaTSO7-T20	3.86e+02 (1.87e+01)	2.33e+02 (1.25e+02) +	4.14e+02 (1.81e+01) -	4.06e+02 (1.89e+01) -	4.09e+02 (1.30e+01) -	4.08e+02 (1.43e+01) -
WCCI20-MaTSO7-T21	5.68e-01 (7.60e-01)	1.27e+01 (4.38e+00) -	5.48e+00 (1.10e+00) -	3.11e+00 (1.15e+00) -	1.87e+01 (1.04e+01) -	2.41e+01 (1.40e+01) -
WCCI20-MaTSO7-T22	3.78e-06 (2.60e-06)	2.48e+00 (1.22e+00) -	1.95e-01 (7.65e-02) -	5.29e-02 (5.03e-02) -	1.32e+01 (8.32e+00) -	9.35e+00 (7.65e+00) -
WCCI20-MaTSO7-T23	3.85e+02 (9.48e+00)	2.27e+02 (9.19e+01) +	4.13e+02 (1.40e+01) -	4.02e+02 (2.16e+01) -	4.08e+02 (2.39e+01) -	4.03e+02 (1.96e+01) -
WCCI20-MaTSO7-T24	3.73e-01 (5.29e-01)	1.33e+01 (4.89e+00) -	5.62e+00 (7.72e-01) -	3.64e+00 (1.16e+00) -	2.99e+01 (1.45e+01) -	1.94e+01 (7.69e+00) -
WCCI20-MaTSO7-T25	1.12e-05 (4.46e-06)	2.38e+00 (9.95e-01) -	2.16e-01 (1.04e-01) -	4.78e-02 (2.64e-02) -	5.41e+00 (4.88e+00) -	1.17e+01 (9.57e+00) -
WCCI20-MaTSO7-T26	3.80e+02 (1.55e+01)	2.60e+02 (1.13e+02) +	4.16e+02 (1.46e+01) -	4.02e+02 (1.83e+01) -	4.13e+02 (2.05e+01) -	4.08e+02 (1.58e+01) -
WCCI20-MaTSO7-T27	5.62e-01 (6.87e-01)	1.16e+01 (4.01e+00) -	5.86e+00 (1.30e+00) -	2.89e+00 (8.51e-01) -	2.18e+01 (9.70e+00) -	2.55e+01 (9.80e+00) -
WCCI20-MaTSO7-T28	7.20e-06 (2.67e-06)	2.29e+00 (1.04e+00) -	1.78e-01 (6.82e-02) -	7.27e-02 (5.80e-02) -	9.94e+00 (8.17e+00) -	6.91e+00 (6.26e+00) -
WCCI20-MaTSO7-T29	3.82e+02 (1.96e+01)	2.28e+02 (1.12e+02) +	4.16e+02 (1.52e+01) -	4.02e+02 (1.50e+01) -	4.04e+02 (1.33e+01) -	4.06e+02 (1.86e+01) -
WCCI20-MaTSO7-T30	5.46e-01 (6.25e-01)	1.41e+01 (2.79e+00) -	5.94e+00 (1.12e+00) -	3.83e+00 (1.60e+00) -	2.57e+01 (1.32e+01) -	2.53e+01 (1.28e+01) -
WCCI20-MaTSO7-T31	9.23e-06 (5.47e-06)	2.31e+00 (1.17e+00) -	1.90e-01 (7.36e-02) -	6.64e-02 (6.02e-02) -	1.03e+01 (8.94e+00) -	9.88e+00 (7.95e+00) -
WCCI20-MaTSO7-T32	3.81e+02 (1.81e+01)	2.55e+02 (9.38e+01) +	4.12e+02 (1.83e+01) -	4.08e+02 (2.01e+01) -	4.06e+02 (1.59e+01) -	4.04e+02 (1.57e+01) -
WCCI20-MaTSO7-T33	4.59e-01 (5.84e-01)	1.30e+01 (5.26e+00) -	5.17e+00 (7.97e-01) -	3.16e+00 (8.61e-01) -	2.31e+01 (1.26e+01) -	2.22e+01 (9.77e+00) -
WCCI20-MaTSO7-T34	8.07e-06 (3.57e-06)	2.43e+00 (9.23e-01) -	2.10e-01 (9.31e-02) -	4.11e-02 (1.99e-02) -	9.69e+00 (7.70e+00) -	1.11e+01 (8.74e+00) -
WCCI20-MaTSO7-T35	3.82e+02 (1.48e+01)	2.75e+02 (1.11e+02) +	4.08e+02 (1.32e+01) -	4.01e+02 (1.82e+01) -	4.06e+02 (2.25e+01) -	4.13e+02 (1.52e+01) -
WCCI20-MaTSO7-T36	9.38e-01 (8.55e-01)	1.13e+01 (3.80e+00) -	6.06e+00 (1.20e+00) -	3.15e+00 (9.40e-01) -	2.30e+01 (1.23e+01) -	2.44e+01 (9.70e+00) -
WCCI20-MaTSO7-T37	9.09e-06 (3.70e-06)	2.00e+00 (7.45e-01) -	2.15e-01 (1.01e-01) -	4.69e-02 (2.57e-02) -	9.74e+00 (8.05e+00) -	1.00e+01 (8.98e+00) -
WCCI20-MaTSO7-T38	3.82e+02 (1.80e+01)	2.42e+02 (9.98e+01) +	4.13e+02 (1.89e+01) -	4.05e+02 (1.70e+01) -	4.07e+02 (1.55e+01) -	4.11e+02 (1.50e+01) -
WCCI20-MaTSO7-T39	4.83e-01 (7.30e-01)	1.06e+01 (3.66e+00) -	5.58e+00 (1.33e+00) -	3.22e+00 (1.13e+00) -	2.38e+01 (1.32e+01) -	1.98e+01 (6.68e+00) -
WCCI20-MaTSO7-T40	5.62e-06 (3.21e-06)	2.28e+00 (8.48e-01) -	2.54e-01 (9.48e-02) -	4.80e-02 (3.56e-02) -	9.32e+00 (7.99e+00) -	1.04e+01 (7.89e+00) -
WCCI20-MaTSO7-T41	3.85e+02 (1.42e+01)	2.63e+02 (1.08e+02) +	4.16e+02 (1.84e+01) -	4.10e+02 (1.35e+01) -	4.02e+02 (2.07e+01) -	4.12e+02 (1.42e+01) -
WCCI20-MaTSO7-T42	4.69e-01 (7.45e-01)	1.35e+01 (6.19e+00) -	5.78e+00 (8.10e-01) -	3.09e+00 (7.83e-01) -	1.83e+01 (7.88e+00) -	2.33e+01 (1.46e+01) -
WCCI20-MaTSO7-T43	9.40e-06 (6.65e-06)	2.21e+00 (8.48e-01) -	2.06e-01 (6.26e-02) -	7.01e-02 (4.23e-02) -	9.91e+00 (8.44e+00) -	9.40e+00 (8.33e+00) -
WCCI20-MaTSO7-T44	3.74e+02 (1.64e+01)	2.52e+02 (9.84e+01) +	4.12e+02 (1.57e+01) -	4.04e+02 (1.75e+01) -	4.05e+02 (2.35e+01) -	4.10e+02 (2.33e+01) -
WCCI20-MaTSO7-T45	3.90e-01 (4.66e-01)	1.32e+01 (5.59e+00) -	5.78e+00 (9.70e-01) -	3.07e+00 (7.80e-01) -	2.61e+01 (1.53e+01) -	2.19e+01 (1.21e+01) -
WCCI20-MaTSO7-T46	1.12e-05 (5.48e-06)	2.60e+00 (7.55e-01) -	2.47e-01 (2.06e-01) -	4.89e-02 (3.34e-02) -	9.09e+00 (8.09e+00) -	1.16e+01 (7.54e+00) -
WCCI20-MaTSO7-T47	3.84e+02 (1.91e+01)	2.72e+02 (8.76e+01) +	4.21e+02 (1.21e+01) -	4.00e+02 (1.58e+01) -	4.10e+02 (1.45e+01) -	4.07e+02 (2.18e+01) -
WCCI20-MaTSO7-T48	4.50e-01 (5.40e-01)	1.38e+01 (5.74e+00) -	5.72e+00 (8.79e-01) -	3.04e+00 (9.15e-01) -	3.00e+01 (1.57e+01) -	2.40e+01 (1.49e+01) -
WCCI20-MaTSO7-T49	8.34e-06 (3.66e-06)	2.41e+00 (6.44e-01) -	2.21e-01 (7.20e-02) -	5.11e-02 (3.86e-02) -	9.57e+00 (7.50e+00) -	1.29e+01 (8.15e+00) -
WCCI20-MaTSO7-T50	3.86e+02 (1.52e+01)	2.89e+02 (1.10e+02) +	4.10e+02 (1.80e+01) -	4.05e+02 (1.35e+01) -	4.06e+02 (1.98e+01) -	4.02e+02 (1.97e+01) -
+/-/=	Base	16/33/1	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S19

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO8 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO8 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO8-T1	1.74e+02 (3.56e+02)	9.60e+02 (1.06e+03) -	4.82e+02 (7.25e+02) -	1.89e+02 (4.60e+02) =	3.65e+02 (1.12e+03) -	6.04e+02 (1.06e+03) -
WCCI20-MaTSO8-T2	3.21e-05 (1.71e-05)	8.38e+00 (8.15e+00) -	1.38e+01 (6.92e+00) -	1.22e+00 (2.32e+00) -	2.03e+01 (3.87e+00) -	1.69e+01 (7.79e+00) -
WCCI20-MaTSO8-T3	3.83e+02 (1.62e+01)	3.38e+02 (1.41e+02) +	4.08e+02 (1.63e+01) -	3.99e+02 (1.66e+01) -	4.08e+02 (1.69e+01) -	4.05e+02 (1.34e+01) -
WCCI20-MaTSO8-T4	2.26e-06 (1.52e-06)	1.96e-01 (3.26e-01) -	1.22e-02 (2.80e-03) -	1.94e-03 (8.44e-04) -	4.26e-03 (1.50e-03) -	4.32e-03 (1.38e-03) -
WCCI20-MaTSO8-T5	2.02e+00 (1.02e+00)	2.43e+01 (8.99e+00) -	3.12e+01 (1.22e+01) -	9.94e+00 (5.89e+00) -	2.19e+01 (1.07e+01) -	2.16e+01 (8.92e+00) -
WCCI20-MaTSO8-T6	8.71e+01 (1.06e+02)	1.23e+03 (2.87e+03) -	3.04e+02 (2.55e+02) -	1.59e+02 (1.88e+02) -	5.68e+02 (1.10e+03) -	1.76e+02 (2.11e+02) -
WCCI20-MaTSO8-T7	1.40e-05 (8.38e-06)	5.13e+00 (4.64e+00) -	2.43e+00 (1.50e+00) -	2.62e-01 (4.58e-01) -	2.06e+01 (2.08e+00) -	1.96e+01 (4.51e+00) -
WCCI20-MaTSO8-T8	3.84e+02 (1.98e+01)	3.67e+02 (1.13e+02) =	4.10e+02 (2.66e+01) -	4.05e+02 (1.79e+01) -	4.10e+02 (1.67e+01) -	4.05e+02 (2.16e+01) -
WCCI20-MaTSO8-T9	4.95e-04 (2.21e-03)	1.18e-01 (2.50e-01) -	1.03e-02 (2.84e-03) -	2.26e-03 (7.83e-04) -	4.09e-03 (1.33e-03) -	3.70e-03 (1.41e-03) -
WCCI20-MaTSO8-T10	3.31e+00 (1.55e+00)	2.44e+01 (6.53e+00) -	3.16e+01 (1.47e+01) -	1.28e+01 (5.23e+00) -	2.43e+01 (1.21e+01) -	2.44e+01 (7.86e+00) -
WCCI20-MaTSO8-T11	4.78e+01 (7.11e-01)	1.92e+03 (3.87e+03) -	5.65e+02 (1.28e+03) -	2.60e+02 (4.62e+02) -	1.72e+02 (1.80e+02) -	3.52e+02 (1.03e+03) -
WCCI20-MaTSO8-T12	1.14e-05 (8.39e-06)	5.26e+00 (4.74e+00) -	3.94e+00 (2.71e+00) -	1.08e+00 (3.82e+00) -	1.90e+01 (5.48e+00) -	1.91e+01 (4.81e+00) -
WCCI20-MaTSO8-T13	3.82e+02 (1.27e+01)	3.72e+02 (9.95e+01) =	4.14e+02 (1.52e+01) -	4.07e+02 (1.33e+01) -	4.06e+02 (1.43e+01) -	4.16e+02 (1.79e+01) -
WCCI20-MaTSO8-T14	2.21e-06 (1.96e-06)	1.49e-01 (2.84e-01) -	1.28e-02 (4.42e-03) -	2.60e-03 (1.19e-03) -	4.48e-03 (2.65e-03) -	3.96e-03 (1.05e-03) -
WCCI20-MaTSO8-T15	2.48e+00 (2.34e+00)	2.81e+01 (1.21e+01) -	2.51e+01 (6.15e+00) -	1.28e+01 (5.94e+00) -	2.99e+01 (1.49e+01) -	2.72e+01 (1.03e+01) -
WCCI20-MaTSO8-T16	1.19e+02 (1.15e+02)	9.12e+02 (1.57e+03) -	2.48e+02 (3.39e+02) -	5.22e+02 (1.11e+03) =	9.03e+02 (1.36e+03) -	7.18e+02 (1.38e+03) -
WCCI20-MaTSO8-T17	1.75e-05 (8.89e-06)	4.56e+00 (3.30e+00) -	4.22e+00 (4.50e+00) -	4.77e-01 (1.17e+00) -	1.93e+01 (5.58e+00) -	2.09e+01 (9.63e-01) -
WCCI20-MaTSO8-T18	3.81e+02 (1.74e+01)	3.59e+02 (1.31e+02) =	4.09e+02 (2.06e+01) -	4.05e+02 (1.89e+01) -	4.07e+02 (1.49e+01) -	4.03e+02 (1.97e+01) -
WCCI20-MaTSO8-T19	4.08e-06 (2.29e-06)	6.30e-02 (9.50e-02) -	1.29e-02 (6.89e-03) -	1.85e-03 (7.28e-04) -	3.66e-03 (1.18e-03) -	3.47e-03 (1.34e-03) -
WCCI20-MaTSO8-T20	2.30e+00 (2.00e+00)	2.81e+01 (1.01e+01) -	2.53e+01 (1.20e+01) -	1.55e+01 (3.32e+00) -	2.19e+01 (7.92e+00) -	2.12e+01 (1.13e+01) -
WCCI20-MaTSO8-T21	4.81e+01 (8.54e-01)	9.00e+03 (1.50e+04) -	3.48e+02 (3.92e+02) -	2.92e+02 (6.95e+02) -	2.36e+02 (2.63e+02) -	3.06e+02 (8.39e+02) -
WCCI20-MaTSO8-T22	1.78e-05 (8.72e-06)	6.21e+00 (6.60e+00) -	1.14e+01 (6.50e+00) -	4.47e-01 (8.06e-01) -	2.11e+01 (3.15e-01) -	1.96e+01 (4.89e+00) -
WCCI20-MaTSO8-T23	3.82e+02 (1.23e+01)	3.28e+02 (1.48e+02) =	4.11e+02 (1.44e+01) -	3.97e+02 (1.62e+01) -	4.03e+02 (1.88e+01) -	4.04e+02 (2.25e+01) -
WCCI20-MaTSO8-T24	4.76e-06 (3.38e-06)	5.35e-02 (8.57e-02) -	1.28e-02 (6.25e-03) -	1.89e-03 (1.06e-03) -	4.82e-03 (2.20e-03) -	4.72e-03 (2.08e-03) -
WCCI20-MaTSO8-T25	2.80e+00 (2.01e+00)	2.58e+01 (6.83e+00) -	3.71e+01 (1.55e+01) -	1.25e+01 (5.91e+00) -	2.60e+01 (1.29e+01) -	2.22e+01 (8.04e+00) -
WCCI20-MaTSO8-T26	4.44e+02 (7.00e+02)	1.08e+03 (1.15e+03) -	8.88e+02 (1.87e+03) =	3.20e+02 (6.69e+02) =	1.04e+03 (2.06e+03) =	8.19e+02 (1.90e+03) =
WCCI20-MaTSO8-T27	1.81e-05 (1.07e-05)	4.12e+00 (3.10e+00) -	6.85e+00 (5.88e+00) -	2.78e-01 (2.29e-01) -	2.01e+01 (3.21e+00) -	1.87e+01 (6.26e+00) -
WCCI20-MaTSO8-T28	3.79e+02 (1.66e+01)	3.60e+02 (1.76e+02) =	4.18e+02 (1.94e+01) -	4.04e+02 (1.21e+01) -	4.07e+02 (1.31e+01) -	4.09e+02 (2.16e+01) -
WCCI20-MaTSO8-T29	2.57e-06 (1.04e-06)	4.59e-02 (5.62e-02) -	1.33e-02 (6.19e-03) -	1.55e-03 (4.85e-04) -	4.24e-03 (1.33e-03) -	3.96e-03 (1.40e-03) -
WCCI20-MaTSO8-T30	2.31e+00 (2.15e+00)	2.64e+01 (7.55e+00) -	3.41e+01 (1.47e+01) -	1.12e+01 (4.41e+00) -	1.87e+01 (6.82e+00) -	2.14e+01 (9.31e+00) -
WCCI20-MaTSO8-T31	3.46e+02 (6.53e+02)	2.18e+03 (2.02e+03) -	6.02e+02 (1.06e+03) -	7.87e+02 (1.50e+03) =	7.23e+02 (1.53e+03) -	3.77e+02 (9.00e+02) -
WCCI20-MaTSO8-T32	2.29e-05 (2.37e-05)	6.61e+00 (6.68e+00) -	1.15e+01 (7.02e+00) -	3.83e-01 (3.81e-01) -	2.01e+01 (2.66e+00) -	2.00e+01 (3.68e+00) -
WCCI20-MaTSO8-T33	3.80e+02 (1.85e+01)	3.71e+02 (1.22e+02) =	4.13e+02 (1.97e+01) -	4.03e+02 (1.80e+01) -	4.09e+02 (1.30e+01) -	4.10e+02 (2.00e+01) -
WCCI20-MaTSO8-T34	1.83e-06 (1.60e-06)	1.02e-01 (1.86e-01) -	1.19e-02 (4.25e-03) -	1.60e-03 (8.34e-04) -	4.37e-03 (1.62e-03) -	5.16e-03 (2.36e-03) -
WCCI20-MaTSO8-T35	1.71e+00 (1.82e+00)	2.69e+01 (7.75e+00) -	3.13e+01 (1.37e+01) -	1.11e+01 (5.54e+00) -	2.24e+01 (8.21e+00) -	2.29e+01 (1.00e+01) -
WCCI20-MaTSO8-T36	2.32e+02 (4.24e+02)	3.31e+03 (7.57e+03) -	1.31e+03 (1.98e+03) -	3.05e+02 (4.91e+02) =	5.83e+02 (1.18e+03) -	6.68e+02 (1.68e+03) -
WCCI20-MaTSO8-T37	2.39e-05 (1.36e-05)	8.40e+00 (7.53e+00) -	1.10e+01 (7.32e+00) -	3.91e-01 (4.26e-01) -	2.05e+01 (2.80e+00) -	1.90e+01 (4.81e+00) -
WCCI20-MaTSO8-T38	3.86e+02 (1.75e+01)	3.57e+02 (1.56e+02) =	4.11e+02 (1.96e+01) -	4.02e+02 (1.78e+01) -	4.07e+02 (1.97e+01) -	4.09e+02 (1.34e+01) -
WCCI20-MaTSO8-T39	2.59e-06 (2.46e-06)	1.88e-01 (3.12e-01) -	1.03e-02 (3.30e-03) -	1.96e-03 (8.50e-04) -	4.02e-03 (1.54e-03) -	3.99e-03 (1.72e-03) -
WCCI20-MaTSO8-T40	2.14e+00 (1.90e+00)	2.51e+01 (7.21e+00) -	2.75e+01 (1.11e+01) -	1.20e+01 (6.24e+00) -	2.31e+01 (1.09e+01) -	2.22e+01 (1.25e+01) -
WCCI20-MaTSO8-T41	5.85e+02 (7.80e+02)	1.55e+03 (2.01e+03) -	2.70e+02 (4.30e+02) =	3.53e+02 (8.39e+02) =	5.74e+02 (1.07e+03) =	4.12e+02 (6.83e+02) =
WCCI20-MaTSO8-T42	1.20e-05 (1.07e-05)	3.46e+00 (1.60e+00) -	1.13e+01 (7.72e+00) -	2.40e-01 (1.63e-01) -	1.92e+01 (5.97e+00) -	2.09e+01 (1.13e+00) -
WCCI20-MaTSO8-T43	3.85e+02 (1.76e+01)	3.99e+02 (1.72e+02) =	4.08e+02 (1.89e+01) -	4.01e+02 (2.16e+01) -	4.07e+02 (1.85e+01) -	4.05e+02 (1.45e+01) -
WCCI20-MaTSO8-T44	3.05e-06 (1.58e-06)	1.13e-01 (1.84e-01) -	1.24e-02 (3.79e-03) -	2.34e-03 (1.15e-03) -	4.93e-03 (2.16e-03) -	3.87e-03 (1.30e-03) -
WCCI20-MaTSO8-T45	2.71e+00 (2.17e+00)	2.72e+01 (8.49e+00) -	3.14e+01 (1.31e+01) -	8.64e+00 (8.31e+00) -	2.35e+01 (1.33e+01) -	2.54e+01 (1.00e+01) -
WCCI20-MaTSO8-T46	7.74e+01 (9.99e+01)	1.28e+03 (3.23e+03) -	5.03e+02 (1.02e+03) -	2.49e+02 (3.22e+02) -	8.31e+01 (6.26e+01) -	2.48e+02 (4.71e+02) -
WCCI20-MaTSO8-T47	2.00e-05 (1.53e-05)	7.51e+00 (7.36e+00) -	6.68e+00 (6.03e+00) -	1.84e-01 (1.77e-01) -	1.92e+01 (4.90e+00) -	2.11e+01 (5.19e-02) -
WCCI20-MaTSO8-T48	3.81e+02 (1.19e+01)	3.72e+02 (1.85e+02) =	4.20e+02 (1.63e+01) -	3.99e+02 (2.03e+01) -	4.13e+02 (1.41e+01) -	4.03e+02 (2.01e+01) -
WCCI20-MaTSO8-T49	2.06e-06 (8.40e-07)	3.12e-02 (4.92e-02) -	1.35e-02 (5.63e-03) -	2.10e-03 (1.21e-03) -	3.92e-03 (1.70e-03) -	4.32e-03 (1.34e-03) -
WCCI20-MaTSO8-T50	1.59e+00 (1.06e+00)	2.51e+01 (8.34e+00) -	2.92e+01 (1.51e+01) -	1.18e+01 (4.27e+00) -	2.33e+01 (7.30e+00) -	2.59e+01 (1.57e+01) -
+/=/	Base	1/40/9	0/48/2	0/44/6	0/48/2	0/48/2

TABLE S20

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO9 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO9 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO9-T1	3.90e+02 (6.11e+02)	7.96e+03 (3.25e+04) -	6.84e+02 (1.21e+03) =	4.39e+02 (7.63e+02) =	1.85e+02 (2.42e+02) =	1.40e+03 (2.59e+03) -
WCCI20-MaTSO9-T2	1.73e-05 (7.47e-06)	6.36e+00 (7.11e+00) -	7.11e+00 (4.81e+00) -	4.23e+00 (7.74e+00) -	1.86e+01 (5.92e+00) -	1.89e+01 (5.50e+00) -
WCCI20-MaTSO9-T3	3.84e+02 (1.64e+01)	3.47e+02 (1.37e+02) =	4.18e+02 (1.61e+01) -	4.06e+02 (1.82e+01) -	3.99e+02 (2.48e+01) -	4.09e+02 (1.87e+01) -
WCCI20-MaTSO9-T4	8.96e-07 (6.22e-07)	1.01e-01 (1.77e-01) -	1.51e-02 (6.34e-03) -	1.80e-03 (7.61e-04) -	4.54e-03 (2.14e-03) -	4.70e-03 (1.80e-03) -
WCCI20-MaTSO9-T5	3.13e+00 (1.46e+00)	2.02e+01 (8.13e+00) -	3.30e+01 (1.42e+01) -	1.09e+01 (4.71e+00) -	2.35e+01 (1.12e+01) -	2.33e+01 (9.48e+00) -
WCCI20-MaTSO9-T6	9.99e+03 (3.39e+03)	8.64e+03 (3.36e+03) =	1.21e+04 (3.69e+02) -	1.21e+04 (3.87e+02) -	1.19e+04 (4.19e+02) -	1.19e+04 (4.48e+02) -
WCCI20-MaTSO9-T7	7.74e+01 (9.80e+01)	6.30e+03 (1.91e+04) -	4.06e+02 (9.09e+02) -	4.97e+02 (1.29e+03) -	3.08e+02 (5.17e+02) -	1.16e+02 (1.50e+02) -
WCCI20-MaTSO9-T8	3.14e-05 (3.09e-05)	2.92e+00 (2.26e+00) -	4.80e+00 (4.79e+00) -	4.41e-01 (5.66e-01) -	1.85e+01 (6.30e+00) -	1.92e+01 (4.68e+00) -
WCCI20-MaTSO9-T9	3.83e+02 (1.40e+01)	3.75e+02 (1.27e+02) =	4.08e+02 (1.79e+01) -	4.06e+02 (1.73e+01) -	4.07e+02 (1.51e+01) -	4.16e+02 (1.35e+01) -
WCCI20-MaTSO9-T10	4.46e-06 (4.80e-06)	4.76e-02 (9.58e-02) -	1.15e-02 (4.04e-03) -	1.97e-03 (8.23e-04) -	4.05e-03 (1.49e-03) -	4.75e-03 (1.27e-03) -
WCCI20-MaTSO9-T11	1.88e+00 (1.50e+00)	2.36e+01 (8.74e+00) -	3.05e+01 (1.31e+01) -	1.20e+01 (4.68e+00) -	2.56e+01 (9.89e+00) -	2.29e+01 (9.59e+00) -
WCCI20-MaTSO9-T12	1.14e+04 (6.88e+02)	1.06e+04 (3.00e+03) =	1.21e+04 (4.92e+02) -	1.20e+04 (4.84e+02) -	1.15e+04 (7.17e+02) =	1.18e+04 (6.00e+02) -
WCCI20-MaTSO9-T13	6.05e+01 (5.57e+01)	4.18e+02 (4.37e+02) -	4.06e+02 (1.01e+03) -	2.95e+02 (5.66e+02) -	8.19e+02 (1.06e+03) -	2.59e+02 (4.76e+02) -
WCCI20-MaTSO9-T14	8.12e-06 (5.45e-06)	2.97e+00 (1.57e+00) -	4.20e+00 (4.64e+00) -	1.04e+00 (1.64e+00) -	1.69e+01 (7.40e+00) -	1.93e+01 (4.26e+00) -
WCCI20-MaTSO9-T15	3.87e+02 (2.10e-01)	3.81e+02 (1.66e+02) =	4.17e+02 (1.17e+01) -	4.08e+02 (1.33e+01) -	4.02e+02 (1.84e+01) -	4.03e+02 (1.95e+01) -
WCCI20-MaTSO9-T16	1.41e-06 (1.10e-06)	2.45e-01 (3.58e-01) -	1.13e-02 (3.64e-03) -	1.69e-03 (7.50e-04) -	3.93e-03 (1.18e-03) -	3.71e-03 (1.64e-03) -
WCCI20-MaTSO9-T17	1.58e+00 (1.57e+00)	2.15e+01 (5.74e+00) -	2.63e+01 (1.30e+01) -	1.29e+01 (4.06e+00) -	2.46e+01 (9.94e+00) -	1.95e+01 (8.59e+00) -
WCCI20-MaTSO9-T18	1.09e+04 (2.37e+03)	1.03e+04 (2.90e+03) =	1.20e+04 (5.84e+02) -	1.18e+04 (7.21e+02) -	1.17e+04 (6.80e+02) =	1.19e+04 (6.53e+02) -
WCCI20-MaTSO9-T19	8.68e+01 (8.68e+01)	1.31e+03 (1.93e+03) -	4.82e+02 (7.80e+02) -	9.07e+01 (6.86e+01) -	3.22e+02 (6.63e+02) -	1.94e+02 (1.72e+02) -
WCCI20-MaTSO9-T20	1.93e-05 (1.34e-05)	9.18e+00 (8.50e+00) -	1.42e+01 (6.56e+00) -	2.11e+00 (4.71e+00) -	2.04e+01 (3.10e+00) -	2.09e+01 (9.64e-01) -
WCCI20-MaTSO9-T21	3.84e+02 (1.90e+01)	3.54e+02 (1.57e+02) =	4.11e+02 (1.83e+01) -	4.06e+02 (1.27e+01) -	4.11e+02 (1.20e+01) -	4.06e+02 (1.72e+01) -
WCCI20-MaTSO9-T22	2.93e-06 (1.74e-06)	1.96e-01 (2.54e-01) -	1.33e-02 (4.07e-03) -	2.01e-03 (1.18e-03) -	4.23e-03 (1.28e-03) -	4.20e-03 (1.82e-03) -
WCCI20-MaTSO9-T23	3.60e+00 (2.28e+00)	2.42e+01 (1.13e+01) -	2.70e+01 (9.94e+00) -	1.35e+01 (4.27e+00) -	2.40e+01 (1.10e+01) -	2.17e+01 (6.54e+00) -
WCCI20-MaTSO9-T24	1.03e+04 (2.77e+03)	9.72e+03 (3.32e+03) =	1.21e+04 (5.46e+02) -	1.18e+04 (4.51e+02) -	1.19e+04 (4.88e+03) -	1.17e+04 (6.74e+02) -
WCCI20-MaTSO9-T25	3.90e+02 (4.95e+02)	1.58e+03 (1.76e+03) -	8.51e+02 (1.36e+03) =	2.55e+02 (4.59e+02) =	6.75e+02 (1.27e+03) =	4.81e+02 (5.11e+02) =
WCCI20-MaTSO9-T26	2.29e-05 (8.17e-06)	6.82e+00 (6.01e+00) -	1.71e+01 (6.47e+00) -	2.95e+00 (6.12e+00) -	2.03e+01 (4.06e+00) -	2.11e+01 (3.98e-02) -
WCCI20-MaTSO9-T27	3.74e+02 (1.67e+01)	3.59e+02 (1.25e+02) =	4.11e+02 (2.08e+01) -	4.06e+02 (1.53e+01) -	4.08e+02 (2.05e+01) -	4.06e+02 (1.70e+01) -
WCCI20-MaTSO9-T28	2.49e-06 (2.96e-06)	9.15e-02 (1.35e-01) -	1.03e-02 (2.98e-03) -	2.13e-03 (1.14e-03) -	3.67e-03 (1.33e-03) -	4.34e-03 (1.51e-03) -
WCCI20-MaTSO9-T29	2.78e+00 (1.49e+00)	2.70e+01 (7.07e+00) -	3.38e+01 (1.19e+01) -	1.27e+01 (6.30e+00) -	2.29e+01 (6.66e+00) -	2.20e+01 (9.49e+00) -
WCCI20-MaTSO9-T30	1.14e+04 (1.81e+03)	1.02e+04 (2.79e+03) =	1.22e+04 (5.81e+02) -	1.21e+04 (5.43e+02) -	1.20e+04 (5.07e+02) =	1.22e+04 (4.47e+02) -
WCCI20-MaTSO9-T31	1.31e+02 (2.57e+02)	1.22e+03 (1.49e+03) -	8.16e+02 (1.10e+03) -	7.88e+02 (1.33e+03) -	3.04e+02 (5.09e+02) -	7.44e+02 (1.34e+03) -
WCCI20-MaTSO9-T32	1.21e-05 (1.00e-05)	5.50e+00 (6.07e+00) -	1.23e+01 (7.55e+00) -	4.99e-01 (6.36e-01) -	1.97e+01 (3.61e+00) -	2.08e+01 (1.43e+00) -
WCCI20-MaTSO9-T33	3.87e+02 (1.51e+01)	3.61e+02 (1.60e+02) =	4.16e+02 (1.36e+01) -	4.08e+02 (1.42e+01) -	4.06e+02 (1.53e+01) -	4.05e+02 (2.14e+01) -
WCCI20-MaTSO9-T34	3.07e-06 (1.98e-06)	1.22e-01 (1.83e-01) -	1.24e-02 (3.47e-03) -	2.00e-03 (8.92e-04) -	4.66e-03 (1.53e-03) -	4.52e-03 (1.66e-03) -
WCCI20-MaTSO9-T35	3.20e+00 (2.35e+00)	3.26e+01 (1.13e+01) -	2.86e+01 (1.13e+01) -	1.40e+01 (5.77e+00) -	2.74e+01 (1.22e+01) -	2.02e+01 (9.47e+00) -
WCCI20-MaTSO9-T36	1.06e+04 (3.24e+03)	9.91e+03 (3.20e+03) =	1.20e+04 (6.35e+02) -	1.19e+04 (5.87e+02) =	1.19e+04 (5.81e+02) =	1.20e+04 (6.45e+02) -
WCCI20-MaTSO9-T37	7.57e+01 (1.12e+02)	9.92e+02 (2.33e+03) -	1.43e+02 (1.21e+02) -	1.67e+02 (1.54e+02) -	6.18e+02 (1.26e+03) -	6.14e+02 (1.12e+03) -
WCCI20-MaTSO9-T38	1.74e-05 (1.07e-05)	7.13e+00 (7.30e+00) -	1.18e+01 (7.22e+00) -	1.82e+00 (4.82e+00) -	1.98e+01 (4.31e+00) -	1.96e+01 (4.64e+00) -
WCCI20-MaTSO9-T39	3.87e+02 (1.72e+01)	3.81e+02 (1.73e+02) =	4.18e+02 (1.29e+01) -	4.01e+02 (1.77e+01) -	4.09e+02 (1.91e+01) -	4.07e+02 (1.71e+01) -
WCCI20-MaTSO9-T40	1.45e-06 (1.15e-06)	1.80e-01 (2.93e-01) -	1.07e-02 (3.98e-03) -	2.09e-03 (1.00e-03) -	3.84e-03 (1.69e-03) -	3.45e-03 (1.85e-03) -
WCCI20-MaTSO9-T41	2.54e+00 (2.68e+00)	2.24e+01 (7.78e+00) -	2.75e+01 (1.09e+01) -	8.57e+00 (3.80e+00) -	2.25e+01 (1.04e+01) -	2.67e+01 (1.10e+01) -
WCCI20-MaTSO9-T42	1.12e+04 (6.74e+02)	9.28e+03 (3.61e+03) =	1.18e+04 (5.38e+02) -	1.18e+04 (6.51e+02) -	1.16e+04 (5.78e+02) -	1.17e+04 (5.38e+02) -
WCCI20-MaTSO9-T43	3.02e+02 (8.65e+02)	9.73e+02 (1.03e+03) -	8.95e+02 (1.31e+03) -	3.27e+02 (6.30e+02) -	7.20e+02 (1.37e+03) -	7.02e+02 (1.45e+03) -
WCCI20-MaTSO9-T44	1.37e-05 (1.53e-05)	5.63e+00 (6.57e+00) -	1.10e+01 (6.49e+00) -	2.63e-01 (1.95e-01) -	1.95e+01 (4.22e+00) -	1.86e+01 (6.10e+00) -
WCCI20-MaTSO9-T45	3.78e+02 (2.29e+01)	3.34e+02 (1.63e+02) =	4.11e+02 (1.77e+01) -	4.11e+02 (1.08e+01) -	4.08e+02 (1.98e+01) -	4.05e+02 (1.62e+01) -
WCCI20-MaTSO9-T46	3.63e-06 (2.28e-06)	9.97e-02 (1.71e-01) -	1.22e-02 (5.41e-03) -	1.79e-03 (7.03e-04) -	4.64e-03 (1.75e-03) -	4.21e-03 (8.86e-04) -
WCCI20-MaTSO9-T47	2.66e+00 (1.60e+00)	2.24e+01 (6.05e+00) -	2.43e+01 (9.21e+00) -	1.19e+01 (6.60e+00) -	2.53e+01 (9.75e+00) -	2.58e+01 (1.02e+01) -
WCCI20-MaTSO9-T48	1.14e+04 (5.82e+02)	1.08e+04 (2.71e+03) =	1.20e+04 (4.00e+02) -	1.20e+04 (4.81e+02) -	1.20e+04 (8.00e+02) -	1.22e+04 (3.02e+02) -
WCCI20-MaTSO9-T49	6.66e+01 (5.33e+01)	7.01e+02 (9.06e+02) -	2.60e+02 (3.78e+02) -	4.95e+02 (1.10e+03) -	2.71e+02 (4.91e+02) -	4.93e+02 (1.10e+03) -
WCCI20-MaTSO9-T50	1.13e-05 (5.95e-06)	9.19e+00 (8.29e+00) -	1.33e+01 (7.12e+00) -	1.06e+00 (1.69e+00) -	2.06e+01 (1.70e+00) -	1.79e+01 (6.66e+00) -
+/-/=	Base	0/34/16	0/48/2	0/47/3	0/44/6	0/49/1

TABLE S21

COMPARISON OF KR-MTDE, AEMTO, MATDE, SBO, EMEA, AND DE IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO10 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTDE (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO10 IN TEST SUITE 4.

Problem	KR-MTDE	AEMTO	MaTDE	SBO	EMEA	DE
WCCI20-MaTSO10-T1	1.50e-05 (6.28e-06)	7.20e+00 (7.27e+00) -	7.31e+00 (5.90e+00) -	1.06e-02 (3.81e-03) -	2.05e+01 (2.89e+00) -	1.97e+01 (4.84e+00) -
WCCI20-MaTSO10-T2	3.85e+02 (1.59e+01)	3.62e+02 (1.40e+02) =	4.14e+02 (1.29e+01) -	4.04e+02 (1.14e+01) -	4.02e+02 (1.84e+01) -	4.04e+02 (1.68e+01) -
WCCI20-MaTSO10-T3	4.23e-06 (5.58e-06)	1.18e-01 (2.03e-01) -	1.30e-02 (4.81e-03) -	1.82e-03 (5.68e-04) -	4.19e-03 (1.93e-03) -	3.89e-03 (1.13e-03) -
WCCI20-MaTSO10-T4	3.28e+00 (3.38e+00)	2.95e+01 (8.60e+00) -	2.79e+01 (1.29e+01) -	1.21e+01 (5.20e+00) -	2.08e+01 (9.54e+00) -	2.60e+01 (1.24e+01) -
WCCI20-MaTSO10-T5	1.15e+04 (6.08e+02)	8.92e+03 (3.76e+03) =	1.20e+04 (6.13e+02) -	1.20e+04 (7.17e+02) -	1.20e+04 (5.14e+02) -	1.17e+04 (6.58e+02) =
WCCI20-MaTSO10-T6	1.30e-05 (6.97e-06)	4.96e+00 (5.52e+00) -	1.22e+01 (7.22e+00) -	3.07e+00 (6.55e+00) -	2.03e+01 (2.47e+00) -	2.01e+01 (4.02e+00) -
WCCI20-MaTSO10-T7	3.80e+02 (1.35e+01)	3.69e+02 (1.38e+02) =	4.07e+02 (1.91e+01) -	4.07e+02 (1.24e+01) -	4.04e+02 (1.69e+01) -	4.09e+02 (1.37e+01) -
WCCI20-MaTSO10-T8	3.30e-06 (2.29e-06)	8.49e-02 (1.27e-01) -	1.61e-02 (1.48e-02) -	2.16e-03 (1.01e-03) -	4.93e-03 (2.97e-03) -	4.13e-03 (1.34e-03) -
WCCI20-MaTSO10-T9	2.33e+00 (1.55e+00)	2.43e+01 (8.98e+00) -	2.78e+01 (1.00e+01) -	1.14e+01 (3.78e+00) -	2.38e+01 (1.37e+01) -	2.81e+01 (1.48e+01) -
WCCI20-MaTSO10-T10	1.19e+04 (6.37e+02)	1.12e+04 (3.20e+03) =	1.24e+04 (6.30e+02) -	1.23e+04 (4.53e+02) =	1.23e+04 (5.48e+02) =	1.24e+04 (5.31e+02) -
WCCI20-MaTSO10-T11	3.06e-05 (2.03e-05)	8.47e+00 (8.11e+00) -	1.62e+01 (7.45e+00) -	2.84e+00 (4.96e+00) -	1.92e+01 (5.36e+00) -	2.05e+01 (2.11e+00) -
WCCI20-MaTSO10-T12	3.83e+02 (2.11e+01)	3.75e+02 (1.07e+02) =	4.09e+02 (1.60e+01) -	4.04e+02 (1.79e+01) -	4.12e+02 (1.31e+01) -	4.05e+02 (1.64e+01) -
WCCI20-MaTSO10-T13	1.79e-06 (1.66e-06)	1.78e-01 (2.97e-01) -	1.25e-02 (4.77e-03) -	2.48e-03 (1.44e-03) -	4.59e-03 (1.95e-03) -	4.26e-03 (1.28e-03) -
WCCI20-MaTSO10-T14	3.32e+00 (2.25e+00)	3.03e+01 (1.40e+01) -	3.51e+01 (1.64e+01) -	1.28e+01 (6.02e+00) -	2.57e+01 (1.18e+01) -	2.33e+01 (1.09e+01) -
WCCI20-MaTSO10-T15	1.12e+04 (7.53e+02)	9.21e+03 (3.38e+03) =	1.19e+04 (4.64e+02) -	1.17e+04 (8.02e+02) -	1.19e+04 (5.08e+02) -	1.19e+04 (6.28e+02) -
WCCI20-MaTSO10-T16	1.76e-05 (1.13e-05)	1.18e+01 (9.27e+00) -	1.81e+01 (5.25e+00) -	6.27e+00 (8.94e+00) -	2.02e+01 (4.47e+00) -	2.12e+01 (3.75e-02) -
WCCI20-MaTSO10-T17	3.88e+02 (1.47e+01)	4.62e+02 (2.04e+02) =	4.14e+02 (1.85e+01) -	3.96e+02 (2.14e+01) =	4.14e+02 (1.71e+01) -	4.05e+02 (2.06e+01) -
WCCI20-MaTSO10-T18	2.93e-06 (1.58e-06)	6.46e-02 (1.18e-01) -	1.40e-02 (5.05e-03) -	2.13e-03 (1.08e-03) -	5.24e-03 (2.50e-03) -	4.21e-03 (1.38e-03) -
WCCI20-MaTSO10-T19	2.93e+00 (2.52e+00)	2.73e+01 (8.43e+00) -	2.84e+01 (1.23e+01) -	1.10e+01 (6.01e+00) -	1.73e+01 (5.95e+00) -	1.97e+01 (7.55e+00) -
WCCI20-MaTSO10-T20	1.18e+04 (4.54e+02)	1.04e+04 (2.64e+03) +	1.22e+04 (4.95e+02) -	1.18e+04 (6.43e+02) =	1.20e+04 (7.56e+02) =	1.18e+04 (7.84e+02) =
WCCI20-MaTSO10-T21	1.84e-05 (1.02e-05)	5.30e+00 (5.41e+00) -	5.45e+00 (5.87e+00) -	5.16e-01 (1.09e+00) -	1.91e+01 (4.34e+00) -	2.07e+01 (1.85e+00) -
WCCI20-MaTSO10-T22	3.83e+02 (2.03e+01)	3.63e+02 (1.79e+02) =	4.11e+02 (1.45e+01) -	4.00e+02 (1.22e+01) -	4.10e+02 (1.70e+01) -	4.10e+02 (1.33e+01) -
WCCI20-MaTSO10-T23	2.45e-06 (1.61e-06)	1.49e-01 (2.52e-01) -	1.40e-02 (4.71e-03) -	1.94e-03 (7.76e-04) -	4.00e-03 (1.08e-03) -	3.85e-03 (1.74e-03) -
WCCI20-MaTSO10-T24	2.40e+00 (1.64e+00)	2.47e+01 (6.42e+00) -	2.69e+01 (1.15e+01) -	1.17e+01 (5.62e+00) -	2.18e+01 (8.69e+00) -	2.34e+01 (1.10e+01) -
WCCI20-MaTSO10-T25	1.14e+04 (5.93e+02)	9.97e+03 (2.78e+03) =	1.17e+04 (5.72e+02) =	1.18e+04 (5.92e+02) -	1.15e+04 (8.86e+02) =	1.17e+04 (7.56e+02) =
WCCI20-MaTSO10-T26	3.19e-05 (3.71e-05)	7.15e+00 (7.60e+00) -	1.61e+01 (6.18e+00) -	3.73e+00 (7.51e+00) -	2.06e+01 (2.69e+00) -	2.03e+01 (2.81e+00) -
WCCI20-MaTSO10-T27	3.85e+02 (1.67e+01)	4.53e+02 (1.12e+02) -	4.16e+02 (1.81e+01) -	4.08e+02 (1.73e+01) -	3.98e+02 (1.80e+01) -	4.07e+02 (1.89e+01) -
WCCI20-MaTSO10-T28	3.71e-04 (1.65e-03)	8.63e-02 (1.88e-01) -	1.51e-02 (8.75e-03) -	1.81e-03 (6.63e-04) -	3.97e-03 (1.20e-03) -	4.42e-03 (2.18e-03) -
WCCI20-MaTSO10-T29	2.92e+00 (1.66e+00)	2.67e+01 (9.04e+00) -	3.14e+01 (1.30e+01) -	1.55e+01 (4.25e+00) -	2.06e+01 (9.51e+00) -	2.46e+01 (1.29e+01) -
WCCI20-MaTSO10-T30	1.14e+04 (5.43e+02)	9.18e+03 (4.10e+03) =	1.18e+04 (4.55e+02) -	1.21e+04 (4.25e+02) -	1.20e+04 (6.67e+02) -	1.20e+04 (4.53e+02) -
WCCI20-MaTSO10-T31	1.51e-05 (8.37e-06)	7.21e+00 (7.55e+00) -	1.20e+01 (6.79e+00) -	2.12e+00 (4.63e+00) -	1.92e+01 (5.35e+00) -	1.81e+01 (6.40e+00) -
WCCI20-MaTSO10-T32	3.93e+02 (1.40e+01)	3.68e+02 (1.29e+02) =	4.08e+02 (1.94e+01) -	4.03e+02 (9.94e+00) -	4.11e+02 (1.75e+01) -	4.06e+02 (1.62e+01) -
WCCI20-MaTSO10-T33	1.16e-06 (7.43e-07)	1.36e-01 (2.82e-01) -	1.22e-02 (4.01e-03) -	2.35e-03 (1.13e-03) -	6.35e-03 (7.95e-03) -	4.33e-03 (1.16e-03) -
WCCI20-MaTSO10-T34	3.08e+00 (1.66e+00)	2.55e+01 (8.02e+00) -	3.28e+01 (1.59e+01) -	1.01e+01 (5.61e+00) -	2.34e+01 (1.11e+01) -	2.78e+01 (1.31e+01) -
WCCI20-MaTSO10-T35	1.11e+04 (1.72e+03)	8.11e+03 (3.36e+03) +	1.19e+04 (5.38e+02) -	1.21e+04 (6.24e+02) -	1.19e+04 (5.90e+02) -	1.16e+04 (7.27e+02) =
WCCI20-MaTSO10-T36	1.74e-05 (9.97e-06)	1.15e+01 (8.01e+00) -	1.30e+01 (7.63e+00) -	2.37e+00 (5.05e+00) -	2.08e+01 (1.31e+00) -	2.01e+01 (3.93e+00) -
WCCI20-MaTSO10-T37	3.80e+02 (1.52e+01)	3.41e+02 (1.16e+02) =	4.14e+02 (1.65e+01) -	3.92e+02 (1.98e+01) -	4.10e+02 (1.46e+01) -	4.05e+02 (1.50e+01) -
WCCI20-MaTSO10-T38	1.28e-06 (8.04e-07)	1.12e-01 (1.56e-01) -	1.32e-02 (5.29e-03) -	2.24e-03 (8.83e-04) -	3.62e-03 (1.26e-03) -	5.08e-03 (1.83e-03) -
WCCI20-MaTSO10-T39	3.04e+00 (2.63e+00)	2.62e+01 (1.09e+01) -	2.42e+01 (7.58e+00) -	1.31e+01 (6.18e+00) -	2.42e+01 (8.89e+00) -	2.32e+01 (1.24e+01) -
WCCI20-MaTSO10-T40	1.16e+04 (6.62e+02)	1.01e+04 (2.89e+03) =	1.21e+04 (6.16e+02) -	1.23e+04 (5.32e+02) -	1.19e+04 (4.78e+02) =	1.20e+04 (5.14e+02) =
WCCI20-MaTSO10-T41	2.43e-05 (1.41e-05)	4.63e+00 (3.89e+00) -	1.69e+01 (6.40e+00) -	2.04e+00 (4.91e+00) -	1.83e+01 (5.85e+00) -	1.96e+01 (4.07e+00) -
WCCI20-MaTSO10-T42	3.85e+02 (1.65e+01)	3.84e+02 (1.25e+02) =	4.08e+02 (1.61e+01) -	4.08e+02 (1.77e+01) -	4.12e+02 (1.13e+01) -	4.10e+02 (1.69e+01) -
WCCI20-MaTSO10-T43	2.02e-06 (2.37e-06)	1.43e-01 (2.00e-01) -	1.26e-02 (5.15e-03) -	1.78e-03 (6.98e-04) -	4.62e-03 (1.74e-03) -	4.41e-03 (1.43e-03) -
WCCI20-MaTSO10-T44	2.23e+00 (1.71e+00)	2.86e+01 (1.01e+01) -	3.04e+01 (9.79e+00) -	1.15e+01 (5.16e+00) -	2.08e+01 (9.92e+00) -	2.24e+01 (7.77e+00) -
WCCI20-MaTSO10-T45	1.02e+04 (3.09e+03)	1.01e+04 (2.98e+03) =	1.21e+04 (4.71e+02) -	1.22e+04 (6.16e+02) -	1.18e+04 (6.75e+02) -	1.18e+04 (6.41e+02) -
WCCI20-MaTSO10-T46	2.24e-05 (1.58e-05)	7.82e+00 (7.92e+00) -	1.57e+01 (6.89e+00) -	9.21e-01 (1.51e+00) -	2.11e+01 (2.85e+01) -	2.12e+01 (2.77e-02) -
WCCI20-MaTSO10-T47	3.82e+02 (2.12e+01)	3.92e+02 (2.46e+02) =	4.11e+02 (1.29e+01) -	4.04e+02 (1.79e+01) -	4.09e+02 (1.59e+01) -	4.10e+02 (1.29e+01) -
WCCI20-MaTSO10-T48	2.34e-06 (1.61e-06)	2.36e-01 (3.25e-01) -	1.29e-02 (4.83e-03) -	2.28e-03 (1.08e-03) -	5.21e-03 (2.32e-03) -	4.19e-03 (2.18e-03) -
WCCI20-MaTSO10-T49	4.15e+00 (2.30e+00)	2.60e+01 (6.94e+00) -	2.98e+01 (1.07e+01) -	1.38e+01 (5.21e+00) -	2.22e+01 (7.95e+00) -	2.39e+01 (1.17e+01) -
WCCI20-MaTSO10-T50	1.06e+04 (2.27e+03)	1.04e+04 (3.18e+03) =	1.16e+04 (5.47e+02) -	1.21e+04 (4.39e+02) -	1.17e+04 (5.67e+02) -	1.15e+04 (5.75e+02) =
+/=	Base	2/31/17	0/49/1	0/47/3	0/46/4	0/44/6

TABLE S22

COMPARISON OF KR-MTGA, AEMTO, MATGA, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN EACH MTO PROBLEM IN CEC17-MTSG. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 18 COMPONENT TASKS FROM ALL NINE MTO PROBLEMS IN CEC17-MTSG.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
MTSO1-CI-HS-T1	0.00e+00 (0.00e+00)	6.58e-02 (1.58e-02) -	1.38e-01 (3.34e-02) -	1.86e-01 (4.30e-02) -	1.56e-01 (4.94e-02) -	1.66e-01 (3.52e-02) -
MTSO1-CI-HS-T2	0.00e+00 (0.00e+00)	5.69e+01 (1.14e+01) -	1.16e+02 (4.54e+01) -	1.37e+02 (4.38e+01) -	1.47e+02 (1.27e+02) -	3.43e+02 (5.82e+01) -
MTSO2-CI-MS-T1	1.07e-15 (7.94e-16)	2.32e+00 (3.72e-01) -	2.86e+00 (3.40e-01) -	3.22e+00 (5.81e-01) -	1.35e+00 (1.42e+00) -	3.44e+00 (4.91e-01) -
MTSO2-CI-MS-T2	0.00e+00 (0.00e+00)	5.48e+01 (1.15e+01) -	1.39e+02 (5.26e+01) -	1.53e+02 (4.06e+01) -	1.38e+01 (2.12e+01) -	3.37e+02 (4.92e+01) -
MTSO3-CI-LS-T1	4.81e-14 (6.73e-15)	2.04e+01 (4.65e-01) -	2.10e+01 (3.01e-01) -	2.06e+01 (4.83e-01) -	2.11e+01 (2.46e-01) -	2.11e+01 (2.47e-01) -
MTSO3-CI-LS-T2	6.36e-04 (0.00e+00)	2.72e+03 (5.36e+02) -	3.05e+03 (5.11e+02) -	3.05e+03 (5.06e+02) -	3.05e+03 (4.24e+02) -	2.99e+03 (3.30e+02) -
MTSO4-PI-HS-T1	0.00e+00 (0.00e+00)	3.45e+02 (6.52e+01) -	3.14e+02 (3.27e+01) -	2.91e+02 (4.41e+01) -	2.62e+02 (1.02e+02) -	3.30e+02 (5.74e+01) -
MTSO4-PI-HS-T2	1.01e-08 (3.24e-08)	1.57e+00 (4.13e-01) -	2.78e+00 (1.04e+00) -	2.22e+00 (5.75e-01) -	1.69e+00 (4.86e-01) -	1.91e+00 (5.34e-01) -
MTSO5-PI-MS-T1	4.99e-01 (6.46e-01)	2.65e-01 (5.96e-01) =	1.54e+00 (7.27e-01) -	3.06e+00 (4.79e-01) -	3.09e+00 (4.52e-01) -	3.40e+00 (5.86e-01) -
MTSO5-PI-MS-T2	4.46e+01 (1.05e+01)	9.70e+01 (2.35e+01) -	1.96e+02 (6.05e+01) -	4.27e+02 (8.31e+01) -	2.42e+02 (4.63e+02) -	1.41e+03 (1.63e+03) -
MTSO6-PI-LS-T1	8.88e-16 (0.00e+00)	4.03e+00 (3.81e+00) -	3.28e+00 (3.62e-01) -	3.26e+00 (4.26e-01) -	8.88e-16 (0.00e+00) =	3.24e+00 (4.77e-01) -
MTSO6-PI-LS-T2	1.39e-14 (1.04e-14)	3.66e+00 (2.36e+00) -	3.35e+00 (8.47e-01) -	3.34e+00 (8.73e-01) -	2.09e-05 (5.03e-05) -	1.18e+01 (2.39e+00) -
MTSO7-NI-HS-T1	4.43e+01 (1.04e+01)	2.20e+02 (4.64e+01) -	3.58e+02 (1.31e+02) -	4.71e+02 (1.72e+02) -	1.27e+03 (1.54e+03) -	1.09e+03 (1.15e+03) -
MTSO7-NI-HS-T2	1.91e+00 (8.52e+00)	7.00e+01 (1.94e+01) -	1.65e+02 (6.00e+01) -	2.32e+02 (7.70e+01) -	1.34e+02 (1.26e+02) -	3.40e+02 (5.80e+01) -
MTSO8-NI-MS-T1	0.00e+00 (0.00e+00)	1.74e-01 (4.39e-02) -	2.44e-01 (3.53e-02) -	1.62e-01 (3.81e-02) -	1.60e-01 (4.15e-02) -	1.57e-01 (3.27e-02) -
MTSO8-NI-MS-T2	1.56e-14 (4.37e-15)	2.22e+01 (6.96e+00) -	2.58e+01 (7.20e+00) -	2.00e+01 (2.38e+00) -	6.58e+00 (2.22e+00) -	3.85e+01 (3.11e+00) -
MTSO9-NI-LS-T1	4.02e+01 (2.22e+01)	3.21e+02 (7.90e+01) -	3.43e+02 (7.36e+01) -	3.19e+02 (6.53e+01) -	3.21e+02 (4.88e+01) -	3.17e+02 (5.10e+01) -
MTSO9-NI-LS-T2	5.38e+02 (8.15e+02)	3.06e+03 (4.02e+02) -	3.10e+03 (4.44e+02) -	2.96e+03 (4.07e+02) -	3.02e+03 (4.62e+02) -	2.79e+03 (4.82e+02) -
+/-/=		0/17/1	0/18/0	0/18/0	0/17/1	0/18/0

TABLE S23

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN EACH MTO PROBLEM IN MATEA-PROBLEM. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 10 COMPONENT TASKS FROM MATEA-PROBLEM.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
MaTSO10-T1	3.03e-29 (7.40e-29)	3.02e+00 (1.34e+00) -	8.27e-02 (8.97e-02) -	2.13e+00 (5.37e-01) -	3.05e-10 (1.30e-09) -	1.95e+00 (5.65e-01) -
MaTSO10-T2	2.78e-26 (1.71e-27)	1.73e+00 (2.77e+00) -	6.28e-01 (1.29e+00) -	5.27e+00 (3.13e+00) -	1.51e+00 (3.30e-01) -	1.44e+00 (6.08e-01) -
MaTSO10-T3	2.02e-29 (9.03e-29)	1.89e+00 (1.49e+00) -	2.94e-02 (3.75e-02) -	5.42e+00 (2.43e+00) -	1.75e+00 (2.87e-01) -	1.65e+00 (4.39e-01) -
MaTSO10-T4	5.14e-05 (2.30e-04)	1.94e-01 (8.08e-02) -	7.54e-02 (3.56e-02) -	3.87e+00 (3.37e+00) -	6.93e+00 (2.29e+00) -	5.97e+00 (1.87e+00) -
MaTSO10-T5	4.70e+01 (1.33e-01)	9.78e+01 (2.40e+01) -	5.00e+01 (1.99e+00) -	1.78e+03 (1.57e+03) -	4.76e+01 (1.57e-01) -	1.09e+03 (1.15e+03) -
MaTSO10-T6	4.87e-14 (2.70e-15)	4.49e-01 (3.75e-01) -	1.94e+00 (5.05e+00) -	1.62e+01 (7.77e+00) -	1.79e+01 (4.89e+00) -	2.00e+01 (4.64e-04) -
MaTSO10-T7	1.77e-13 (6.10e-13)	2.08e+00 (5.80e-01) -	6.31e-01 (2.28e-01) -	1.42e+01 (5.25e+00) -	2.01e+01 (4.58e+00) -	1.57e+01 (2.37e+00) -
MaTSO10-T8	6.36e-04 (1.46e-11)	4.50e+01 (4.92e+01) -	1.02e+02 (1.89e+02) -	2.97e+03 (8.21e+02) -	2.87e+03 (3.59e+02) -	3.14e+03 (6.25e+02) -
MaTSO10-T9	1.48e-03 (6.62e-03)	2.84e-01 (1.03e-01) -	7.61e-02 (1.57e-02) -	1.45e-01 (6.07e-02) -	4.98e-02 (1.50e-02) -	4.52e-02 (1.21e-02) -
MaTSO10-T10	7.85e+00 (1.63e+01)	1.50e+02 (2.13e+01) -	1.02e+02 (1.60e+01) -	1.11e+02 (1.70e+01) -	8.48e+01 (1.35e+01) -	9.10e+01 (1.69e+01) -
+/-/=		0/10/0	0/10/0	0/10/0	0/10/1	0/10/0

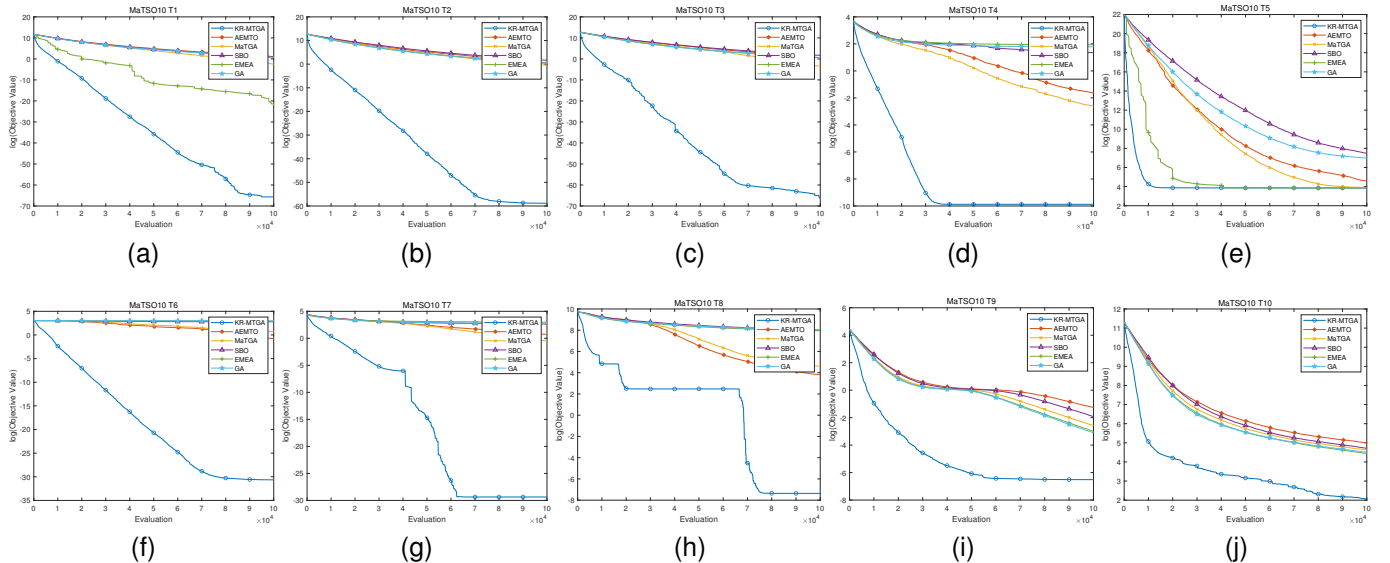


Fig. S4. Average convergence trends of six compared methods, i.e., KR-MTGA, AEMTO, MaTGA, SBO, EMEA, and single-tasking GA on MaTEA-problem.

TABLE S24

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO1 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO1 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO1-T1	1.30e+02 (4.72e+01)	1.22e+03 (1.26e+03) -	8.57e+02 (5.31e+02) -	9.57e+02 (8.74e+02) -	7.87e+02 (8.37e+02) -	8.96e+02 (1.04e+03) -
CEC19-MaTSO1-T2	1.74e+02 (7.56e+01)	9.20e+02 (8.57e+02) -	9.82e+02 (9.22e+02) -	1.82e+03 (1.50e+03) -	9.70e+02 (1.02e+03) -	7.83e+02 (9.56e+02) -
CEC19-MaTSO1-T3	1.65e+02 (1.37e+02)	1.18e+03 (1.26e+03) -	1.13e+03 (1.34e+03) -	1.70e+03 (9.12e+02) -	7.79e+02 (7.73e+02) -	1.43e+03 (1.79e+03) -
CEC19-MaTSO1-T4	1.45e+02 (4.54e+01)	1.60e+03 (1.53e+03) -	9.76e+02 (1.06e+03) -	2.15e+03 (1.56e+03) -	1.33e+03 (1.57e+03) -	1.13e+03 (1.37e+03) -
CEC19-MaTSO1-T5	1.48e+02 (1.01e+02)	8.83e+02 (3.72e+02) -	1.66e+03 (1.89e+03) -	1.73e+03 (1.64e+03) -	1.23e+03 (1.49e+03) -	9.99e+02 (1.15e+03) -
CEC19-MaTSO1-T6	1.45e+02 (6.79e+01)	1.23e+03 (1.21e+03) -	8.09e+02 (8.77e+02) -	1.84e+03 (1.30e+03) -	8.63e+02 (7.71e+02) -	7.78e+02 (9.58e+02) -
CEC19-MaTSO1-T7	1.45e+02 (7.52e+01)	1.58e+03 (1.36e+03) -	1.67e+03 (1.56e+03) -	1.53e+03 (6.69e+02) -	1.17e+03 (1.09e+03) -	5.89e+02 (3.32e+02) -
CEC19-MaTSO1-T8	2.31e+02 (1.39e+02)	1.60e+03 (1.18e+03) -	9.22e+02 (8.69e+02) -	2.45e+03 (1.85e+03) -	1.26e+03 (1.73e+03) -	1.04e+03 (1.28e+03) -
CEC19-MaTSO1-T9	1.14e+02 (4.93e+01)	9.05e+02 (6.29e+02) -	8.71e+02 (9.04e+02) -	2.40e+03 (1.51e+03) -	8.45e+02 (9.57e+02) -	9.74e+02 (8.81e+02) -
CEC19-MaTSO1-T10	1.34e+02 (5.24e+01)	1.85e+03 (1.31e+03) -	1.19e+03 (1.52e+03) -	2.07e+03 (1.23e+03) -	8.86e+02 (9.68e+02) -	9.81e+02 (1.08e+03) -
CEC19-MaTSO1-T11	1.13e+02 (4.93e+01)	1.66e+03 (1.55e+03) -	1.18e+03 (1.13e+03) -	2.21e+03 (1.45e+03) -	7.84e+02 (9.59e+02) -	1.11e+03 (1.19e+03) -
CEC19-MaTSO1-T12	1.17e+02 (4.55e+01)	1.20e+03 (1.20e+03) -	1.15e+03 (1.17e+03) -	1.92e+03 (9.86e+02) -	5.99e+02 (4.30e+02) -	8.97e+02 (1.05e+03) -
CEC19-MaTSO1-T13	1.19e+02 (7.37e+01)	1.97e+03 (1.65e+03) -	9.36e+02 (9.55e+02) -	1.83e+03 (1.25e+03) -	1.12e+03 (1.61e+03) -	1.33e+03 (1.59e+03) -
CEC19-MaTSO1-T14	1.38e+02 (9.82e+01)	8.46e+02 (9.42e+02) -	1.22e+03 (1.30e+03) -	1.88e+03 (1.12e+03) -	1.19e+03 (1.58e+03) -	1.29e+03 (1.34e+03) -
CEC19-MaTSO1-T15	2.66e+02 (3.82e+02)	2.33e+03 (1.89e+03) -	1.13e+03 (1.52e+03) -	2.00e+03 (1.42e+03) -	8.99e+02 (1.14e+03) -	1.29e+03 (1.79e+03) -
CEC19-MaTSO1-T16	1.26e+02 (5.08e+01)	1.04e+03 (7.97e+02) -	8.65e+02 (9.57e+02) -	1.61e+03 (7.38e+02) -	1.33e+03 (1.59e+03) -	1.42e+03 (1.53e+03) -
CEC19-MaTSO1-T17	2.13e+02 (1.26e+02)	1.14e+03 (1.25e+03) -	5.94e+02 (1.77e+02) -	1.93e+03 (1.80e+03) -	1.01e+03 (1.14e+03) -	1.55e+03 (1.95e+03) -
CEC19-MaTSO1-T18	1.75e+02 (1.39e+02)	1.78e+03 (1.98e+03) -	1.69e+03 (1.96e+03) -	2.34e+03 (1.90e+03) -	1.32e+03 (1.52e+03) -	1.26e+03 (1.32e+03) -
CEC19-MaTSO1-T19	1.99e+02 (7.68e+01)	8.09e+02 (7.13e+02) -	1.04e+03 (1.28e+03) -	1.78e+03 (6.56e+02) -	1.01e+03 (1.15e+03) -	6.49e+02 (4.49e+02) -
CEC19-MaTSO1-T20	1.31e+02 (4.60e+01)	1.42e+03 (1.24e+03) -	1.42e+03 (1.55e+03) -	2.25e+03 (1.91e+03) -	9.03e+02 (1.13e+03) -	8.37e+02 (1.05e+03) -
CEC19-MaTSO1-T21	2.22e+02 (1.07e+02)	1.09e+03 (9.04e+02) -	1.04e+03 (8.18e+02) -	1.63e+03 (1.26e+03) -	9.00e+02 (9.44e+02) -	7.82e+02 (7.58e+02) -
CEC19-MaTSO1-T22	2.09e+02 (9.36e+01)	1.44e+03 (1.51e+03) -	8.16e+02 (8.49e+02) -	1.62e+03 (1.11e+03) -	1.18e+03 (1.31e+03) -	9.97e+02 (1.34e+03) -
CEC19-MaTSO1-T23	1.35e+02 (5.96e+01)	1.35e+03 (1.23e+03) -	1.01e+03 (1.07e+03) -	2.08e+03 (1.43e+03) -	5.46e+02 (1.70e+02) -	7.00e+02 (7.19e+02) -
CEC19-MaTSO1-T24	1.22e+02 (8.23e+01)	1.45e+03 (1.25e+03) -	7.06e+02 (4.58e+02) -	2.01e+03 (1.15e+03) -	1.15e+03 (1.21e+03) -	1.27e+03 (1.38e+03) -
CEC19-MaTSO1-T25	1.56e+02 (5.11e+01)	2.39e+03 (2.02e+03) -	1.16e+03 (1.36e+03) -	2.10e+03 (1.86e+03) -	1.40e+03 (1.66e+03) -	1.11e+03 (1.21e+03) -
CEC19-MaTSO1-T26	1.23e+02 (5.01e+01)	1.64e+03 (1.48e+03) -	7.39e+02 (6.23e+02) -	1.55e+03 (8.36e+02) -	1.05e+03 (1.00e+03) -	1.02e+03 (1.07e+03) -
CEC19-MaTSO1-T27	1.40e+02 (7.24e+01)	1.17e+03 (8.83e+02) -	7.94e+02 (9.66e+02) -	1.62e+03 (7.10e+02) -	1.20e+03 (3.39e+02) -	6.55e+02 (3.39e+02) -
CEC19-MaTSO1-T28	9.20e+01 (4.10e+01)	1.15e+03 (1.09e+03) -	1.56e+03 (1.70e+03) -	1.68e+03 (9.11e+02) -	1.39e+03 (1.67e+03) -	8.65e+02 (1.20e+03) -
CEC19-MaTSO1-T29	2.43e+02 (9.18e+01)	8.84e+02 (7.72e+02) -	7.68e+02 (3.24e+02) -	1.77e+03 (1.23e+03) -	9.16e+02 (1.10e+03) -	8.44e+02 (7.84e+02) -
CEC19-MaTSO1-T30	2.22e+02 (8.84e+01)	7.58e+02 (2.21e+02) -	1.24e+03 (1.63e+03) -	1.55e+03 (8.42e+02) -	1.40e+03 (1.56e+03) -	8.59e+02 (6.30e+02) -
CEC19-MaTSO1-T31	1.31e+02 (3.57e+01)	1.34e+03 (9.97e+02) -	1.22e+03 (1.35e+03) -	2.21e+03 (1.27e+03) -	9.74e+02 (1.11e+03) -	6.27e+02 (2.18e+02) -
CEC19-MaTSO1-T32	1.88e+02 (1.05e+02)	1.08e+03 (9.01e+02) -	1.27e+03 (1.34e+03) -	2.22e+03 (1.87e+03) -	1.48e+03 (1.57e+03) -	8.93e+02 (1.07e+03) -
CEC19-MaTSO1-T33	1.83e+02 (1.80e+02)	2.84e+03 (2.07e+03) -	1.03e+03 (1.09e+03) -	2.11e+03 (1.28e+03) -	1.04e+03 (1.26e+03) -	1.12e+03 (1.33e+03) -
CEC19-MaTSO1-T34	1.31e+02 (4.21e+01)	2.16e+03 (1.70e+03) -	1.85e+03 (1.61e+03) -	1.49e+03 (9.09e+02) -	9.17e+02 (9.71e+02) -	8.08e+02 (7.09e+02) -
CEC19-MaTSO1-T35	1.23e+02 (6.89e+01)	1.07e+03 (1.02e+03) -	8.58e+02 (8.38e+02) -	1.83e+03 (1.10e+03) -	1.17e+03 (1.33e+03) -	1.26e+03 (1.20e+03) -
CEC19-MaTSO1-T36	2.53e+02 (1.22e+02)	1.05e+03 (6.73e+02) -	2.10e+03 (2.32e+03) -	2.34e+03 (1.83e+03) -	9.62e+02 (1.08e+03) -	1.27e+03 (1.36e+03) -
CEC19-MaTSO1-T37	1.86e+02 (1.01e+02)	9.49e+02 (7.83e+02) -	1.07e+03 (1.22e+03) -	1.77e+03 (1.41e+03) -	1.01e+03 (1.33e+03) -	1.10e+03 (1.13e+03) -
CEC19-MaTSO1-T38	1.65e+02 (4.72e+01)	9.74e+02 (7.43e+02) -	7.64e+02 (6.86e+02) -	2.02e+03 (1.58e+03) -	9.29e+02 (1.22e+03) -	7.50e+02 (4.51e+02) -
CEC19-MaTSO1-T39	1.60e+02 (5.02e+01)	1.16e+03 (1.25e+03) -	1.17e+03 (1.40e+03) -	2.03e+03 (1.28e+03) -	1.35e+03 (1.34e+03) -	9.24e+02 (7.01e+02) -
CEC19-MaTSO1-T40	1.26e+02 (4.34e+01)	1.34e+03 (1.19e+03) -	1.25e+03 (1.20e+03) -	1.46e+03 (5.47e+02) -	6.49e+02 (6.72e+02) -	1.45e+03 (1.40e+03) -
CEC19-MaTSO1-T41	1.64e+02 (8.69e+01)	1.03e+03 (1.05e+03) -	1.29e+03 (1.43e+03) -	2.08e+03 (1.49e+03) -	8.16e+02 (7.93e+02) -	1.53e+03 (1.76e+03) -
CEC19-MaTSO1-T42	1.13e+02 (4.11e+01)	1.75e+03 (1.72e+03) -	8.05e+02 (8.25e+02) -	1.57e+03 (1.15e+03) -	9.98e+02 (1.01e+03) -	1.08e+03 (8.00e+02) -
CEC19-MaTSO1-T43	1.25e+02 (5.22e+01)	1.84e+03 (1.79e+03) -	7.76e+02 (9.85e+02) -	1.66e+03 (7.58e+02) -	5.78e+02 (2.03e+02) -	9.39e+02 (9.55e+02) -
CEC19-MaTSO1-T44	1.36e+02 (7.85e+01)	1.19e+03 (9.88e+02) -	1.72e+03 (1.81e+03) -	1.98e+03 (1.31e+03) -	1.53e+03 (1.92e+03) -	9.27e+02 (1.24e+03) -
CEC19-MaTSO1-T45	1.13e+02 (4.64e+01)	1.81e+03 (1.50e+03) -	1.57e+03 (1.63e+03) -	1.73e+03 (1.03e+03) -	8.74e+02 (9.42e+02) -	1.07e+03 (1.21e+03) -
CEC19-MaTSO1-T46	1.59e+02 (6.24e+01)	1.25e+03 (1.12e+03) -	1.11e+03 (1.11e+03) -	2.25e+03 (1.70e+03) -	1.22e+03 (1.51e+03) -	7.48e+02 (8.88e+02) -
CEC19-MaTSO1-T47	1.66e+02 (4.95e+01)	1.21e+03 (9.52e+02) -	1.05e+03 (1.12e+03) -	2.09e+03 (1.72e+03) -	5.70e+02 (3.06e+02) -	1.05e+03 (1.01e+03) -
CEC19-MaTSO1-T48	2.15e+02 (1.86e+02)	1.66e+03 (1.69e+03) -	6.47e+02 (2.74e+02) -	1.76e+03 (1.16e+03) -	1.34e+03 (1.55e+03) -	1.36e+03 (1.59e+03) -
CEC19-MaTSO1-T49	1.26e+02 (3.37e+01)	1.66e+03 (1.63e+03) -	1.12e+03 (1.27e+03) -	1.60e+03 (9.56e+02) -	9.77e+02 (8.64e+02) -	1.03e+03 (1.22e+03) -
CEC19-MaTSO1-T50	1.53e+02 (4.92e+01)	9.68e+02 (1.00e+03) -	9.20e+02 (8.60e+02) -	1.63e+03 (1.35e+03) -	1.04e+03 (1.15e+03) -	8.63e+02 (9.77e+02) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S25

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO2 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO2 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO2-T1	2.16e-03 (4.91e-04)	9.87e-02 (2.15e-02) -	6.09e+00 (9.34e+00) -	6.86e+00 (8.84e+00) -	1.73e+01 (6.60e+00) -	1.91e+01 (4.04e+00) -
CEC19-MaTSO2-T2	1.60e-03 (3.48e-04)	9.38e-02 (2.18e-02) -	6.06e+00 (9.32e+00) -	1.34e+01 (9.32e+00) -	1.90e+01 (4.37e+00) -	1.92e+01 (3.61e+00) -
CEC19-MaTSO2-T3	2.27e-03 (6.23e-04)	1.09e-01 (2.88e-02) -	6.09e+00 (9.36e+00) -	1.34e+01 (9.28e+00) -	2.00e+01 (8.04e-03) -	1.90e+01 (4.33e+00) -
CEC19-MaTSO2-T4	2.53e-03 (9.33e-04)	1.32e-01 (3.31e-02) -	6.07e+00 (9.30e+00) -	1.25e+01 (9.41e+00) -	1.91e+01 (4.08e+00) -	1.90e+01 (4.31e+00) -
CEC19-MaTSO2-T5	2.01e-03 (6.78e-04)	1.06e-01 (2.39e-02) -	6.10e+00 (9.34e+00) -	1.43e+01 (9.04e+00) -	1.90e+01 (4.33e+00) -	1.90e+01 (4.35e+00) -
CEC19-MaTSO2-T6	2.14e-03 (3.58e-04)	1.07e-01 (2.89e-02) -	6.07e+00 (9.34e+00) -	1.34e+01 (9.31e+00) -	1.63e+01 (7.65e+00) -	2.00e+01 (7.82e-03) -
CEC19-MaTSO2-T7	2.12e-03 (4.05e-04)	1.14e-01 (2.49e-02) -	6.06e+00 (9.31e+00) -	1.33e+01 (9.35e+00) -	1.72e+01 (6.84e+00) -	1.91e+01 (4.17e+00) -
CEC19-MaTSO2-T8	2.33e-03 (5.23e-04)	1.18e-01 (2.24e-02) -	6.08e+00 (9.33e+00) -	1.25e+01 (9.46e+00) -	1.91e+01 (4.08e+00) -	1.72e+01 (6.93e+00) -
CEC19-MaTSO2-T9	2.23e-03 (4.73e-04)	1.30e-01 (2.94e-02) -	6.07e+00 (9.33e+00) -	1.34e+01 (9.22e+00) -	1.90e+01 (4.28e+00) -	1.91e+01 (4.17e+00) -
CEC19-MaTSO2-T10	2.13e-03 (5.93e-04)	1.09e-01 (2.54e-02) -	6.08e+00 (9.32e+00) -	1.15e+01 (9.62e+00) -	1.72e+01 (6.76e+00) -	1.81e+01 (5.83e+00) -
CEC19-MaTSO2-T11	1.97e-03 (5.72e-04)	1.21e-01 (3.14e-02) -	6.09e+00 (9.34e+00) -	1.25e+01 (9.45e+00) -	1.73e+01 (6.71e+00) -	2.00e+01 (2.02e-02) -
CEC19-MaTSO2-T12	2.29e-03 (4.35e-04)	1.11e-01 (2.77e-02) -	6.08e+00 (9.34e+00) -	1.24e+01 (9.55e+00) -	1.90e+01 (4.33e+00) -	2.00e+01 (1.20e-02) -
CEC19-MaTSO2-T13	1.99e-03 (5.94e-04)	1.04e-01 (2.91e-02) -	6.07e+00 (9.32e+00) -	1.34e+01 (9.32e+00) -	2.00e+01 (6.76e-03) -	1.91e+01 (4.00e+00) -
CEC19-MaTSO2-T14	2.05e-03 (4.80e-04)	1.10e-01 (2.97e-02) -	6.08e+00 (9.34e+00) -	1.34e+01 (9.24e+00) -	2.00e+01 (9.12e-03) -	1.94e+01 (2.67e+00) -
CEC19-MaTSO2-T15	2.03e-03 (6.74e-04)	1.32e-01 (3.37e-02) -	6.11e+00 (9.36e+00) -	1.16e+01 (9.59e+00) -	1.82e+01 (5.55e+00) -	2.00e+01 (1.18e-02) -
CEC19-MaTSO2-T16	2.07e-03 (6.87e-04)	1.32e-01 (3.01e-02) -	6.09e+00 (9.35e+00) -	1.33e+01 (9.34e+00) -	2.00e+01 (7.11e-03) -	1.90e+01 (4.32e+00) -
CEC19-MaTSO2-T17	2.13e-03 (5.22e-04)	1.15e-01 (2.44e-02) -	6.08e+00 (9.33e+00) -	1.25e+01 (9.44e+00) -	1.91e+01 (4.07e+00) -	1.90e+01 (4.31e+00) -
CEC19-MaTSO2-T18	2.12e-03 (5.50e-04)	1.18e-01 (2.50e-02) -	6.09e+00 (9.36e+00) -	1.25e+01 (9.44e+00) -	2.00e+01 (2.59e-02) -	1.81e+01 (5.96e+00) -
CEC19-MaTSO2-T19	2.01e-03 (4.74e-04)	1.00e-01 (2.63e-02) -	6.07e+00 (9.33e+00) -	1.34e+01 (9.32e+00) -	2.00e+01 (3.82e-02) -	1.91e+01 (4.16e+00) -
CEC19-MaTSO2-T20	2.43e-03 (5.26e-04)	1.22e-01 (2.79e-02) -	6.09e+00 (9.33e+00) -	1.25e+01 (9.47e+00) -	1.82e+01 (5.64e+00) -	1.81e+01 (5.83e+00) -
CEC19-MaTSO2-T21	2.32e-03 (5.53e-04)	1.19e-01 (2.60e-02) -	6.07e+00 (9.33e+00) -	1.25e+01 (9.52e+00) -	1.82e+01 (5.56e+00) -	1.81e+01 (5.82e+00) -
CEC19-MaTSO2-T22	1.76e-03 (5.31e-04)	1.14e-01 (2.97e-02) -	6.10e+00 (9.36e+00) -	1.34e+01 (9.31e+00) -	2.00e+01 (1.15e-02) -	2.00e+01 (1.12e-02) -
CEC19-MaTSO2-T23	2.33e-03 (6.99e-04)	1.17e-01 (2.87e-02) -	6.06e+00 (9.32e+00) -	1.34e+01 (9.31e+00) -	1.91e+01 (3.92e+00) -	1.90e+01 (4.28e+00) -
CEC19-MaTSO2-T24	1.87e-03 (5.87e-04)	1.23e-01 (2.95e-02) -	6.08e+00 (9.34e+00) -	1.25e+01 (9.50e+00) -	1.91e+01 (3.91e+00) -	2.00e+01 (8.27e-03) -
CEC19-MaTSO2-T25	2.21e-03 (6.29e-04)	1.27e-01 (3.60e-02) -	6.10e+00 (9.37e+00) -	1.25e+01 (9.45e+00) -	1.81e+01 (5.68e+00) -	1.63e+01 (7.69e+00) -
CEC19-MaTSO2-T26	2.16e-03 (5.20e-04)	1.07e-01 (2.52e-02) -	6.06e+00 (9.30e+00) -	1.34e+01 (9.30e+00) -	1.81e+01 (5.93e+00) -	2.00e+01 (1.30e-02) -
CEC19-MaTSO2-T27	2.24e-03 (5.66e-04)	1.27e-01 (2.25e-02) -	6.10e+00 (9.35e+00) -	1.34e+01 (9.24e+00) -	1.91e+01 (4.16e+00) -	1.74e+01 (6.46e+00) -
CEC19-MaTSO2-T28	2.11e-03 (6.67e-04)	1.31e-01 (3.48e-02) -	6.10e+00 (9.36e+00) -	1.25e+01 (9.47e+00) -	1.91e+01 (4.17e+00) -	1.91e+01 (4.13e+00) -
CEC19-MaTSO2-T29	2.09e-03 (7.01e-04)	1.35e-01 (3.85e-02) -	6.11e+00 (9.37e+00) -	1.34e+01 (9.27e+00) -	1.89e+01 (4.11e+00) -	2.00e+01 (2.66e-02) -
CEC19-MaTSO2-T30	2.33e-03 (7.34e-04)	1.10e-01 (2.15e-02) -	6.09e+00 (9.34e+00) -	1.25e+01 (9.46e+00) -	1.71e+01 (6.98e+00) -	1.91e+01 (4.12e+00) -
CEC19-MaTSO2-T31	2.31e-03 (4.53e-04)	1.30e-01 (2.82e-02) -	6.06e+00 (9.32e+00) -	1.34e+01 (9.31e+00) -	1.90e+01 (4.25e+00) -	1.90e+01 (4.23e+00) -
CEC19-MaTSO2-T32	2.03e-03 (4.95e-04)	1.19e-01 (3.31e-02) -	6.04e+00 (9.27e+00) -	1.34e+01 (9.28e+00) -	2.00e+01 (1.42e-01) -	1.72e+01 (6.92e+00) -
CEC19-MaTSO2-T33	2.14e-03 (5.61e-04)	1.11e-01 (2.25e-02) -	6.07e+00 (9.32e+00) -	1.24e+01 (9.55e+00) -	1.81e+01 (5.71e+00) -	2.00e+01 (1.03e-02) -
CEC19-MaTSO2-T34	2.22e-03 (6.52e-04)	1.13e-01 (2.37e-02) -	6.04e+00 (9.29e+00) -	1.25e+01 (9.48e+00) -	2.00e+01 (5.00e-02) -	1.90e+01 (4.24e+00) -
CEC19-MaTSO2-T35	2.15e-03 (5.02e-04)	1.32e-01 (3.07e-02) -	6.11e+00 (9.37e+00) -	1.16e+01 (9.55e+00) -	1.90e+01 (4.34e+00) -	1.81e+01 (5.90e+00) -
CEC19-MaTSO2-T36	2.39e-03 (6.53e-04)	1.35e-01 (3.05e-02) -	6.11e+00 (9.36e+00) -	1.26e+01 (9.39e+00) -	2.00e+01 (1.93e-02) -	1.71e+01 (7.03e+00) -
CEC19-MaTSO2-T37	2.36e-03 (9.79e-04)	1.31e-01 (3.58e-02) -	6.08e+00 (9.34e+00) -	1.25e+01 (9.43e+00) -	1.71e+01 (6.97e+00) -	1.71e+01 (6.96e+00) -
CEC19-MaTSO2-T38	2.17e-03 (6.27e-04)	1.28e-01 (4.03e-02) -	6.06e+00 (9.29e+00) -	1.34e+01 (9.29e+00) -	1.91e+01 (4.20e+00) -	1.90e+01 (4.34e+00) -
CEC19-MaTSO2-T39	2.02e-03 (6.24e-04)	1.16e-01 (2.57e-02) -	6.07e+00 (9.31e+00) -	1.34e+01 (9.29e+00) -	1.81e+01 (5.81e+00) -	1.80e+01 (6.01e+00) -
CEC19-MaTSO2-T40	2.01e-03 (5.08e-04)	1.19e-01 (2.65e-02) -	6.09e+00 (9.36e+00) -	1.25e+01 (9.49e+00) -	1.81e+01 (5.74e+00) -	2.00e+01 (1.69e-02) -
CEC19-MaTSO2-T41	2.14e-03 (6.76e-04)	1.05e-01 (2.30e-02) -	6.08e+00 (9.34e+00) -	1.25e+01 (9.47e+00) -	1.81e+01 (5.88e+00) -	1.71e+01 (7.00e+00) -
CEC19-MaTSO2-T42	1.76e-03 (4.97e-04)	1.15e-01 (2.71e-02) -	6.08e+00 (9.34e+00) -	1.24e+01 (9.54e+00) -	1.71e+01 (6.96e+00) -	1.91e+01 (3.94e+00) -
CEC19-MaTSO2-T43	2.51e-03 (5.96e-04)	1.06e-01 (2.25e-02) -	6.06e+00 (9.31e+00) -	1.25e+01 (9.49e+00) -	1.95e+01 (2.13e+00) -	1.81e+01 (5.76e+00) -
CEC19-MaTSO2-T44	2.51e-03 (5.82e-04)	1.17e-01 (2.58e-02) -	6.09e+00 (9.34e+00) -	1.33e+01 (9.34e+00) -	1.90e+01 (4.34e+00) -	1.91e+01 (4.09e+00) -
CEC19-MaTSO2-T45	2.44e-03 (7.69e-04)	1.24e-01 (3.46e-02) -	6.06e+00 (9.32e+00) -	1.43e+01 (8.99e+00) -	1.82e+01 (5.57e+00) -	1.81e+01 (5.72e+00) -
CEC19-MaTSO2-T46	1.99e-03 (5.85e-04)	1.09e-01 (2.11e-02) -	6.07e+00 (9.33e+00) -	1.33e+01 (9.36e+00) -	2.00e+01 (1.27e-02) -	1.63e+01 (7.52e+00) -
CEC19-MaTSO2-T47	2.10e-03 (6.64e-04)	1.31e-01 (3.03e-02) -	6.10e+00 (9.35e+00) -	1.25e+01 (9.46e+00) -	1.91e+01 (4.13e+00) -	1.91e+01 (4.19e+00) -
CEC19-MaTSO2-T48	1.92e-03 (4.70e-04)	1.13e-01 (2.57e-02) -	6.09e+00 (9.35e+00) -	1.34e+01 (9.21e+00) -	1.90e+01 (4.25e+00) -	1.62e+01 (7.72e+00) -
CEC19-MaTSO2-T49	2.09e-03 (4.95e-04)	1.24e-01 (2.52e-02) -	6.08e+00 (9.34e+00) -	1.34e+01 (9.21e+00) -	1.81e+01 (5.85e+00) -	1.81e+01 (5.88e+00) -
CEC19-MaTSO2-T50	2.52e-03 (6.48e-04)	1.19e-01 (2.41e-02) -	6.08e+00 (9.32e+00) -	1.25e+01 (9.44e+00) -	2.00e+01 (9.55e-03) -	1.82e+01 (5.50e+00) -
+/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S26

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO3 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/!="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO3 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO3-T1	1.90e+02 (3.48e+01)	4.07e+02 (8.60e+01) -	3.19e+02 (6.33e+01) -	3.36e+02 (5.36e+01) -	3.23e+02 (5.75e+01) -	3.44e+02 (7.71e+01) -
CEC19-MaTSO3-T2	1.88e+02 (5.30e+01)	4.36e+02 (8.32e+01) -	3.35e+02 (7.10e+01) -	3.35e+02 (5.65e+01) -	3.39e+02 (6.40e+01) -	3.16e+02 (5.19e+01) -
CEC19-MaTSO3-T3	2.01e+02 (3.16e+01)	4.36e+02 (9.62e+01) -	3.22e+02 (5.97e+01) -	3.70e+02 (5.01e+01) -	3.35e+02 (6.51e+01) -	3.45e+02 (5.77e+01) -
CEC19-MaTSO3-T4	1.91e+02 (3.34e+01)	4.42e+02 (8.34e+01) -	3.28e+02 (7.21e+01) -	3.37e+02 (5.71e+01) -	3.18e+02 (4.65e+01) -	3.40e+02 (6.75e+01) -
CEC19-MaTSO3-T5	2.04e+02 (4.82e+01)	5.10e+02 (1.01e+02) -	3.29e+02 (5.77e+01) -	3.45e+02 (5.38e+01) -	3.21e+02 (5.05e+01) -	3.12e+02 (7.33e+01) -
CEC19-MaTSO3-T6	1.82e+02 (3.40e+01)	4.54e+02 (6.91e+01) -	2.98e+02 (4.31e+01) -	3.55e+02 (5.12e+01) -	3.40e+02 (5.78e+01) -	3.03e+02 (4.52e+01) -
CEC19-MaTSO3-T7	2.09e+02 (5.06e+01)	5.16e+02 (1.13e+02) -	3.22e+02 (5.99e+01) -	3.36e+02 (5.20e+01) -	3.25e+02 (6.93e+01) -	3.26e+02 (6.92e+01) -
CEC19-MaTSO3-T8	2.05e+02 (4.32e+01)	4.28e+02 (9.00e+01) -	3.04e+02 (5.41e+01) -	3.23e+02 (5.26e+01) -	3.22e+02 (5.03e+01) -	3.23e+02 (6.44e+01) -
CEC19-MaTSO3-T9	1.85e+02 (5.04e+01)	4.53e+02 (9.96e+01) -	3.36e+02 (5.13e+01) -	3.18e+02 (6.23e+01) -	3.11e+02 (5.22e+01) -	3.23e+02 (7.07e+01) -
CEC19-MaTSO3-T10	2.00e+02 (3.24e+01)	4.30e+02 (7.25e+01) -	3.30e+02 (5.97e+01) -	3.54e+02 (6.58e+01) -	3.19e+02 (6.67e+01) -	3.01e+02 (4.06e+01) -
CEC19-MaTSO3-T11	1.80e+02 (4.00e+01)	4.54e+02 (9.80e+01) -	3.00e+02 (5.06e+01) -	3.13e+02 (5.74e+01) -	3.47e+02 (7.78e+01) -	3.19e+02 (7.51e+01) -
CEC19-MaTSO3-T12	1.91e+02 (4.37e+01)	4.73e+02 (1.20e+02) -	3.15e+02 (5.13e+01) -	3.25e+02 (5.01e+01) -	3.22e+02 (5.06e+01) -	3.19e+02 (6.13e+01) -
CEC19-MaTSO3-T13	1.83e+02 (3.77e+01)	4.79e+02 (1.05e+02) -	2.96e+02 (4.54e+01) -	3.55e+02 (6.66e+01) -	3.11e+02 (6.37e+01) -	3.12e+02 (5.21e+01) -
CEC19-MaTSO3-T14	2.06e+02 (5.51e+01)	4.67e+02 (1.05e+02) -	3.28e+02 (3.47e+01) -	3.74e+02 (6.13e+01) -	3.14e+02 (5.46e+01) -	2.94e+02 (5.01e+01) -
CEC19-MaTSO3-T15	2.07e+02 (3.38e+01)	4.67e+02 (8.61e+01) -	3.13e+02 (4.17e+01) -	3.35e+02 (6.12e+01) -	3.17e+02 (5.44e+01) -	3.27e+02 (6.92e+01) -
CEC19-MaTSO3-T16	1.90e+02 (3.60e+01)	3.84e+02 (6.86e+01) -	3.25e+02 (5.64e+01) -	3.49e+02 (6.75e+01) -	3.18e+02 (8.76e+01) -	3.25e+02 (5.01e+01) -
CEC19-MaTSO3-T17	1.93e+02 (5.58e+01)	4.48e+02 (9.99e+01) -	3.38e+02 (5.86e+01) -	3.43e+02 (5.49e+01) -	3.37e+02 (5.49e+01) -	3.17e+02 (6.02e+01) -
CEC19-MaTSO3-T18	1.71e+02 (3.27e+01)	4.03e+02 (8.94e+01) -	3.11e+02 (4.33e+01) -	3.35e+02 (5.49e+01) -	3.29e+02 (6.40e+01) -	3.19e+02 (6.14e+01) -
CEC19-MaTSO3-T19	1.86e+02 (3.42e+01)	4.58e+02 (1.16e+02) -	3.52e+02 (4.99e+01) -	3.52e+02 (7.18e+01) -	3.17e+02 (5.26e+01) -	3.14e+02 (6.89e+01) -
CEC19-MaTSO3-T20	1.78e+02 (3.35e+01)	4.55e+02 (8.68e+01) -	3.10e+02 (6.23e+01) -	3.22e+02 (6.58e+01) -	3.27e+02 (6.18e+01) -	3.19e+02 (6.10e+01) -
CEC19-MaTSO3-T21	2.06e+02 (4.84e+01)	4.61e+02 (9.80e+01) -	3.21e+02 (6.96e+01) -	3.46e+02 (8.42e+01) -	3.37e+02 (6.37e+01) -	3.30e+02 (7.20e+01) -
CEC19-MaTSO3-T22	2.03e+02 (4.48e+01)	4.73e+02 (1.05e+02) -	3.54e+02 (7.02e+01) -	3.50e+02 (8.69e+01) -	3.27e+02 (4.83e+01) -	3.36e+02 (7.09e+01) -
CEC19-MaTSO3-T23	1.73e+02 (3.29e+01)	4.74e+02 (9.72e+01) -	3.09e+02 (4.91e+01) -	3.47e+02 (7.98e+01) -	3.19e+02 (4.36e+01) -	3.41e+02 (9.21e+01) -
CEC19-MaTSO3-T24	1.87e+02 (1.93e+01)	4.61e+02 (1.02e+02) -	3.07e+02 (4.50e+01) -	3.19e+02 (4.94e+01) -	3.30e+02 (4.79e+01) -	3.11e+02 (6.29e+01) -
CEC19-MaTSO3-T25	1.87e+02 (4.66e+01)	4.41e+02 (8.67e+01) -	3.43e+02 (6.45e+01) -	3.32e+02 (6.77e+01) -	3.22e+02 (6.32e+01) -	3.55e+02 (5.72e+01) -
CEC19-MaTSO3-T26	1.96e+02 (3.59e+01)	4.72e+02 (8.10e+01) -	3.35e+02 (5.34e+01) -	3.30e+02 (6.40e+01) -	3.26e+02 (5.74e+01) -	3.33e+02 (7.39e+01) -
CEC19-MaTSO3-T27	1.98e+02 (3.39e+01)	4.18e+02 (7.37e+01) -	3.29e+02 (5.55e+01) -	3.45e+02 (5.31e+01) -	3.14e+02 (5.37e+01) -	3.17e+02 (5.75e+01) -
CEC19-MaTSO3-T28	1.95e+02 (5.01e+01)	4.33e+02 (6.42e+01) -	3.18e+02 (7.00e+01) -	3.58e+02 (4.79e+01) -	3.08e+02 (5.98e+01) -	3.05e+02 (5.53e+01) -
CEC19-MaTSO3-T29	1.91e+02 (4.96e+01)	4.69e+02 (6.94e+01) -	3.35e+02 (6.99e+01) -	3.59e+02 (5.59e+01) -	3.35e+02 (3.58e+01) -	3.28e+02 (5.38e+01) -
CEC19-MaTSO3-T30	2.02e+02 (4.44e+01)	4.36e+02 (7.49e+01) -	3.41e+02 (6.73e+01) -	3.40e+02 (5.74e+01) -	3.10e+02 (6.29e+01) -	3.52e+02 (6.37e+01) -
CEC19-MaTSO3-T31	2.00e+02 (4.08e+01)	3.96e+02 (8.85e+01) -	3.18e+02 (4.87e+01) -	3.36e+02 (6.12e+01) -	3.15e+02 (5.87e+01) -	3.49e+02 (6.09e+01) -
CEC19-MaTSO3-T32	1.94e+02 (4.01e+01)	4.41e+02 (5.88e+01) -	3.29e+02 (6.14e+01) -	3.38e+02 (4.18e+01) -	3.18e+02 (5.06e+01) -	3.33e+02 (5.88e+01) -
CEC19-MaTSO3-T33	2.10e+02 (4.31e+01)	4.35e+02 (9.73e+01) -	3.05e+02 (6.49e+01) -	3.29e+02 (6.78e+01) -	3.22e+02 (6.28e+01) -	3.42e+02 (6.84e+01) -
CEC19-MaTSO3-T34	2.02e+02 (4.65e+01)	4.41e+02 (8.77e+01) -	3.05e+02 (4.38e+01) -	3.31e+02 (5.25e+01) -	3.28e+02 (7.07e+01) -	3.02e+02 (4.08e+01) -
CEC19-MaTSO3-T35	1.88e+02 (4.28e+01)	4.82e+02 (8.66e+01) -	3.13e+02 (4.63e+01) -	3.47e+02 (5.23e+01) -	3.13e+02 (5.28e+01) -	3.01e+02 (5.96e+01) -
CEC19-MaTSO3-T36	1.88e+02 (4.86e+01)	4.68e+02 (8.68e+01) -	3.31e+02 (6.97e+01) -	3.05e+02 (5.13e+01) -	3.26e+02 (7.87e+01) -	3.04e+02 (5.49e+01) -
CEC19-MaTSO3-T37	1.99e+02 (4.26e+01)	4.34e+02 (7.73e+01) -	3.37e+02 (6.00e+01) -	3.29e+02 (4.17e+01) -	3.17e+02 (5.93e+01) -	3.25e+02 (6.11e+01) -
CEC19-MaTSO3-T38	1.73e+02 (4.25e+01)	4.54e+02 (1.03e+02) -	3.41e+02 (7.08e+01) -	3.35e+02 (6.22e+01) -	3.30e+02 (6.28e+01) -	3.22e+02 (5.29e+01) -
CEC19-MaTSO3-T39	1.84e+02 (3.14e+01)	4.43e+02 (6.91e+01) -	3.44e+02 (5.73e+01) -	3.46e+02 (6.13e+01) -	2.99e+02 (4.28e+01) -	3.14e+02 (6.63e+01) -
CEC19-MaTSO3-T40	2.02e+02 (4.52e+01)	4.35e+02 (9.77e+01) -	3.34e+02 (5.24e+01) -	3.46e+02 (7.86e+01) -	3.22e+02 (5.64e+01) -	3.39e+02 (5.84e+01) -
CEC19-MaTSO3-T41	1.80e+02 (3.55e+01)	4.58e+02 (9.47e+01) -	3.27e+02 (6.58e+01) -	3.54e+02 (7.01e+01) -	3.35e+02 (7.30e+01) -	3.13e+02 (7.70e+01) -
CEC19-MaTSO3-T42	1.81e+02 (4.61e+01)	4.58e+02 (6.59e+01) -	3.26e+02 (6.27e+01) -	3.23e+02 (5.27e+01) -	3.32e+02 (6.11e+01) -	3.22e+02 (4.87e+01) -
CEC19-MaTSO3-T43	1.90e+02 (4.37e+01)	4.70e+02 (8.77e+01) -	3.34e+02 (5.67e+01) -	3.30e+02 (5.51e+01) -	3.28e+02 (5.89e+01) -	3.37e+02 (5.76e+01) -
CEC19-MaTSO3-T44	1.85e+02 (3.56e+01)	4.48e+02 (9.56e+01) -	3.55e+02 (7.22e+01) -	3.31e+02 (5.73e+01) -	3.23e+02 (6.06e+01) -	3.45e+02 (6.99e+01) -
CEC19-MaTSO3-T45	1.74e+02 (3.39e+01)	4.43e+02 (8.03e+01) -	3.22e+02 (6.43e+01) -	3.56e+02 (4.90e+01) -	3.13e+02 (6.17e+01) -	3.16e+02 (5.23e+01) -
CEC19-MaTSO3-T46	2.00e+02 (5.42e+01)	4.13e+02 (9.91e+01) -	3.37e+02 (7.17e+01) -	3.51e+02 (6.94e+01) -	3.12e+02 (6.90e+01) -	3.40e+02 (5.98e+01) -
CEC19-MaTSO3-T47	2.16e+02 (4.68e+01)	5.05e+02 (8.33e+01) -	3.23e+02 (5.37e+01) -	3.36e+02 (5.33e+01) -	3.34e+02 (6.11e+01) -	3.26e+02 (7.17e+01) -
CEC19-MaTSO3-T48	2.00e+02 (3.55e+01)	5.13e+02 (9.44e+01) -	3.19e+02 (5.47e+01) -	3.65e+02 (5.81e+01) -	3.18e+02 (5.97e+01) -	3.06e+02 (5.25e+01) -
CEC19-MaTSO3-T49	1.87e+02 (4.46e+01)	4.39e+02 (5.35e+01) -	3.14e+02 (5.27e+01) -	3.44e+02 (5.91e+01) -	3.26e+02 (6.04e+01) -	3.16e+02 (6.28e+01) -
CEC19-MaTSO3-T50	1.77e+02 (3.27e+01)	5.14e+02 (1.30e+02) -	3.32e+02 (7.07e+01) -	3.58e+02 (6.14e+01) -	3.32e+02 (6.05e+01) -	3.18e+02 (5.50e+01) -
+/!=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S27

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO4 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO4 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO4-T1	2.63e-02 (1.01e-02)	2.61e-01 (5.37e-02) -	2.01e-01 (3.88e-02) -	1.88e-01 (2.11e-02) -	1.68e-01 (3.54e-02) -	1.80e-01 (3.19e-02) -
CEC19-MaTSO4-T2	2.66e-02 (1.57e-02)	2.78e-01 (5.49e-02) -	1.95e-01 (4.53e-02) -	3.83e-01 (5.87e-02) -	1.71e-01 (3.93e-02) -	1.67e-01 (4.39e-02) -
CEC19-MaTSO4-T3	3.30e-02 (1.26e-02)	2.76e-01 (5.93e-02) -	1.98e-01 (5.14e-02) -	3.46e-01 (6.59e-02) -	1.74e-01 (3.55e-02) -	1.60e-01 (3.60e-02) -
CEC19-MaTSO4-T4	2.53e-02 (7.54e-03)	2.82e-01 (5.97e-02) -	2.08e-01 (4.96e-02) -	3.55e-01 (4.02e-02) -	1.68e-01 (3.91e-02) -	1.63e-01 (2.66e-02) -
CEC19-MaTSO4-T5	2.63e-02 (1.01e-02)	2.80e-01 (6.15e-02) -	2.11e-01 (5.16e-02) -	3.72e-01 (6.78e-02) -	1.73e-01 (3.78e-02) -	1.74e-01 (4.76e-02) -
CEC19-MaTSO4-T6	2.37e-02 (1.02e-02)	2.91e-01 (4.98e-02) -	1.92e-01 (3.35e-02) -	3.68e-01 (6.13e-02) -	1.68e-01 (4.42e-02) -	1.81e-01 (2.83e-02) -
CEC19-MaTSO4-T7	3.05e-02 (1.43e-02)	2.89e-01 (5.99e-02) -	1.96e-01 (4.05e-02) -	3.82e-01 (5.38e-02) -	1.69e-01 (3.91e-02) -	1.67e-01 (3.46e-02) -
CEC19-MaTSO4-T8	2.66e-02 (1.41e-02)	2.87e-01 (5.95e-02) -	2.11e-01 (4.40e-02) -	3.69e-01 (6.27e-02) -	1.77e-01 (5.26e-02) -	1.57e-01 (3.33e-02) -
CEC19-MaTSO4-T9	2.73e-02 (1.20e-02)	2.75e-01 (5.77e-02) -	2.00e-01 (3.85e-02) -	3.45e-01 (5.99e-02) -	1.76e-01 (3.25e-02) -	1.80e-01 (4.86e-02) -
CEC19-MaTSO4-T10	2.25e-02 (9.78e-03)	2.96e-01 (5.44e-02) -	1.99e-01 (4.12e-02) -	3.79e-01 (5.99e-02) -	1.53e-01 (2.98e-02) -	1.69e-01 (4.08e-02) -
CEC19-MaTSO4-T11	2.40e-02 (7.93e-03)	2.60e-01 (4.44e-02) -	1.90e-01 (3.48e-02) -	3.63e-01 (5.66e-02) -	1.72e-01 (3.92e-02) -	1.68e-01 (3.41e-02) -
CEC19-MaTSO4-T12	2.45e-02 (7.92e-03)	2.85e-01 (5.18e-02) -	1.99e-01 (4.11e-02) -	3.83e-01 (4.57e-02) -	1.53e-01 (3.26e-02) -	1.71e-01 (3.34e-02) -
CEC19-MaTSO4-T13	2.20e-02 (8.76e-03)	2.75e-01 (5.91e-02) -	1.95e-01 (4.70e-02) -	3.75e-01 (5.27e-02) -	1.63e-01 (3.90e-02) -	1.75e-01 (3.59e-02) -
CEC19-MaTSO4-T14	3.12e-02 (1.32e-02)	2.77e-01 (6.28e-02) -	2.07e-01 (4.53e-02) -	3.71e-01 (7.08e-02) -	1.77e-01 (4.06e-02) -	1.80e-01 (3.46e-02) -
CEC19-MaTSO4-T15	2.37e-02 (1.06e-02)	3.01e-01 (6.86e-02) -	2.08e-01 (4.79e-02) -	3.73e-01 (8.18e-02) -	1.78e-01 (3.94e-02) -	1.54e-01 (2.61e-02) -
CEC19-MaTSO4-T16	2.34e-02 (1.08e-02)	2.78e-01 (5.53e-02) -	2.00e-01 (3.36e-02) -	3.61e-01 (5.62e-02) -	1.65e-01 (2.23e-02) -	1.63e-01 (3.77e-02) -
CEC19-MaTSO4-T17	2.26e-02 (9.28e-03)	2.77e-01 (4.48e-02) -	1.96e-01 (2.50e-02) -	3.80e-01 (6.76e-02) -	1.68e-01 (2.45e-02) -	1.60e-01 (3.15e-02) -
CEC19-MaTSO4-T18	2.43e-02 (1.13e-02)	2.81e-01 (4.33e-02) -	2.08e-01 (4.22e-02) -	3.32e-01 (4.31e-02) -	1.65e-01 (4.39e-02) -	1.67e-01 (3.55e-02) -
CEC19-MaTSO4-T19	2.23e-02 (1.09e-02)	2.94e-01 (4.77e-02) -	1.98e-01 (3.65e-02) -	3.52e-01 (6.29e-02) -	1.76e-01 (3.51e-02) -	1.78e-01 (3.17e-02) -
CEC19-MaTSO4-T20	2.74e-02 (1.08e-02)	2.77e-01 (4.71e-02) -	2.00e-01 (4.91e-02) -	3.49e-01 (6.62e-02) -	1.68e-01 (3.78e-02) -	1.64e-01 (4.79e-02) -
CEC19-MaTSO4-T21	2.29e-02 (8.04e-03)	2.70e-01 (5.97e-02) -	1.98e-01 (4.25e-02) -	3.88e-01 (6.84e-02) -	1.71e-01 (4.04e-02) -	1.73e-01 (2.92e-02) -
CEC19-MaTSO4-T22	2.53e-02 (8.44e-03)	2.96e-01 (4.85e-02) -	2.08e-01 (4.88e-02) -	3.55e-01 (6.84e-02) -	1.78e-01 (5.35e-02) -	1.53e-01 (3.47e-02) -
CEC19-MaTSO4-T23	2.74e-02 (1.25e-02)	2.88e-01 (4.98e-02) -	2.08e-01 (4.55e-02) -	3.47e-01 (4.77e-02) -	1.74e-01 (4.44e-02) -	1.65e-01 (3.72e-02) -
CEC19-MaTSO4-T24	2.70e-02 (1.05e-02)	2.92e-01 (5.41e-02) -	2.02e-01 (4.60e-02) -	3.88e-01 (6.87e-02) -	1.61e-01 (3.98e-02) -	1.68e-01 (3.58e-02) -
CEC19-MaTSO4-T25	2.36e-02 (7.58e-03)	2.80e-01 (5.21e-02) -	2.00e-01 (5.20e-02) -	3.42e-01 (6.08e-02) -	1.60e-01 (4.48e-02) -	1.76e-01 (4.25e-02) -
CEC19-MaTSO4-T26	2.33e-02 (7.93e-03)	2.78e-01 (5.46e-02) -	1.93e-01 (3.53e-02) -	3.66e-01 (7.06e-02) -	1.76e-01 (4.21e-02) -	1.62e-01 (4.99e-02) -
CEC19-MaTSO4-T27	1.93e-02 (6.96e-03)	2.72e-01 (5.11e-02) -	1.99e-01 (4.50e-02) -	3.52e-01 (5.20e-02) -	1.49e-01 (3.60e-02) -	1.77e-01 (5.34e-02) -
CEC19-MaTSO4-T28	2.33e-02 (9.10e-03)	2.82e-01 (5.81e-02) -	1.84e-01 (2.86e-02) -	3.45e-01 (6.83e-02) -	1.70e-01 (3.83e-02) -	1.79e-01 (2.86e-02) -
CEC19-MaTSO4-T29	2.79e-02 (1.44e-02)	2.68e-01 (7.37e-02) -	2.05e-01 (4.55e-02) -	3.50e-01 (5.21e-02) -	1.71e-01 (3.70e-02) -	1.77e-01 (3.04e-02) -
CEC19-MaTSO4-T30	2.69e-02 (1.38e-02)	2.54e-01 (5.79e-02) -	1.90e-01 (3.36e-02) -	3.52e-01 (7.64e-02) -	1.79e-01 (3.68e-02) -	1.71e-01 (4.15e-02) -
CEC19-MaTSO4-T31	2.37e-02 (9.24e-03)	2.78e-01 (4.23e-02) -	2.10e-01 (4.09e-02) -	3.69e-01 (7.29e-02) -	1.74e-01 (3.66e-02) -	1.77e-01 (4.09e-02) -
CEC19-MaTSO4-T32	2.63e-02 (1.15e-02)	3.07e-01 (5.26e-02) -	1.90e-01 (3.49e-02) -	3.47e-01 (5.77e-02) -	1.75e-01 (4.13e-02) -	1.73e-01 (3.07e-02) -
CEC19-MaTSO4-T33	2.54e-02 (1.32e-02)	2.86e-01 (3.46e-02) -	1.84e-01 (4.22e-02) -	3.64e-01 (6.70e-02) -	1.57e-01 (4.13e-02) -	1.72e-01 (3.68e-02) -
CEC19-MaTSO4-T34	2.72e-02 (1.18e-02)	2.91e-01 (4.30e-02) -	1.90e-01 (3.99e-02) -	3.94e-01 (5.03e-02) -	1.72e-01 (3.67e-02) -	1.51e-01 (2.62e-02) -
CEC19-MaTSO4-T35	2.65e-02 (1.14e-02)	2.73e-01 (6.55e-02) -	1.96e-01 (4.81e-02) -	3.80e-01 (5.25e-02) -	1.69e-01 (3.02e-02) -	1.62e-01 (3.31e-02) -
CEC19-MaTSO4-T36	2.68e-02 (1.09e-02)	2.88e-01 (4.90e-02) -	2.11e-01 (4.02e-02) -	3.96e-01 (8.86e-02) -	1.66e-01 (3.60e-02) -	1.65e-01 (3.54e-02) -
CEC19-MaTSO4-T37	2.65e-02 (9.88e-03)	2.84e-01 (4.89e-02) -	2.03e-01 (3.75e-02) -	3.49e-01 (5.65e-02) -	1.74e-01 (3.54e-02) -	1.67e-01 (2.36e-02) -
CEC19-MaTSO4-T38	2.72e-02 (1.08e-02)	2.71e-01 (5.62e-02) -	2.10e-01 (4.44e-02) -	3.87e-01 (8.11e-02) -	1.53e-01 (2.65e-02) -	1.53e-01 (3.35e-02) -
CEC19-MaTSO4-T39	2.48e-02 (1.07e-02)	2.84e-01 (5.28e-02) -	2.09e-01 (3.82e-02) -	3.60e-01 (7.58e-02) -	1.62e-01 (4.83e-02) -	1.59e-01 (2.22e-02) -
CEC19-MaTSO4-T40	2.62e-02 (1.13e-02)	2.59e-01 (4.73e-02) -	2.30e-01 (5.83e-02) -	3.52e-01 (7.43e-02) -	1.67e-01 (3.35e-02) -	1.63e-01 (3.74e-02) -
CEC19-MaTSO4-T41	2.54e-02 (1.14e-02)	2.73e-01 (5.38e-02) -	2.05e-01 (4.93e-02) -	3.58e-01 (5.72e-02) -	1.74e-01 (3.53e-02) -	1.48e-01 (3.97e-02) -
CEC19-MaTSO4-T42	2.74e-02 (1.12e-02)	2.93e-01 (5.87e-02) -	2.01e-01 (4.27e-02) -	3.76e-01 (8.32e-02) -	1.57e-01 (2.83e-02) -	1.52e-01 (3.81e-02) -
CEC19-MaTSO4-T43	2.59e-02 (7.25e-03)	2.79e-01 (5.38e-02) -	1.97e-01 (4.02e-02) -	3.69e-01 (7.13e-02) -	1.63e-01 (3.90e-02) -	1.68e-01 (4.28e-02) -
CEC19-MaTSO4-T44	2.45e-02 (8.33e-03)	2.85e-01 (5.14e-02) -	1.95e-01 (4.97e-02) -	3.63e-01 (5.99e-02) -	1.65e-01 (3.49e-02) -	1.72e-01 (4.20e-02) -
CEC19-MaTSO4-T45	2.47e-02 (9.45e-03)	3.05e-01 (5.07e-02) -	2.00e-01 (5.19e-02) -	3.52e-01 (6.53e-02) -	1.59e-01 (3.68e-02) -	1.66e-01 (2.73e-02) -
CEC19-MaTSO4-T46	2.71e-02 (6.98e-03)	2.82e-01 (5.61e-02) -	2.22e-01 (3.83e-02) -	3.74e-01 (5.78e-02) -	1.76e-01 (3.71e-02) -	1.73e-01 (4.04e-02) -
CEC19-MaTSO4-T47	2.35e-02 (8.45e-03)	2.85e-01 (4.30e-02) -	2.07e-01 (4.14e-02) -	3.61e-01 (5.41e-02) -	1.59e-01 (4.10e-02) -	1.59e-01 (3.01e-02) -
CEC19-MaTSO4-T48	2.54e-02 (9.90e-03)	2.73e-01 (6.01e-02) -	1.99e-01 (3.85e-02) -	3.41e-01 (7.94e-02) -	1.71e-01 (3.13e-02) -	1.80e-01 (4.76e-02) -
CEC19-MaTSO4-T49	2.89e-02 (9.64e-03)	2.86e-01 (5.78e-02) -	2.12e-01 (4.48e-02) -	3.47e-01 (6.77e-02) -	1.73e-01 (3.46e-02) -	1.61e-01 (3.61e-02) -
CEC19-MaTSO4-T50	2.70e-02 (1.01e-02)	2.84e-01 (6.61e-02) -	2.01e-01 (4.99e-02) -	3.36e-01 (5.43e-02) -	1.71e-01 (2.91e-02) -	1.64e-01 (4.06e-02) -
+/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S28

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO5 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO5 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO5-T1	5.66e-01 (1.26e-01)	1.99e+00 (2.00e-01) -	1.49e+00 (1.77e-01) -	1.45e+00 (2.08e-01) -	1.38e+00 (1.63e-01) -	1.36e+00 (2.22e-01) -
CEC19-MaTSO5-T2	6.24e-01 (1.45e-01)	2.01e+00 (1.83e-01) -	1.55e+00 (1.98e-01) -	2.37e+00 (3.01e-01) -	1.28e+00 (1.15e-01) -	1.31e+00 (1.48e-01) -
CEC19-MaTSO5-T3	5.90e-01 (1.37e-01)	2.01e+00 (2.26e-01) -	1.58e+00 (1.95e-01) -	2.31e+00 (3.61e-01) -	1.42e+00 (2.34e-01) -	1.32e+00 (1.33e-01) -
CEC19-MaTSO5-T4	5.94e-01 (1.09e-01)	2.00e+00 (2.54e-01) -	1.50e+00 (1.50e-01) -	2.41e+00 (2.89e-01) -	1.32e+00 (2.15e-01) -	1.31e+00 (1.70e-01) -
CEC19-MaTSO5-T5	6.21e-01 (1.09e-01)	2.13e+00 (2.69e-01) -	1.52e+00 (2.12e-01) -	2.37e+00 (3.06e-01) -	1.34e+00 (1.72e-01) -	1.38e+00 (1.68e-01) -
CEC19-MaTSO5-T6	6.18e-01 (1.42e-01)	2.07e+00 (2.63e-01) -	1.47e+00 (1.62e-01) -	2.30e+00 (2.65e-01) -	1.34e+00 (1.37e-01) -	1.35e+00 (1.20e-01) -
CEC19-MaTSO5-T7	6.23e-01 (1.19e-01)	2.07e+00 (2.35e-01) -	1.47e+00 (1.51e-01) -	2.18e+00 (2.21e-01) -	1.31e+00 (1.64e-01) -	1.42e+00 (1.44e-01) -
CEC19-MaTSO5-T8	6.46e-01 (1.38e-01)	2.09e+00 (2.51e-01) -	1.50e+00 (1.43e-01) -	2.39e+00 (3.02e-01) -	1.40e+00 (1.44e-01) -	1.39e+00 (1.73e-01) -
CEC19-MaTSO5-T9	6.23e-01 (9.97e-02)	2.19e+00 (2.57e-01) -	1.48e+00 (1.80e-01) -	2.42e+00 (1.97e-01) -	1.34e+00 (1.34e-01) -	1.39e+00 (1.78e-01) -
CEC19-MaTSO5-T10	5.60e-01 (1.44e-01)	2.14e+00 (2.12e-01) -	1.59e+00 (1.62e-01) -	2.42e+00 (4.17e-01) -	1.36e+00 (1.95e-01) -	1.39e+00 (1.17e-01) -
CEC19-MaTSO5-T11	6.63e-01 (1.09e-01)	2.07e+00 (2.34e-01) -	1.46e+00 (2.16e-01) -	2.37e+00 (2.65e-01) -	1.32e+00 (1.45e-01) -	1.31e+00 (1.77e-01) -
CEC19-MaTSO5-T12	6.01e-01 (9.28e-02)	2.02e+00 (2.04e-01) -	1.49e+00 (1.38e-01) -	2.30e+00 (2.28e-01) -	1.35e+00 (1.28e-01) -	1.34e+00 (1.40e-01) -
CEC19-MaTSO5-T13	6.11e-01 (9.56e-02)	2.10e+00 (2.83e-01) -	1.52e+00 (1.92e-01) -	2.35e+00 (2.81e-01) -	1.29e+00 (1.69e-01) -	1.38e+00 (1.64e-01) -
CEC19-MaTSO5-T14	5.93e-01 (8.68e-02)	2.17e+00 (3.02e-01) -	1.50e+00 (1.50e-01) -	2.31e+00 (2.15e-01) -	1.26e+00 (1.51e-01) -	1.39e+00 (1.47e-01) -
CEC19-MaTSO5-T15	6.03e-01 (1.41e-01)	2.13e+00 (2.56e-01) -	1.43e+00 (1.98e-01) -	2.41e+00 (2.43e-01) -	1.36e+00 (1.89e-01) -	1.40e+00 (1.70e-01) -
CEC19-MaTSO5-T16	6.03e-01 (1.30e-01)	2.10e+00 (2.39e-01) -	1.48e+00 (1.39e-01) -	2.33e+00 (2.10e-01) -	1.31e+00 (1.59e-01) -	1.38e+00 (1.72e-01) -
CEC19-MaTSO5-T17	5.82e-01 (1.77e-01)	2.23e+00 (2.24e-01) -	1.45e+00 (1.15e-01) -	2.43e+00 (2.58e-01) -	1.33e+00 (1.04e-01) -	1.34e+00 (1.63e-01) -
CEC19-MaTSO5-T18	5.79e-01 (1.52e-01)	2.09e+00 (2.19e-01) -	1.51e+00 (1.88e-01) -	2.32e+00 (2.20e-01) -	1.33e+00 (1.79e-01) -	1.30e+00 (1.91e-01) -
CEC19-MaTSO5-T19	6.25e-01 (1.18e-01)	2.12e+00 (2.41e-01) -	1.48e+00 (1.86e-01) -	2.41e+00 (2.93e-01) -	1.38e+00 (1.27e-01) -	1.41e+00 (1.74e-01) -
CEC19-MaTSO5-T20	6.55e-01 (1.19e-01)	2.09e+00 (1.70e-01) -	1.47e+00 (1.81e-01) -	2.38e+00 (2.90e-01) -	1.31e+00 (1.53e-01) -	1.39e+00 (1.85e-01) -
CEC19-MaTSO5-T21	6.00e-01 (1.49e-01)	2.04e+00 (1.72e-01) -	1.52e+00 (1.79e-01) -	2.27e+00 (2.82e-01) -	1.33e+00 (2.00e-01) -	1.38e+00 (1.26e-01) -
CEC19-MaTSO5-T22	6.31e-01 (1.24e-01)	2.18e+00 (2.30e-01) -	1.51e+00 (1.65e-01) -	2.46e+00 (2.80e-01) -	1.34e+00 (2.03e-01) -	1.35e+00 (1.66e-01) -
CEC19-MaTSO5-T23	5.73e-01 (1.06e-01)	2.20e+00 (2.31e-01) -	1.61e+00 (1.85e-01) -	2.41e+00 (2.83e-01) -	1.35e+00 (1.59e-01) -	1.31e+00 (1.55e-01) -
CEC19-MaTSO5-T24	5.90e-01 (1.40e-01)	2.21e+00 (2.29e-01) -	1.41e+00 (1.72e-01) -	2.39e+00 (2.84e-01) -	1.27e+00 (1.38e-01) -	1.33e+00 (2.33e-01) -
CEC19-MaTSO5-T25	5.30e-01 (9.83e-02)	2.10e+00 (1.76e-01) -	1.46e+00 (1.61e-01) -	2.43e+00 (2.37e-01) -	1.34e+00 (1.41e-01) -	1.36e+00 (1.99e-01) -
CEC19-MaTSO5-T26	5.52e-01 (1.08e-01)	2.15e+00 (2.85e-01) -	1.48e+00 (2.02e-01) -	2.43e+00 (2.33e-01) -	1.33e+00 (1.40e-01) -	1.31e+00 (1.58e-01) -
CEC19-MaTSO5-T27	6.07e-01 (1.10e-01)	2.13e+00 (1.76e-01) -	1.57e+00 (1.87e-01) -	2.48e+00 (2.50e-01) -	1.30e+00 (1.79e-01) -	1.32e+00 (1.11e-01) -
CEC19-MaTSO5-T28	5.61e-01 (1.28e-01)	2.11e+00 (1.79e-01) -	1.54e+00 (1.51e-01) -	2.48e+00 (3.05e-01) -	1.26e+00 (1.54e-01) -	1.42e+00 (1.98e-01) -
CEC19-MaTSO5-T29	6.27e-01 (1.44e-01)	2.01e+00 (2.08e-01) -	1.49e+00 (1.23e-01) -	2.30e+00 (3.42e-01) -	1.31e+00 (1.49e-01) -	1.32e+00 (1.36e-01) -
CEC19-MaTSO5-T30	5.87e-01 (1.29e-01)	2.11e+00 (2.16e-01) -	1.54e+00 (1.68e-01) -	2.49e+00 (3.50e-01) -	1.42e+00 (2.08e-01) -	1.40e+00 (1.96e-01) -
CEC19-MaTSO5-T31	6.13e-01 (1.42e-01)	2.04e+00 (1.87e-01) -	1.44e+00 (1.61e-01) -	2.42e+00 (3.12e-01) -	1.37e+00 (1.60e-01) -	1.33e+00 (1.24e-01) -
CEC19-MaTSO5-T32	6.16e-01 (1.30e-01)	2.16e+00 (2.09e-01) -	1.47e+00 (1.60e-01) -	2.25e+00 (2.32e-01) -	1.40e+00 (2.25e-01) -	1.35e+00 (1.98e-01) -
CEC19-MaTSO5-T33	6.19e-01 (1.25e-01)	2.08e+00 (2.40e-01) -	1.44e+00 (1.14e-01) -	2.35e+00 (2.26e-01) -	1.31e+00 (1.90e-01) -	1.40e+00 (1.92e-01) -
CEC19-MaTSO5-T34	6.00e-01 (1.33e-01)	2.11e+00 (2.88e-01) -	1.53e+00 (1.34e-01) -	2.54e+00 (2.67e-01) -	1.33e+00 (1.61e-01) -	1.38e+00 (1.64e-01) -
CEC19-MaTSO5-T35	6.08e-01 (1.34e-01)	2.22e+00 (2.00e-01) -	1.53e+00 (1.82e-01) -	2.34e+00 (2.20e-01) -	1.36e+00 (1.61e-01) -	1.38e+00 (1.74e-01) -
CEC19-MaTSO5-T36	5.59e-01 (1.22e-01)	2.08e+00 (2.68e-01) -	1.62e+00 (1.83e-01) -	2.34e+00 (3.18e-01) -	1.37e+00 (1.50e-01) -	1.35e+00 (1.29e-01) -
CEC19-MaTSO5-T37	5.51e-01 (1.10e-01)	2.11e+00 (2.25e-01) -	1.52e+00 (2.03e-01) -	2.46e+00 (2.60e-01) -	1.31e+00 (1.80e-01) -	1.38e+00 (1.22e-01) -
CEC19-MaTSO5-T38	6.00e-01 (1.25e-01)	2.12e+00 (1.87e-01) -	1.48e+00 (1.26e-01) -	2.56e+00 (2.77e-01) -	1.32e+00 (1.47e-01) -	1.33e+00 (1.86e-01) -
CEC19-MaTSO5-T39	5.58e-01 (1.21e-01)	2.18e+00 (1.81e-01) -	1.50e+00 (1.46e-01) -	2.43e+00 (3.11e-01) -	1.30e+00 (1.42e-01) -	1.37e+00 (1.80e-01) -
CEC19-MaTSO5-T40	6.51e-01 (1.40e-01)	2.03e+00 (1.83e-01) -	1.46e+00 (1.95e-01) -	2.35e+00 (2.42e-01) -	1.30e+00 (1.52e-01) -	1.37e+00 (1.21e-01) -
CEC19-MaTSO5-T41	6.33e-01 (8.32e-02)	2.08e+00 (2.06e-01) -	1.48e+00 (1.56e-01) -	2.36e+00 (3.00e-01) -	1.39e+00 (2.62e-01) -	1.45e+00 (1.34e-01) -
CEC19-MaTSO5-T42	6.11e-01 (1.26e-01)	2.21e+00 (2.93e-01) -	1.50e+00 (1.81e-01) -	2.36e+00 (2.99e-01) -	1.30e+00 (1.55e-01) -	1.32e+00 (1.32e-01) -
CEC19-MaTSO5-T43	6.24e-01 (1.21e-01)	2.13e+00 (2.22e-01) -	1.56e+00 (1.79e-01) -	2.30e+00 (2.45e-01) -	1.36e+00 (1.04e-01) -	1.33e+00 (1.68e-01) -
CEC19-MaTSO5-T44	5.59e-01 (9.19e-02)	2.18e+00 (2.01e-01) -	1.57e+00 (1.69e-01) -	2.36e+00 (3.37e-01) -	1.32e+00 (1.83e-01) -	1.31e+00 (1.25e-01) -
CEC19-MaTSO5-T45	5.93e-01 (1.28e-01)	2.13e+00 (2.00e-01) -	1.60e+00 (1.71e-01) -	2.36e+00 (2.44e-01) -	1.33e+00 (1.29e-01) -	1.31e+00 (1.23e-01) -
CEC19-MaTSO5-T46	5.93e-01 (1.16e-01)	2.15e+00 (2.38e-01) -	1.40e+00 (1.32e-01) -	2.37e+00 (3.42e-01) -	1.31e+00 (1.44e-01) -	1.38e+00 (1.69e-01) -
CEC19-MaTSO5-T47	5.93e-01 (1.33e-01)	2.17e+00 (2.10e-01) -	1.47e+00 (1.77e-01) -	2.36e+00 (2.34e-01) -	1.35e+00 (1.81e-01) -	1.24e+00 (1.70e-01) -
CEC19-MaTSO5-T48	6.77e-01 (1.30e-01)	2.05e+00 (2.27e-01) -	1.54e+00 (1.66e-01) -	2.37e+00 (2.12e-01) -	1.32e+00 (1.76e-01) -	1.40e+00 (2.01e-01) -
CEC19-MaTSO5-T49	6.01e-01 (1.60e-01)	2.13e+00 (2.37e-01) -	1.52e+00 (2.04e-01) -	2.33e+00 (3.22e-01) -	1.34e+00 (1.64e-01) -	1.32e+00 (1.53e-01) -
CEC19-MaTSO5-T50	6.57e-01 (1.47e-01)	2.08e+00 (3.05e-01) -	1.51e+00 (1.79e-01) -	2.33e+00 (2.93e-01) -	1.34e+00 (1.98e-01) -	1.39e+00 (1.65e-01) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S29

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATSO6 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATSO6 IN TEST SUITE 3.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
CEC19-MaTSO6-T1	9.77e-03 (4.99e-03)	8.16e+02 (5.18e+02) -	1.18e+02 (1.06e+02) -	2.54e+03 (4.25e+02) -	2.69e+03 (4.37e+02) -	2.65e+03 (4.02e+02) -
CEC19-MaTSO6-T2	1.33e-02 (5.36e-03)	8.37e+02 (5.99e+02) -	6.25e+01 (5.06e+01) -	2.97e+03 (3.62e+02) -	2.82e+03 (4.20e+02) -	2.67e+03 (4.27e+02) -
CEC19-MaTSO6-T3	1.05e-02 (4.90e-03)	8.56e+02 (5.67e+02) -	8.14e+01 (7.84e+01) -	3.05e+03 (3.71e+02) -	2.72e+03 (4.89e+02) -	2.65e+03 (3.07e+02) -
CEC19-MaTSO6-T4	1.11e-02 (5.35e-03)	8.71e+02 (5.29e+02) -	9.09e+01 (7.01e+01) -	2.93e+03 (4.71e+02) -	2.80e+03 (4.13e+02) -	2.55e+03 (2.91e+02) -
CEC19-MaTSO6-T5	7.52e-03 (3.38e-03)	8.68e+02 (5.59e+02) -	8.55e+01 (9.88e+01) -	2.88e+03 (4.53e+02) -	2.83e+03 (3.70e+02) -	2.76e+03 (3.93e+02) -
CEC19-MaTSO6-T6	8.72e-03 (3.35e-03)	8.96e+02 (5.65e+02) -	1.73e+02 (1.64e+02) -	2.91e+03 (5.25e+02) -	2.62e+03 (3.27e+02) -	2.90e+03 (3.54e+02) -
CEC19-MaTSO6-T7	1.05e-02 (6.36e-03)	8.02e+02 (5.46e+02) -	9.40e+01 (9.35e+01) -	2.65e+03 (3.21e+02) -	2.69e+03 (4.73e+02) -	2.77e+03 (4.90e+02) -
CEC19-MaTSO6-T8	1.15e-02 (6.20e-03)	8.39e+02 (5.21e+02) -	1.30e+02 (1.29e+02) -	3.09e+03 (4.31e+02) -	2.76e+03 (3.98e+02) -	2.76e+03 (3.83e+02) -
CEC19-MaTSO6-T9	6.89e-03 (4.02e-03)	8.57e+02 (5.96e+02) -	9.34e+01 (8.30e+01) -	2.92e+03 (4.48e+02) -	2.75e+03 (4.69e+02) -	2.85e+03 (5.13e+02) -
CEC19-MaTSO6-T10	7.00e-03 (2.78e-03)	8.45e+02 (5.34e+02) -	1.06e+02 (1.17e+02) -	2.99e+03 (4.37e+02) -	2.66e+03 (3.92e+02) -	2.55e+03 (4.11e+02) -
CEC19-MaTSO6-T11	8.99e-03 (3.97e-03)	8.49e+02 (5.65e+02) -	5.81e+01 (5.02e+01) -	2.93e+03 (4.02e+02) -	2.78e+03 (4.61e+02) -	2.66e+03 (4.45e+02) -
CEC19-MaTSO6-T12	5.93e+00 (2.65e+01)	8.84e+02 (6.01e+02) -	1.63e+02 (1.89e+02) -	2.88e+03 (4.82e+02) -	2.64e+03 (4.03e+02) -	2.81e+03 (3.51e+02) -
CEC19-MaTSO6-T13	1.17e-02 (8.98e-03)	8.67e+02 (5.91e+02) -	1.07e+02 (8.35e+01) -	2.98e+03 (4.23e+02) -	2.75e+03 (4.46e+02) -	2.71e+03 (3.80e+02) -
CEC19-MaTSO6-T14	8.80e-03 (4.44e-03)	8.45e+02 (5.87e+02) -	9.97e+01 (1.18e+02) -	3.03e+03 (3.44e+02) -	2.76e+03 (4.20e+02) -	2.75e+03 (3.61e+02) -
CEC19-MaTSO6-T15	7.66e-03 (4.38e-03)	8.35e+02 (5.48e+02) -	1.04e+02 (1.01e+02) -	2.88e+03 (2.76e+02) -	2.59e+03 (2.41e+02) -	2.76e+03 (3.94e+02) -
CEC19-MaTSO6-T16	5.66e-03 (2.79e-03)	8.49e+02 (5.99e+02) -	1.00e+02 (1.03e+02) -	2.86e+03 (2.88e+02) -	2.76e+03 (3.29e+02) -	2.71e+03 (3.29e+02) -
CEC19-MaTSO6-T17	1.05e-02 (9.76e-03)	8.68e+02 (5.57e+02) -	1.03e+02 (1.03e+02) -	2.78e+03 (4.72e+02) -	2.72e+03 (3.79e+02) -	2.75e+03 (3.10e+02) -
CEC19-MaTSO6-T18	7.68e-03 (3.16e-03)	8.50e+02 (5.66e+02) -	1.19e+02 (1.27e+02) -	2.85e+03 (3.99e+02) -	2.65e+03 (3.82e+02) -	2.73e+03 (5.07e+02) -
CEC19-MaTSO6-T19	1.15e-02 (6.52e-03)	8.62e+02 (5.37e+02) -	1.87e+02 (2.59e+02) -	2.65e+03 (4.65e+02) -	2.63e+03 (4.74e+02) -	2.74e+03 (4.22e+02) -
CEC19-MaTSO6-T20	7.29e-03 (2.78e-03)	8.15e+02 (5.55e+02) -	1.35e+02 (1.30e+02) -	2.94e+03 (4.66e+02) -	2.82e+03 (4.23e+02) -	2.91e+03 (3.32e+02) -
CEC19-MaTSO6-T21	7.02e-03 (4.11e-03)	8.72e+02 (5.68e+02) -	1.85e+02 (1.57e+02) -	2.82e+03 (4.12e+02) -	2.82e+03 (4.63e+02) -	2.80e+03 (4.08e+02) -
CEC19-MaTSO6-T22	7.01e-03 (2.68e-03)	8.60e+02 (5.90e+02) -	9.30e+01 (7.44e+01) -	2.94e+03 (4.94e+02) -	2.94e+03 (4.71e+02) -	2.70e+03 (4.82e+02) -
CEC19-MaTSO6-T23	6.30e-03 (2.68e-03)	8.62e+02 (6.47e+02) -	1.06e+02 (1.06e+02) -	2.93e+03 (3.65e+02) -	2.71e+03 (4.05e+02) -	2.85e+03 (2.94e+02) -
CEC19-MaTSO6-T24	1.34e-02 (4.97e-03)	8.58e+02 (5.74e+02) -	1.50e+02 (1.23e+02) -	2.82e+03 (4.41e+02) -	2.78e+03 (4.63e+02) -	2.80e+03 (4.57e+02) -
CEC19-MaTSO6-T25	7.02e-03 (2.56e-03)	8.17e+02 (5.54e+02) -	1.06e+02 (1.20e+02) -	3.01e+03 (3.14e+02) -	3.04e+03 (5.61e+02) -	2.70e+03 (2.83e+02) -
CEC19-MaTSO6-T26	8.96e-03 (5.72e-03)	8.58e+02 (6.18e+02) -	1.35e+02 (1.42e+02) -	3.01e+03 (2.70e+02) -	2.75e+03 (3.48e+02) -	2.62e+03 (3.88e+02) -
CEC19-MaTSO6-T27	7.89e-03 (4.42e-03)	8.91e+02 (6.25e+02) -	1.47e+02 (1.67e+02) -	2.77e+03 (4.40e+02) -	2.66e+03 (4.40e+02) -	2.48e+03 (3.83e+02) -
CEC19-MaTSO6-T28	8.10e-03 (3.32e-03)	8.15e+02 (6.01e+02) -	1.61e+02 (1.52e+02) -	2.96e+03 (4.82e+02) -	2.79e+03 (4.55e+02) -	2.51e+03 (3.62e+02) -
CEC19-MaTSO6-T29	8.33e-03 (4.36e-03)	8.19e+02 (5.44e+02) -	8.26e+01 (6.87e+01) -	2.69e+03 (4.39e+02) -	2.55e+03 (5.13e+02) -	2.54e+03 (4.40e+02) -
CEC19-MaTSO6-T30	1.12e-02 (5.50e-03)	8.49e+02 (5.91e+02) -	1.31e+02 (1.44e+02) -	2.79e+03 (4.77e+02) -	2.79e+03 (4.41e+02) -	2.79e+03 (4.44e+02) -
CEC19-MaTSO6-T31	9.45e-03 (4.66e-03)	8.81e+02 (5.92e+02) -	1.20e+02 (1.07e+02) -	2.86e+03 (3.67e+02) -	2.76e+03 (4.19e+02) -	2.75e+03 (4.17e+02) -
CEC19-MaTSO6-T32	1.10e-02 (4.58e-03)	8.56e+02 (5.27e+02) -	8.91e+01 (6.91e+01) -	3.01e+03 (4.28e+02) -	2.76e+03 (4.11e+02) -	2.62e+03 (2.95e+02) -
CEC19-MaTSO6-T33	1.12e-02 (4.82e-03)	8.70e+02 (6.03e+02) -	1.51e+02 (1.15e+02) -	3.01e+03 (4.37e+02) -	2.73e+03 (4.20e+02) -	2.77e+03 (4.30e+02) -
CEC19-MaTSO6-T34	6.76e-03 (3.05e-03)	8.55e+02 (5.79e+02) -	1.41e+02 (1.60e+02) -	2.95e+03 (2.97e+02) -	2.89e+03 (3.89e+02) -	2.70e+03 (5.53e+02) -
CEC19-MaTSO6-T35	1.22e-02 (5.80e-03)	8.72e+02 (5.86e+02) -	9.50e+01 (9.12e+01) -	3.01e+03 (3.30e+02) -	2.90e+03 (4.25e+02) -	2.59e+03 (3.93e+02) -
CEC19-MaTSO6-T36	9.29e-03 (6.21e-03)	8.80e+02 (5.61e+02) -	1.09e+02 (1.06e+02) -	3.14e+03 (3.56e+02) -	2.82e+03 (2.89e+02) -	2.75e+03 (4.02e+02) -
CEC19-MaTSO6-T37	6.34e-03 (2.39e-03)	8.73e+02 (6.27e+02) -	1.12e+02 (1.24e+02) -	3.11e+03 (6.03e+02) -	2.63e+03 (3.61e+02) -	2.86e+03 (5.31e+02) -
CEC19-MaTSO6-T38	5.92e-03 (2.31e-03)	8.61e+02 (5.72e+02) -	8.73e+01 (9.49e+01) -	2.82e+03 (3.89e+02) -	2.73e+03 (4.40e+02) -	2.62e+03 (4.42e+02) -
CEC19-MaTSO6-T39	9.32e-03 (4.54e-03)	8.71e+02 (5.71e+02) -	1.10e+02 (8.97e+01) -	2.84e+03 (4.24e+02) -	2.65e+03 (4.76e+02) -	2.53e+03 (3.89e+02) -
CEC19-MaTSO6-T40	1.03e-02 (3.83e-03)	8.36e+02 (5.93e+02) -	1.19e+02 (1.09e+02) -	2.91e+03 (4.05e+02) -	2.71e+03 (3.92e+02) -	2.76e+03 (4.56e+02) -
CEC19-MaTSO6-T41	7.67e-03 (4.24e-03)	8.35e+02 (5.70e+02) -	2.52e+02 (3.28e+02) -	2.68e+03 (4.64e+02) -	2.42e+03 (3.63e+02) -	2.60e+03 (3.45e+02) -
CEC19-MaTSO6-T42	7.98e-03 (5.72e-03)	8.59e+02 (6.07e+02) -	1.32e+02 (1.81e+02) -	2.88e+03 (3.72e+02) -	2.87e+03 (4.85e+02) -	2.64e+03 (3.68e+02) -
CEC19-MaTSO6-T43	6.58e-03 (2.03e-03)	8.60e+02 (5.83e+02) -	9.83e+01 (1.07e+02) -	2.93e+03 (3.63e+02) -	2.66e+03 (4.42e+02) -	2.64e+03 (4.57e+02) -
CEC19-MaTSO6-T44	4.99e-03 (2.24e-03)	8.60e+02 (5.68e+02) -	9.82e+01 (9.11e+01) -	2.84e+03 (3.58e+02) -	2.68e+03 (4.15e+02) -	2.82e+03 (5.67e+02) -
CEC19-MaTSO6-T45	1.16e-02 (1.43e-02)	7.94e+02 (5.92e+02) -	1.15e+02 (1.04e+02) -	2.83e+03 (3.85e+02) -	2.67e+03 (3.08e+02) -	2.66e+03 (5.25e+02) -
CEC19-MaTSO6-T46	7.99e-03 (4.09e-03)	8.79e+02 (5.71e+02) -	2.11e+02 (1.89e+02) -	2.98e+03 (3.22e+02) -	2.74e+03 (4.37e+02) -	2.62e+03 (3.99e+02) -
CEC19-MaTSO6-T47	8.94e-03 (4.53e-03)	8.72e+02 (6.24e+02) -	1.51e+02 (1.43e+02) -	2.74e+03 (4.44e+02) -	2.62e+03 (4.33e+02) -	2.58e+03 (4.33e+02) -
CEC19-MaTSO6-T48	8.31e-03 (4.30e-03)	8.18e+02 (5.43e+02) -	1.14e+02 (1.03e+02) -	2.89e+03 (4.52e+02) -	2.56e+03 (4.29e+02) -	2.67e+03 (3.98e+02) -
CEC19-MaTSO6-T49	1.19e-02 (6.19e-03)	8.53e+02 (5.81e+02) -	1.89e+02 (2.66e+02) -	2.72e+03 (4.11e+02) -	2.58e+03 (4.02e+02) -	2.62e+03 (2.72e+02) -
CEC19-MaTSO6-T50	5.54e-03 (2.25e-03)	8.47e+02 (6.03e+02) -	7.82e+01 (6.05e+01) -	2.72e+03 (4.48e+02) -	2.77e+03 (5.30e+02) -	2.68e+03 (5.01e+02) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

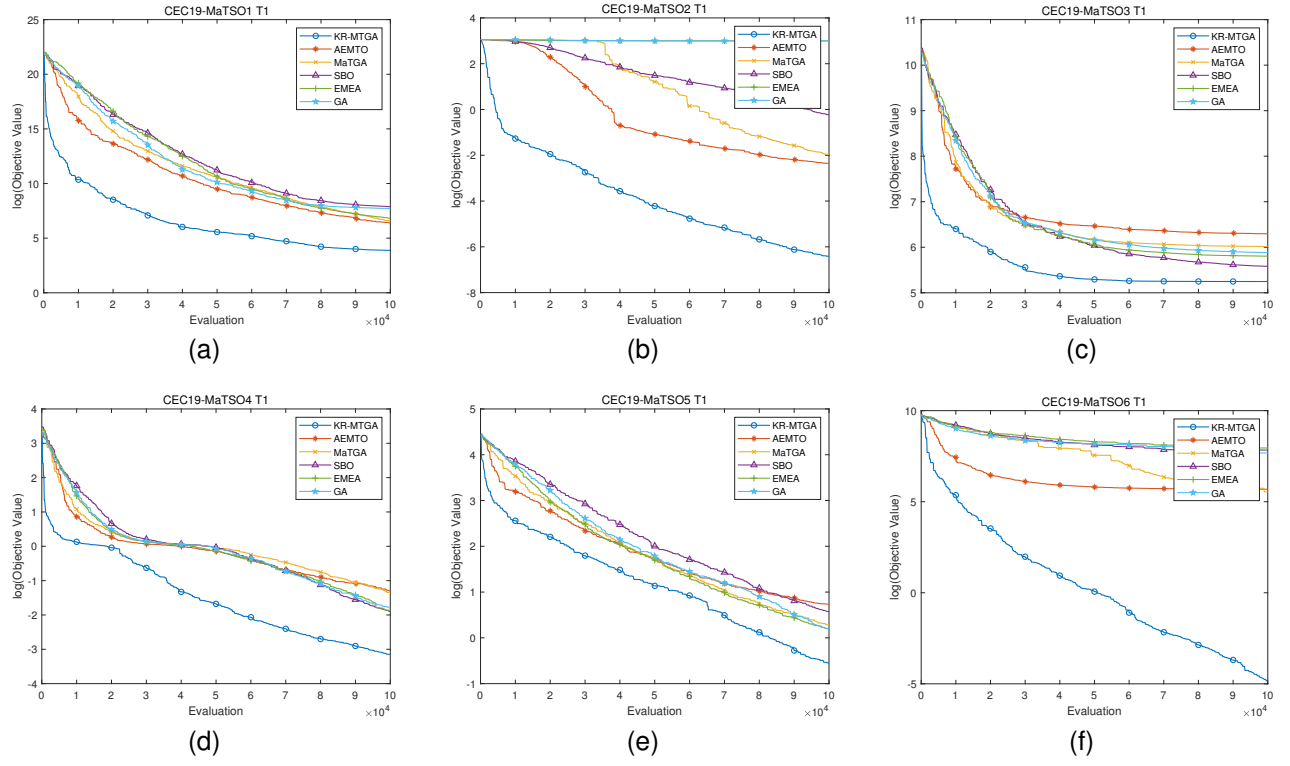


Fig. S5. Average convergence trends of six compared methods, i.e., KR-MTGA, AEMTO, MaTGA, SBO, EMEA, and single-tasking GA on CEC19-MaTSO.

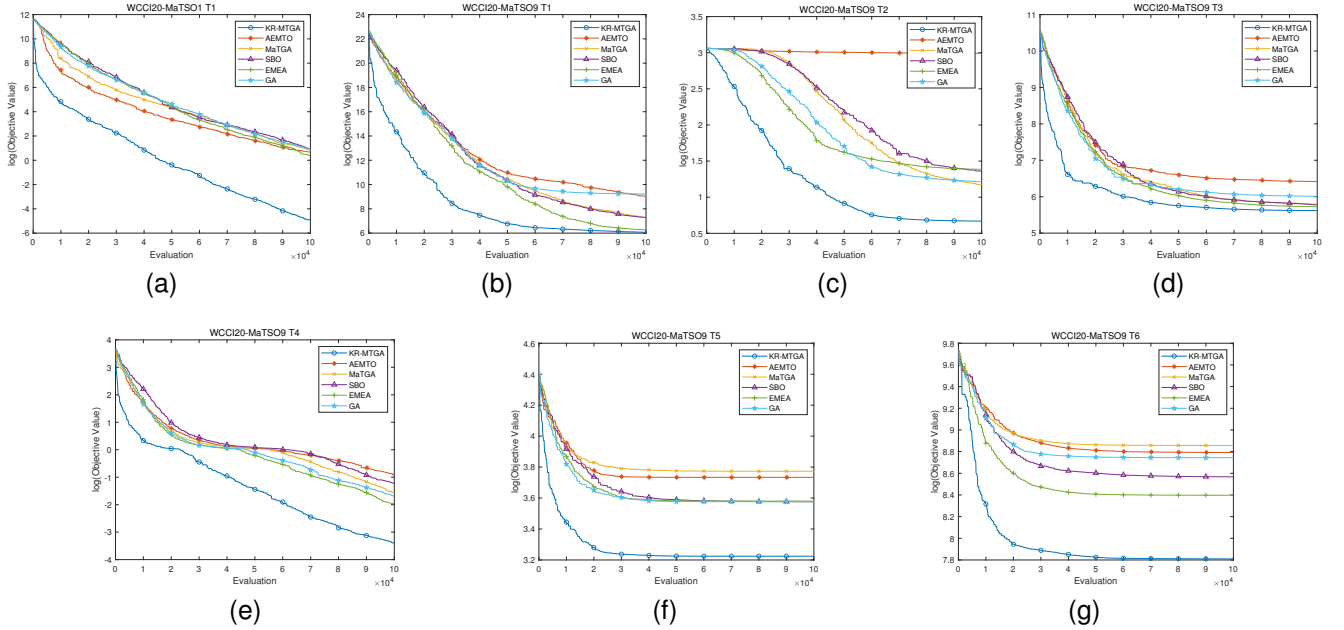


Fig. S6. Average convergence trends of six compared methods, i.e., KR-MTGA, AEMTO, MaTGA, SBO, EMEA, and single-tasking DE on WCCI20-MaTSO.

TABLE S30

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO1 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO1 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO1-T1	9.68e-03 (4.46e-03)	2.33e+00 (4.61e-01) -	2.04e+00 (4.69e-01) -	2.69e+00 (6.78e-01) -	1.81e+00 (4.07e-01) -	1.99e+00 (6.05e-01) -
WCCI20-MaTSO1-T2	1.21e-02 (7.74e-03)	2.44e+00 (5.84e-01) -	1.96e+00 (4.11e-01) -	9.20e+00 (3.01e+00) -	1.99e+00 (4.54e-01) -	2.05e+00 (6.86e-01) -
WCCI20-MaTSO1-T3	1.10e-02 (5.52e-03)	2.64e+00 (6.57e-01) -	2.14e+00 (5.19e-01) -	8.55e+00 (2.99e+00) -	1.92e+00 (4.25e-01) -	1.95e+00 (3.44e-01) -
WCCI20-MaTSO1-T4	8.00e-03 (4.15e-03)	2.81e+00 (7.72e-01) -	2.20e+00 (6.58e-01) -	8.91e+00 (3.32e+00) -	1.86e+00 (4.18e-01) -	1.98e+00 (5.25e-01) -
WCCI20-MaTSO1-T5	7.82e-03 (4.17e-03)	2.73e+00 (5.53e-01) -	2.02e+00 (4.07e-01) -	8.75e+00 (3.05e+00) -	1.99e+00 (4.69e-01) -	1.92e+00 (5.93e-01) -
WCCI20-MaTSO1-T6	1.11e-02 (6.19e-03)	2.96e+00 (6.77e-01) -	2.31e+00 (5.35e-01) -	8.51e+00 (3.25e+00) -	2.05e+00 (3.77e-01) -	2.10e+00 (4.89e-01) -
WCCI20-MaTSO1-T7	8.10e-03 (3.69e-03)	3.06e+00 (1.10e+00) -	2.51e+00 (5.21e-01) -	8.06e+00 (2.23e+00) -	1.90e+00 (4.32e-01) -	1.89e+00 (5.52e-01) -
WCCI20-MaTSO1-T8	9.20e-03 (3.90e-03)	2.98e+00 (7.44e-01) -	2.12e+00 (4.11e-01) -	8.68e+00 (2.60e+00) -	1.86e+00 (5.41e-01) -	1.89e+00 (2.49e-01) -
WCCI20-MaTSO1-T9	1.13e-02 (6.99e-03)	2.82e+00 (7.48e-01) -	2.17e+00 (3.96e-01) -	9.09e+00 (3.59e+00) -	1.87e+00 (5.58e-01) -	1.90e+00 (5.28e-01) -
WCCI20-MaTSO1-T10	1.02e-02 (5.95e-03)	2.99e+00 (7.31e-01) -	2.13e+00 (4.68e-01) -	9.13e+00 (2.94e+00) -	2.04e+00 (5.88e-01) -	1.92e+00 (5.07e-01) -
WCCI20-MaTSO1-T11	7.73e-03 (3.95e-03)	2.72e+00 (5.75e-01) -	2.22e+00 (7.05e-01) -	1.06e+01 (5.45e+00) -	2.04e+00 (6.30e-01) -	1.94e+00 (5.10e-01) -
WCCI20-MaTSO1-T12	7.36e-03 (5.69e-03)	2.56e+00 (6.01e-01) -	1.99e+00 (4.81e-01) -	9.54e+00 (3.33e+00) -	2.14e+00 (5.87e-01) -	2.01e+00 (4.04e-01) -
WCCI20-MaTSO1-T13	6.94e-03 (3.70e-03)	2.43e+00 (4.83e-01) -	2.19e+00 (5.67e-01) -	1.01e+01 (6.34e+00) -	1.95e+00 (5.53e-01) -	2.00e+00 (4.34e-01) -
WCCI20-MaTSO1-T14	1.19e-02 (7.12e-03)	2.71e+00 (5.40e-01) -	2.12e+00 (4.87e-01) -	8.93e+00 (4.61e+00) -	1.93e+00 (5.00e-01) -	1.73e+00 (5.60e-01) -
WCCI20-MaTSO1-T15	1.22e-02 (6.40e-03)	2.86e+00 (8.74e-01) -	2.22e+00 (7.16e-01) -	8.66e+00 (4.67e+00) -	1.95e+00 (6.13e-01) -	1.88e+00 (3.39e-01) -
WCCI20-MaTSO1-T16	1.03e-02 (7.88e-03)	3.05e+00 (1.01e+00) -	1.89e+00 (3.76e-01) -	8.64e+00 (2.74e+00) -	1.82e+00 (4.47e-01) -	1.97e+00 (5.98e-01) -
WCCI20-MaTSO1-T17	1.06e-02 (3.80e-03)	3.07e+00 (8.19e-01) -	2.34e+00 (6.03e-01) -	8.55e+00 (1.75e+00) -	1.86e+00 (4.20e-01) -	1.84e+00 (4.64e-01) -
WCCI20-MaTSO1-T18	8.21e-03 (4.62e-03)	2.64e+00 (6.43e-01) -	2.09e+00 (3.92e-01) -	7.99e+00 (2.22e+00) -	2.01e+00 (3.37e-01) -	2.20e+00 (4.47e-01) -
WCCI20-MaTSO1-T19	1.19e-02 (6.77e-03)	3.17e+00 (6.32e-01) -	2.16e+00 (5.65e-01) -	8.58e+00 (2.59e+00) -	1.97e+00 (3.92e-01) -	1.82e+00 (5.72e-01) -
WCCI20-MaTSO1-T20	7.67e-03 (4.05e-03)	2.94e+00 (5.41e-01) -	2.14e+00 (5.35e-01) -	9.89e+00 (2.60e+00) -	1.97e+00 (4.87e-01) -	1.85e+00 (4.67e-01) -
WCCI20-MaTSO1-T21	8.68e-03 (3.40e-03)	2.55e+00 (5.41e-01) -	2.02e+00 (5.20e-01) -	9.05e+00 (3.82e+00) -	1.75e+00 (5.66e-01) -	2.11e+00 (6.15e-01) -
WCCI20-MaTSO1-T22	9.31e-03 (5.65e-03)	2.65e+00 (5.60e-01) -	2.18e+00 (6.05e-01) -	8.63e+00 (2.20e+00) -	1.94e+00 (4.65e-01) -	1.81e+00 (4.34e-01) -
WCCI20-MaTSO1-T23	8.82e-03 (3.40e-03)	3.18e+00 (8.31e-01) -	2.23e+00 (5.00e-01) -	8.18e+00 (3.05e+00) -	2.02e+00 (6.72e-01) -	1.99e+00 (5.89e-01) -
WCCI20-MaTSO1-T24	1.01e-02 (7.67e-03)	2.85e+00 (6.30e-01) -	2.13e+00 (4.27e-01) -	8.88e+00 (2.53e+00) -	1.97e+00 (5.06e-01) -	1.97e+00 (3.94e-01) -
WCCI20-MaTSO1-T25	1.34e-02 (7.23e-03)	3.15e+00 (7.20e-01) -	2.16e+00 (4.02e-01) -	7.41e+00 (2.22e+00) -	2.13e+00 (4.00e-01) -	1.87e+00 (4.58e-01) -
WCCI20-MaTSO1-T26	9.02e-03 (3.44e-03)	2.74e+00 (6.83e-01) -	1.90e+00 (4.64e-01) -	7.52e+00 (2.33e+00) -	1.94e+00 (5.43e-01) -	2.15e+00 (5.06e-01) -
WCCI20-MaTSO1-T27	9.37e-03 (5.19e-03)	3.16e+00 (8.13e-01) -	2.14e+00 (5.39e-01) -	9.73e+00 (3.55e+00) -	1.80e+00 (6.06e-01) -	1.92e+00 (5.41e-01) -
WCCI20-MaTSO1-T28	9.87e-03 (4.99e-03)	2.69e+00 (6.77e-01) -	2.33e+00 (5.39e-01) -	7.86e+00 (2.13e+00) -	1.88e+00 (4.83e-01) -	1.95e+00 (3.45e-01) -
WCCI20-MaTSO1-T29	1.02e-02 (6.49e-03)	2.65e+00 (6.74e-01) -	2.26e+00 (5.76e-01) -	8.50e+00 (2.93e+00) -	1.93e+00 (4.78e-01) -	1.92e+00 (4.31e-01) -
WCCI20-MaTSO1-T30	1.30e-02 (6.40e-03)	2.70e+00 (5.01e-01) -	2.07e+00 (3.74e-01) -	7.80e+00 (2.65e+00) -	1.91e+00 (4.61e-01) -	2.02e+00 (6.53e-01) -
WCCI20-MaTSO1-T31	1.94e-02 (1.18e-02)	3.17e+00 (6.84e-01) -	2.17e+00 (4.94e-01) -	9.11e+00 (3.81e+00) -	1.89e+00 (6.14e-01) -	1.77e+00 (4.05e-01) -
WCCI20-MaTSO1-T32	1.10e-02 (5.41e-03)	3.22e+00 (9.54e-01) -	1.95e+00 (4.97e-01) -	9.35e+00 (5.09e+00) -	1.70e+00 (3.58e-01) -	2.05e+00 (5.58e-01) -
WCCI20-MaTSO1-T33	7.65e-03 (3.98e-03)	2.84e+00 (7.49e-01) -	2.30e+00 (7.07e-01) -	7.78e+00 (3.00e+00) -	1.72e+00 (4.90e-01) -	1.82e+00 (4.46e-01) -
WCCI20-MaTSO1-T34	1.15e-02 (5.59e-03)	3.18e+00 (8.41e-01) -	2.15e+00 (6.14e-01) -	7.44e+00 (1.48e+00) -	1.95e+00 (5.60e-01) -	1.92e+00 (4.10e-01) -
WCCI20-MaTSO1-T35	6.78e-03 (4.30e-03)	2.61e+00 (6.65e-01) -	2.11e+00 (4.28e-01) -	8.35e+00 (2.36e+00) -	1.86e+00 (3.05e-01) -	2.04e+00 (4.97e-01) -
WCCI20-MaTSO1-T36	1.08e-02 (4.05e-03)	3.15e+00 (8.46e-01) -	2.38e+00 (6.00e-01) -	9.81e+00 (4.98e+00) -	1.98e+00 (5.26e-01) -	1.85e+00 (3.67e-01) -
WCCI20-MaTSO1-T37	1.02e-02 (6.33e-03)	2.55e+00 (7.42e-01) -	1.98e+00 (5.23e-01) -	9.22e+00 (2.89e+00) -	1.98e+00 (4.76e-01) -	1.89e+00 (6.01e-01) -
WCCI20-MaTSO1-T38	8.47e-03 (4.81e-03)	2.89e+00 (6.06e-01) -	2.02e+00 (5.19e-01) -	8.89e+00 (2.61e+00) -	1.93e+00 (5.18e-01) -	1.96e+00 (6.46e-01) -
WCCI20-MaTSO1-T39	1.09e-02 (4.04e-03)	2.85e+00 (8.93e-01) -	2.11e+00 (5.77e-01) -	8.57e+00 (3.09e+00) -	1.72e+00 (5.27e-01) -	1.81e+00 (4.31e-01) -
WCCI20-MaTSO1-T40	8.04e-03 (3.57e-03)	2.85e+00 (7.58e-01) -	2.00e+00 (5.50e-01) -	8.17e+00 (2.60e+00) -	1.83e+00 (5.66e-01) -	1.83e+00 (5.19e-01) -
WCCI20-MaTSO1-T41	7.48e-03 (2.77e-03)	2.82e+00 (7.12e-01) -	2.29e+00 (4.81e-01) -	8.12e+00 (2.29e+00) -	1.93e+00 (4.46e-01) -	1.96e+00 (3.98e-01) -
WCCI20-MaTSO1-T42	1.20e-02 (6.98e-03)	3.00e+00 (7.59e-01) -	2.22e+00 (5.67e-01) -	9.54e+00 (2.39e+00) -	1.72e+00 (4.42e-01) -	1.98e+00 (6.71e-01) -
WCCI20-MaTSO1-T43	7.28e-03 (3.59e-03)	2.60e+00 (7.18e-01) -	2.06e+00 (4.10e-01) -	9.67e+00 (3.98e+00) -	1.97e+00 (5.79e-01) -	1.82e+00 (3.04e-01) -
WCCI20-MaTSO1-T44	1.23e-02 (6.82e-03)	2.59e+00 (6.27e-01) -	2.00e+00 (5.10e-01) -	9.05e+00 (2.66e+00) -	1.73e+00 (4.70e-01) -	2.08e+00 (5.84e-01) -
WCCI20-MaTSO1-T45	1.48e-02 (8.03e-03)	3.44e+00 (9.61e-01) -	2.27e+00 (6.30e-01) -	8.23e+00 (2.69e+00) -	1.89e+00 (5.38e-01) -	1.92e+00 (5.26e-01) -
WCCI20-MaTSO1-T46	7.20e-03 (3.54e-03)	2.50e+00 (4.46e-01) -	2.08e+00 (6.69e-01) -	8.14e+00 (1.77e+00) -	1.98e+00 (3.61e-01) -	1.91e+00 (4.84e-01) -
WCCI20-MaTSO1-T47	8.18e-03 (6.68e-03)	2.51e+00 (6.63e-01) -	2.15e+00 (4.20e-01) -	8.87e+00 (2.49e+00) -	2.06e+00 (4.61e-01) -	2.05e+00 (5.14e-01) -
WCCI20-MaTSO1-T48	1.51e-02 (7.79e-03)	2.71e+00 (6.47e-01) -	2.07e+00 (5.47e-01) -	7.37e+00 (2.03e+00) -	2.07e+00 (4.30e-01) -	1.91e+00 (5.08e-01) -
WCCI20-MaTSO1-T49	1.08e-02 (3.85e-03)	3.35e+00 (8.68e-01) -	2.10e+00 (6.08e-01) -	9.10e+00 (2.33e+00) -	1.76e+00 (3.69e-01) -	1.80e+00 (4.00e-01) -
WCCI20-MaTSO1-T50	1.08e-02 (4.73e-03)	2.79e+00 (8.64e-01) -	2.03e+00 (4.78e-01) -	8.86e+00 (3.77e+00) -	1.93e+00 (4.04e-01) -	1.83e+00 (5.36e-01) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S31

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO2 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO2 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO2-T1	1.14e+02 (3.99e+01)	6.02e+03 (1.06e+04) -	8.72e+02 (8.28e+02) -	4.83e+04 (9.49e+04) -	1.76e+04 (2.71e+04) -	3.22e+04 (7.62e+04) -
WCCI20-MaTSO2-T2	3.29e+02 (5.79e+01)	3.24e+03 (6.04e+03) -	1.51e+03 (2.02e+03) -	2.07e+04 (4.28e+04) -	5.02e+03 (5.24e+03) -	1.11e+04 (2.02e+04) -
WCCI20-MaTSO2-T3	1.56e+02 (7.30e+01)	4.77e+03 (1.19e+04) -	8.30e+02 (7.32e+02) -	6.40e+04 (1.44e+05) -	1.55e+04 (4.32e+04) -	2.28e+04 (5.34e+04) -
WCCI20-MaTSO2-T4	2.02e+02 (1.08e+02)	5.11e+03 (9.90e+03) -	3.00e+03 (6.29e+03) -	3.40e+04 (7.66e+04) -	9.62e+03 (2.38e+04) -	3.02e+03 (3.38e+03) -
WCCI20-MaTSO2-T5	2.30e+02 (8.56e+01)	4.55e+03 (1.19e+04) -	1.51e+03 (2.20e+03) -	5.62e+04 (1.34e+05) -	2.39e+04 (4.93e+04) -	3.33e+04 (6.32e+04) -
WCCI20-MaTSO2-T6	1.19e+02 (5.17e+01)	6.37e+03 (1.72e+04) -	2.12e+03 (5.66e+03) -	8.27e+04 (1.46e+05) -	5.59e+04 (1.16e+05) -	1.50e+04 (2.10e+04) -
WCCI20-MaTSO2-T7	1.69e+02 (1.09e+02)	4.82e+03 (8.86e+03) -	1.45e+03 (1.54e+03) -	5.65e+04 (1.11e+05) -	1.11e+04 (2.48e+04) -	1.70e+04 (3.92e+04) -
WCCI20-MaTSO2-T8	1.14e+02 (5.56e+01)	5.69e+03 (1.29e+04) -	7.57e+03 (2.58e+04) -	4.85e+04 (9.84e+04) -	2.50e+04 (7.37e+04) -	2.70e+04 (4.28e+04) -
WCCI20-MaTSO2-T9	3.53e+02 (1.52e+02)	3.69e+03 (5.32e+03) -	1.95e+03 (2.48e+03) -	5.99e+04 (1.01e+05) -	1.47e+04 (3.18e+04) -	2.24e+04 (5.03e+04) -
WCCI20-MaTSO2-T10	1.10e+02 (4.14e+01)	4.12e+03 (6.31e+03) -	4.85e+03 (1.41e+04) -	7.11e+04 (1.07e+05) -	9.34e+03 (3.00e+04) -	3.38e+03 (3.61e+03) -
WCCI20-MaTSO2-T11	1.33e+02 (6.27e+01)	8.53e+03 (1.96e+04) -	1.20e+03 (1.14e+03) -	9.21e+04 (1.43e+05) -	1.12e+04 (3.79e+04) -	4.07e+04 (1.19e+05) -
WCCI20-MaTSO2-T12	1.08e+02 (4.63e+01)	6.69e+03 (1.43e+04) -	2.88e+03 (5.13e+03) -	6.55e+04 (1.24e+05) -	1.29e+04 (3.01e+04) -	4.72e+03 (6.36e+03) -
WCCI20-MaTSO2-T13	1.25e+02 (6.87e+01)	5.03e+03 (1.04e+04) -	3.61e+03 (6.07e+03) -	6.00e+04 (1.06e+05) -	1.75e+04 (5.90e+04) -	1.25e+04 (3.40e+04) -
WCCI20-MaTSO2-T14	8.13e+01 (2.85e+01)	4.48e+03 (9.27e+03) -	1.29e+03 (8.72e+02) -	6.58e+04 (1.62e+05) -	2.35e+04 (4.35e+04) -	5.34e+03 (1.11e+04) -
WCCI20-MaTSO2-T15	3.26e+02 (1.64e+02)	4.74e+03 (1.05e+04) -	9.06e+02 (5.38e+02) -	6.46e+04 (1.25e+05) -	9.64e+03 (1.76e+04) -	1.28e+04 (1.90e+04) -
WCCI20-MaTSO2-T16	6.18e+01 (1.48e+01)	5.87e+03 (1.33e+04) -	4.82e+03 (1.65e+04) -	5.91e+04 (1.19e+05) -	7.16e+04 (1.19e+05) -	9.42e+03 (1.84e+04) -
WCCI20-MaTSO2-T17	1.69e+02 (7.67e+01)	7.19e+03 (1.61e+04) -	2.46e+03 (3.78e+03) -	8.11e+04 (1.41e+05) -	2.39e+04 (4.15e+04) -	2.10e+04 (4.60e+04) -
WCCI20-MaTSO2-T18	2.14e+02 (1.22e+02)	5.98e+03 (1.35e+04) -	1.39e+03 (1.98e+03) -	4.10e+04 (9.17e+04) -	1.17e+04 (2.90e+04) -	1.59e+04 (3.71e+04) -
WCCI20-MaTSO2-T19	7.93e+01 (3.01e+01)	5.07e+03 (1.21e+04) -	1.54e+03 (2.51e+03) -	4.27e+04 (7.49e+04) -	1.06e+04 (1.82e+04) -	2.15e+04 (3.22e+04) -
WCCI20-MaTSO2-T20	1.59e+02 (6.24e+01)	4.75e+03 (1.09e+04) -	4.14e+03 (1.33e+04) -	8.62e+04 (1.59e+05) -	1.26e+04 (2.04e+04) -	1.56e+04 (3.41e+04) -
WCCI20-MaTSO2-T21	1.44e+02 (7.90e+01)	5.21e+03 (1.24e+04) -	7.66e+03 (1.88e+04) -	4.30e+04 (8.82e+04) -	9.05e+03 (1.58e+04) -	8.46e+03 (1.27e+04) -
WCCI20-MaTSO2-T22	1.11e+02 (5.28e+01)	6.68e+03 (1.48e+04) -	2.64e+03 (4.30e+03) -	4.64e+04 (1.12e+05) -	3.45e+04 (9.09e+04) -	2.46e+04 (4.94e+04) -
WCCI20-MaTSO2-T23	1.16e+02 (5.60e+01)	3.66e+03 (5.38e+03) -	1.91e+03 (2.87e+03) -	6.01e+04 (9.88e+04) -	1.01e+04 (1.74e+04) -	1.08e+04 (1.88e+04) -
WCCI20-MaTSO2-T24	9.80e+01 (3.51e+01)	8.21e+03 (1.70e+04) -	2.10e+03 (2.79e+03) -	4.98e+04 (8.69e+04) -	2.65e+04 (4.76e+04) -	9.48e+03 (2.35e+04) -
WCCI20-MaTSO2-T25	1.45e+02 (6.62e+01)	5.84e+03 (1.02e+04) -	1.48e+03 (9.70e+02) -	4.27e+04 (9.05e+04) -	1.59e+04 (3.50e+04) -	5.90e+03 (9.86e+03) -
WCCI20-MaTSO2-T26	1.23e+02 (5.45e+01)	2.39e+04 (8.20e+04) -	1.51e+03 (1.49e+03) -	4.90e+04 (9.65e+04) -	1.93e+04 (4.83e+04) -	9.76e+03 (1.66e+04) -
WCCI20-MaTSO2-T27	1.67e+02 (6.74e+01)	4.09e+03 (7.71e+03) -	1.15e+03 (1.44e+03) -	4.62e+04 (9.40e+04) -	1.83e+04 (3.61e+04) -	9.39e+03 (2.14e+04) -
WCCI20-MaTSO2-T28	9.85e+01 (5.42e+01)	4.53e+03 (8.34e+03) -	1.50e+03 (1.90e+03) -	6.97e+04 (1.33e+05) -	1.26e+04 (2.43e+04) -	1.49e+04 (2.30e+04) -
WCCI20-MaTSO2-T29	9.50e+01 (4.08e+01)	5.74e+03 (1.43e+04) -	7.91e+02 (7.02e+02) -	5.66e+04 (1.01e+05) -	1.63e+04 (3.68e+04) -	1.16e+04 (2.48e+04) -
WCCI20-MaTSO2-T30	4.56e+02 (1.69e+02)	5.96e+03 (1.48e+04) -	2.09e+03 (2.89e+03) -	2.46e+04 (6.37e+04) -	1.39e+04 (3.37e+04) -	2.72e+04 (5.32e+04) -
WCCI20-MaTSO2-T31	1.42e+02 (8.14e+01)	4.91e+03 (9.92e+03) -	4.00e+03 (1.05e+04) -	3.75e+04 (7.52e+04) -	5.32e+03 (7.31e+03) -	5.07e+04 (1.56e+05) -
WCCI20-MaTSO2-T32	1.80e+02 (1.01e+02)	3.74e+03 (7.15e+03) -	2.28e+03 (5.64e+03) -	4.42e+04 (1.02e+05) -	4.11e+04 (7.72e+04) -	1.74e+04 (5.09e+04) -
WCCI20-MaTSO2-T33	1.30e+02 (4.35e+01)	6.58e+03 (1.57e+04) -	8.60e+02 (5.65e+02) -	9.46e+04 (1.72e+05) -	2.80e+04 (6.36e+04) -	1.46e+04 (2.94e+04) -
WCCI20-MaTSO2-T34	7.26e+01 (2.55e+01)	4.87e+03 (6.16e+03) -	1.00e+03 (8.15e+02) -	7.28e+04 (1.18e+05) -	1.82e+04 (4.01e+04) -	1.61e+04 (3.21e+04) -
WCCI20-MaTSO2-T35	1.20e+02 (6.05e+01)	5.70e+03 (1.08e+04) -	2.27e+03 (3.70e+03) -	6.41e+04 (1.35e+05) -	8.12e+03 (1.02e+04) -	1.72e+04 (3.44e+04) -
WCCI20-MaTSO2-T36	1.48e+02 (7.24e+01)	6.44e+03 (1.62e+04) -	9.67e+02 (1.30e+03) -	4.16e+04 (9.60e+04) -	2.99e+04 (7.48e+04) -	1.86e+04 (5.88e+04) -
WCCI20-MaTSO2-T37	1.05e+02 (7.80e+01)	5.02e+03 (1.09e+04) -	6.20e+03 (2.45e+04) -	5.93e+04 (9.50e+04) -	2.66e+04 (5.69e+04) -	7.09e+03 (8.39e+03) -
WCCI20-MaTSO2-T38	2.22e+02 (1.16e+02)	7.15e+03 (1.98e+04) -	1.42e+03 (1.85e+03) -	7.32e+04 (1.42e+05) -	1.90e+04 (2.67e+04) -	1.49e+04 (4.77e+04) -
WCCI20-MaTSO2-T39	5.09e+02 (2.58e+02)	4.34e+03 (5.70e+03) -	1.77e+03 (3.40e+03) =	3.14e+04 (6.69e+04) -	1.37e+04 (3.04e+04) -	1.55e+04 (3.35e+04) -
WCCI20-MaTSO2-T40	1.74e+02 (5.58e+01)	5.55e+03 (1.01e+04) -	1.41e+03 (1.53e+03) -	3.94e+04 (8.60e+04) -	1.15e+04 (2.45e+04) -	1.06e+04 (2.30e+04) -
WCCI20-MaTSO2-T41	3.25e+02 (1.29e+02)	4.06e+03 (1.06e+04) -	1.29e+04 (5.37e+04) -	4.31e+04 (9.45e+04) -	9.58e+03 (1.95e+04) -	1.36e+04 (3.79e+04) -
WCCI20-MaTSO2-T42	1.15e+02 (7.46e+01)	5.41e+03 (6.44e+03) -	1.86e+03 (2.67e+03) -	4.71e+04 (7.35e+04) -	5.74e+03 (8.46e+03) -	2.17e+04 (3.97e+04) -
WCCI20-MaTSO2-T43	9.25e+01 (2.85e+01)	7.12e+03 (1.65e+04) -	2.42e+03 (3.88e+03) -	7.09e+04 (1.53e+05) -	1.01e+04 (2.56e+04) -	4.22e+04 (1.27e+05) -
WCCI20-MaTSO2-T44	9.56e+01 (4.52e+01)	4.57e+03 (8.23e+03) -	2.65e+03 (4.11e+03) -	3.37e+04 (7.18e+04) -	1.10e+04 (2.36e+04) -	1.75e+04 (3.02e+04) -
WCCI20-MaTSO2-T45	1.52e+02 (8.97e+01)	5.22e+03 (1.16e+04) -	1.24e+03 (1.97e+03) -	2.99e+04 (5.20e+04) -	5.79e+03 (1.34e+04) -	1.31e+04 (2.08e+04) -
WCCI20-MaTSO2-T46	1.27e+02 (5.31e+01)	2.31e+03 (1.96e+03) -	8.34e+03 (2.55e+04) -	6.05e+04 (1.29e+05) -	1.70e+04 (3.94e+04) -	2.39e+04 (4.81e+04) -
WCCI20-MaTSO2-T47	2.97e+02 (1.18e+02)	4.79e+03 (1.28e+04) -	1.18e+03 (8.72e+02) -	4.33e+04 (8.24e+04) -	6.61e+03 (1.84e+04) -	1.30e+04 (2.37e+04) -
WCCI20-MaTSO2-T48	1.76e+02 (9.65e+01)	5.49e+03 (1.16e+04) -	1.55e+03 (1.56e+03) -	4.16e+04 (7.30e+04) -	1.88e+04 (4.02e+04) -	1.71e+04 (3.23e+04) -
WCCI20-MaTSO2-T49	1.12e+02 (4.69e+01)	6.17e+03 (1.17e+04) -	2.40e+03 (4.62e+03) -	4.32e+04 (8.16e+04) -	2.10e+04 (4.61e+04) -	3.07e+04 (7.33e+04) -
WCCI20-MaTSO2-T50	1.36e+02 (4.14e+01)	5.56e+03 (1.12e+04) -	3.86e+03 (1.25e+04) -	7.33e+04 (1.42e+05) -	1.20e+04 (3.86e+04) -	1.56e+04 (2.31e+04) -
+/-/=	Base	0/50/0	0/49/1	0/50/0	0/50/0	0/50/0

TABLE S32

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO3 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO3 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO3-T1	1.53e+02 (4.56e+01)	2.75e+02 (4.16e+01) -	2.99e+02 (3.86e+01) -	3.08e+02 (4.97e+01) -	3.09e+02 (5.00e+01) -	2.94e+02 (6.39e+01) -
WCCI20-MaTSO3-T2	1.61e+02 (2.43e+01)	2.59e+02 (4.63e+01) -	2.86e+02 (5.73e+01) -	3.57e+02 (6.05e+01) -	4.08e+02 (1.36e+01) -	3.29e+02 (7.61e+01) -
WCCI20-MaTSO3-T3	1.56e+02 (3.60e+01)	2.78e+02 (5.29e+01) -	2.87e+02 (5.07e+01) -	3.51e+02 (5.43e+01) -	3.31e+02 (6.59e+01) -	3.07e+02 (6.40e+01) -
WCCI20-MaTSO3-T4	1.53e+02 (3.55e+01)	3.02e+02 (5.06e+01) -	2.77e+02 (4.98e+01) -	3.26e+02 (4.25e+01) -	4.14e+02 (1.65e+01) -	3.55e+02 (7.41e+01) -
WCCI20-MaTSO3-T5	1.55e+02 (4.13e+01)	3.11e+02 (5.21e+01) -	2.79e+02 (4.72e+01) -	3.44e+02 (4.05e+01) -	3.01e+02 (5.26e+01) -	3.01e+02 (5.86e+01) -
WCCI20-MaTSO3-T6	1.68e+02 (3.85e+01)	3.17e+02 (5.44e+01) -	2.81e+02 (6.61e+01) -	3.62e+02 (5.31e+01) -	4.09e+02 (1.58e+01) -	3.31e+02 (4.83e+01) -
WCCI20-MaTSO3-T7	1.60e+02 (2.93e+01)	3.15e+02 (4.01e+01) -	2.99e+02 (5.16e+01) -	3.33e+02 (5.72e+01) -	3.15e+02 (9.75e+01) -	3.20e+02 (5.53e+01) -
WCCI20-MaTSO3-T8	1.52e+02 (2.76e+01)	3.30e+02 (5.72e+01) -	2.89e+02 (4.65e+01) -	3.67e+02 (4.89e+01) -	4.10e+02 (1.39e+01) -	3.03e+02 (6.04e+01) -
WCCI20-MaTSO3-T9	1.64e+02 (2.93e+01)	3.25e+02 (4.39e+01) -	2.99e+02 (5.72e+01) -	3.51e+02 (8.66e+01) -	3.28e+02 (5.59e+01) -	3.38e+02 (6.74e+01) -
WCCI20-MaTSO3-T10	1.79e+02 (4.19e+01)	3.06e+02 (5.37e+01) -	2.87e+02 (3.45e+01) -	3.46e+02 (6.91e+01) -	4.08e+02 (1.96e+01) -	3.08e+02 (4.79e+01) -
WCCI20-MaTSO3-T11	1.60e+02 (3.38e+01)	3.28e+02 (5.88e+01) -	2.93e+02 (5.33e+01) -	3.65e+02 (7.49e+01) -	3.65e+02 (5.67e+01) -	3.14e+02 (5.43e+01) -
WCCI20-MaTSO3-T12	1.44e+02 (3.21e+01)	3.43e+02 (6.33e+01) -	3.10e+02 (4.51e+01) -	3.32e+02 (7.19e+01) -	4.11e+02 (2.16e+01) -	3.42e+02 (5.66e+01) -
WCCI20-MaTSO3-T13	1.44e+02 (3.71e+01)	2.95e+02 (5.54e+01) -	3.12e+02 (6.13e+01) -	3.37e+02 (6.58e+01) -	3.36e+02 (6.27e+01) -	3.39e+02 (5.87e+01) -
WCCI20-MaTSO3-T14	1.46e+02 (3.92e+01)	3.25e+02 (5.02e+01) -	3.01e+02 (5.02e+01) -	3.43e+02 (7.00e+01) -	4.06e+02 (1.88e+01) -	3.33e+02 (6.37e+01) -
WCCI20-MaTSO3-T15	1.55e+02 (3.99e+01)	3.35e+02 (5.64e+01) -	3.10e+02 (6.66e+01) -	3.32e+02 (5.14e+01) -	3.23e+02 (4.61e+01) -	3.18e+02 (6.16e+01) -
WCCI20-MaTSO3-T16	1.64e+02 (3.88e+01)	2.96e+02 (4.68e+01) -	2.94e+02 (3.99e+01) -	3.28e+02 (6.02e+01) -	4.06e+02 (1.81e+01) -	3.15e+02 (6.44e+01) -
WCCI20-MaTSO3-T17	1.63e+02 (4.18e+01)	3.23e+02 (6.80e+01) -	2.76e+02 (5.31e+01) -	3.72e+02 (6.48e+01) -	3.13e+02 (6.38e+01) -	3.24e+02 (5.05e+01) -
WCCI20-MaTSO3-T18	1.52e+02 (3.15e+01)	2.89e+02 (4.67e+01) -	2.89e+02 (5.08e+01) -	3.44e+02 (7.60e+01) -	4.08e+02 (1.95e+01) -	3.38e+02 (6.15e+01) -
WCCI20-MaTSO3-T19	1.60e+02 (3.79e+01)	3.01e+02 (5.24e+01) -	2.88e+02 (5.95e+01) -	3.42e+02 (5.55e+01) -	3.21e+02 (7.72e+01) -	3.33e+02 (6.72e+01) -
WCCI20-MaTSO3-T20	1.39e+02 (2.33e+01)	3.65e+02 (6.96e+01) -	3.09e+02 (4.96e+01) -	3.31e+02 (4.88e+01) -	4.09e+02 (1.31e+01) -	3.25e+02 (4.17e+01) -
WCCI20-MaTSO3-T21	1.41e+02 (3.22e+01)	2.84e+02 (5.15e+01) -	3.12e+02 (5.60e+01) -	3.23e+02 (5.26e+01) -	3.12e+02 (3.97e+01) -	3.27e+02 (5.50e+01) -
WCCI20-MaTSO3-T22	1.60e+02 (3.84e+01)	3.14e+02 (5.66e+01) -	3.10e+02 (6.46e+01) -	3.47e+02 (6.46e+01) -	4.08e+02 (1.31e+01) -	3.16e+02 (4.67e+01) -
WCCI20-MaTSO3-T23	1.56e+02 (4.08e+01)	2.90e+02 (6.85e+01) -	2.82e+02 (5.78e+01) -	3.34e+02 (6.49e+01) -	3.30e+02 (7.69e+01) -	3.02e+02 (4.91e+01) -
WCCI20-MaTSO3-T24	1.56e+02 (4.52e+01)	3.10e+02 (4.96e+01) -	2.99e+02 (6.40e+01) -	3.29e+02 (6.65e+01) -	4.06e+02 (1.79e+01) -	3.32e+02 (6.89e+01) -
WCCI20-MaTSO3-T25	1.42e+02 (2.92e+01)	2.77e+02 (4.02e+01) -	2.98e+02 (4.21e+01) -	3.51e+02 (5.22e+01) -	3.23e+02 (6.25e+01) -	3.23e+02 (5.30e+01) -
WCCI20-MaTSO3-T26	1.69e+02 (3.45e+01)	3.17e+02 (8.44e+01) -	2.79e+02 (5.24e+01) -	3.35e+02 (6.41e+01) -	4.14e+02 (1.30e+01) -	3.16e+02 (7.79e+01) -
WCCI20-MaTSO3-T27	1.55e+02 (3.41e+01)	3.11e+02 (6.82e+01) -	3.15e+02 (7.13e+01) -	3.56e+02 (5.61e+01) -	3.12e+02 (5.70e+01) -	3.00e+02 (5.25e+01) -
WCCI20-MaTSO3-T28	1.69e+02 (4.14e+01)	3.32e+02 (4.66e+01) -	3.07e+02 (6.78e+01) -	3.51e+02 (5.51e+01) -	4.06e+02 (1.81e+01) -	3.33e+02 (6.09e+01) -
WCCI20-MaTSO3-T29	1.60e+02 (3.22e+01)	3.14e+02 (5.03e+01) -	2.90e+02 (4.50e+01) -	3.12e+02 (6.66e+01) -	3.23e+02 (5.33e+01) -	3.21e+02 (5.16e+01) -
WCCI20-MaTSO3-T30	1.53e+02 (3.37e+01)	2.86e+02 (4.90e+01) -	2.99e+02 (5.60e+01) -	3.43e+02 (5.17e+01) -	4.08e+02 (1.43e+01) -	3.04e+02 (5.65e+01) -
WCCI20-MaTSO3-T31	1.40e+02 (2.33e+01)	3.10e+02 (4.19e+01) -	2.71e+02 (5.24e+01) -	3.23e+02 (6.26e+01) -	3.28e+02 (5.61e+01) -	3.27e+02 (6.68e+01) -
WCCI20-MaTSO3-T32	1.42e+02 (3.16e+01)	3.38e+02 (4.97e+01) -	2.80e+02 (4.22e+01) -	3.31e+02 (5.09e+01) -	4.06e+02 (1.58e+01) -	3.43e+02 (5.57e+01) -
WCCI20-MaTSO3-T33	1.57e+02 (2.87e+01)	3.11e+02 (3.87e+01) -	2.80e+02 (5.59e+01) -	3.49e+02 (6.31e+01) -	3.06e+02 (6.42e+01) -	3.20e+02 (8.09e+01) -
WCCI20-MaTSO3-T34	1.38e+02 (3.46e+01)	3.32e+02 (7.20e+01) -	2.79e+02 (3.30e+01) -	3.27e+02 (5.07e+01) -	4.07e+02 (1.98e+01) -	3.27e+02 (5.18e+01) -
WCCI20-MaTSO3-T35	1.57e+02 (3.52e+01)	3.21e+02 (4.46e+01) -	2.93e+02 (5.10e+01) -	3.41e+02 (6.13e+01) -	3.27e+02 (6.43e+01) -	2.97e+02 (6.54e+01) -
WCCI20-MaTSO3-T36	1.51e+02 (3.25e+01)	3.23e+02 (6.40e+01) -	2.78e+02 (5.84e+01) -	3.66e+02 (8.59e+01) -	4.05e+02 (1.32e+01) -	3.45e+02 (5.23e+01) -
WCCI20-MaTSO3-T37	1.50e+02 (4.63e+01)	3.27e+02 (5.36e+01) -	2.99e+02 (6.86e+01) -	3.53e+02 (6.63e+01) -	3.27e+02 (7.12e+01) -	3.45e+02 (4.31e+01) -
WCCI20-MaTSO3-T38	1.56e+02 (4.17e+01)	3.04e+02 (5.40e+01) -	2.95e+02 (5.44e+01) -	3.25e+02 (6.13e+01) -	4.09e+02 (1.76e+01) -	3.42e+02 (8.01e+01) -
WCCI20-MaTSO3-T39	1.54e+02 (3.99e+01)	2.57e+02 (4.85e+01) -	2.72e+02 (5.64e+01) -	3.47e+02 (7.46e+01) -	3.29e+02 (6.94e+01) -	3.38e+02 (7.52e+01) -
WCCI20-MaTSO3-T40	1.58e+02 (4.03e+01)	3.34e+02 (5.89e+01) -	3.03e+02 (5.24e+01) -	3.36e+02 (4.00e+01) -	4.13e+02 (2.52e+01) -	3.37e+02 (6.72e+01) -
WCCI20-MaTSO3-T41	1.61e+02 (3.61e+01)	3.24e+02 (5.85e+01) -	3.05e+02 (5.87e+01) -	3.42e+02 (6.19e+01) -	3.24e+02 (5.39e+01) -	3.13e+02 (6.62e+01) -
WCCI20-MaTSO3-T42	1.48e+02 (3.86e+01)	2.89e+02 (4.16e+01) -	3.03e+02 (6.46e+01) -	3.25e+02 (5.65e+01) -	4.07e+02 (1.93e+01) -	3.33e+02 (7.39e+01) -
WCCI20-MaTSO3-T43	1.55e+02 (4.09e+01)	3.18e+02 (6.98e+01) -	2.94e+02 (5.59e+01) -	3.53e+02 (3.61e+01) -	3.19e+02 (6.52e+01) -	3.14e+02 (6.17e+01) -
WCCI20-MaTSO3-T44	1.53e+02 (3.28e+01)	3.12e+02 (6.26e+01) -	2.75e+02 (6.25e+01) -	3.20e+02 (6.35e+01) -	4.06e+02 (1.89e+01) -	3.22e+02 (5.94e+01) -
WCCI20-MaTSO3-T45	1.57e+02 (4.25e+01)	2.94e+02 (5.87e+01) -	2.82e+02 (4.91e+01) -	3.28e+02 (5.92e+01) -	3.20e+02 (6.40e+01) -	3.01e+02 (7.22e+01) -
WCCI20-MaTSO3-T46	1.60e+02 (3.38e+01)	3.06e+02 (5.48e+01) -	2.69e+02 (5.02e+01) -	3.05e+02 (4.54e+01) -	4.06e+02 (1.69e+01) -	3.37e+02 (5.36e+01) -
WCCI20-MaTSO3-T47	1.49e+02 (3.36e+01)	2.94e+02 (5.02e+01) -	2.81e+02 (4.48e+01) -	3.52e+02 (4.77e+01) -	2.95e+02 (6.60e+01) -	3.23e+02 (5.81e+01) -
WCCI20-MaTSO3-T48	1.47e+02 (4.12e+01)	3.13e+02 (5.05e+01) -	3.34e+02 (5.51e+01) -	3.53e+02 (4.44e+01) -	4.04e+02 (1.52e+01) -	3.11e+02 (5.82e+01) -
WCCI20-MaTSO3-T49	1.46e+02 (3.12e+01)	2.73e+02 (3.90e+01) -	2.95e+02 (5.14e+01) -	3.35e+02 (5.85e+01) -	3.35e+02 (8.64e+01) -	3.36e+02 (6.33e+01) -
WCCI20-MaTSO3-T50	1.44e+02 (3.78e+01)	2.81e+02 (4.54e+01) -	2.90e+02 (5.78e+01) -	3.37e+02 (7.15e+01) -	4.09e+02 (1.42e+01) -	3.10e+02 (6.54e+01) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S33

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO4 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY (" +/- ="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO4 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO4-T1	1.99e-02 (8.47e-03)	4.62e+00 (1.43e+00) -	3.30e+00 (7.60e-01) -	2.46e+00 (5.44e-01) -	1.89e+00 (5.79e-01) -	1.87e+00 (4.51e-01) -
WCCI20-MaTSO4-T2	1.68e+02 (7.18e+01)	5.16e+03 (8.89e+03) -	9.41e+03 (1.68e+04) -	8.95e+04 (1.73e+05) -	1.07e+02 (9.10e+01) +	2.85e+04 (8.66e+04) -
WCCI20-MaTSO4-T3	2.29e+00 (4.99e-01)	4.45e+00 (6.97e-01) -	3.03e+00 (4.51e-01) -	3.57e+00 (3.66e-01) -	3.16e+00 (5.65e-01) -	3.29e+00 (5.92e-01) -
WCCI20-MaTSO4-T4	1.97e-02 (8.87e-03)	5.24e+00 (1.49e+00) -	3.40e+00 (8.58e-01) -	8.62e+00 (2.39e+00) -	4.65e-03 (2.07e-03) +	2.00e+00 (5.05e-01) -
WCCI20-MaTSO4-T5	2.24e+02 (1.75e+02)	9.42e+03 (2.18e+04) -	2.62e+04 (1.05e+05) -	2.22e+04 (5.23e+04) -	9.08e+03 (2.13e+04) -	3.75e+04 (9.57e+04) -
WCCI20-MaTSO4-T6	2.20e+00 (4.79e-01)	4.01e+00 (7.69e-01) -	3.08e+00 (3.52e-01) -	3.43e+00 (3.80e-01) -	1.04e+01 (8.32e+00) -	3.28e+00 (5.61e-01) -
WCCI20-MaTSO4-T7	2.26e-02 (1.35e-02)	6.07e+00 (1.28e+00) -	3.00e+00 (6.24e-01) -	9.08e+00 (2.42e+00) -	2.00e+00 (4.91e-01) -	1.85e+00 (5.02e-01) -
WCCI20-MaTSO4-T8	1.92e+02 (8.75e+01)	2.25e+04 (5.28e+04) -	4.04e+03 (7.92e+03) -	8.69e+04 (1.59e+05) -	1.11e+03 (1.52e+03) =	3.81e+04 (7.06e+04) -
WCCI20-MaTSO4-T9	2.20e+00 (6.39e-01)	4.54e+00 (7.38e-01) -	3.27e+00 (4.19e-01) -	3.44e+00 (4.10e-01) -	3.28e+00 (5.12e-01) -	3.28e+00 (3.82e-01) -
WCCI20-MaTSO4-T10	1.87e-02 (1.06e-02)	5.37e+00 (9.00e-01) -	3.37e+00 (9.11e-01) -	9.03e+00 (1.89e+00) -	5.32e-03 (3.69e-03) +	1.91e+00 (6.39e-01) -
WCCI20-MaTSO4-T11	2.14e+02 (1.18e+02)	2.27e+03 (2.69e+03) -	1.66e+04 (2.26e+04) -	2.96e+04 (7.00e+04) -	1.22e+04 (1.78e+04) -	2.47e+04 (3.97e+04) -
WCCI20-MaTSO4-T12	2.27e+00 (4.14e-01)	4.45e+00 (6.00e-01) -	3.30e+00 (5.38e-01) -	3.44e+00 (5.15e-01) -	7.00e+00 (6.29e+00) -	3.54e+00 (5.81e-01) -
WCCI20-MaTSO4-T13	1.92e-02 (1.10e-02)	5.16e+00 (1.13e+00) -	3.12e+00 (7.21e-01) -	8.84e+00 (2.24e+00) -	2.02e+00 (5.59e-01) -	2.00e+00 (6.16e-01) -
WCCI20-MaTSO4-T14	5.56e+02 (3.94e+02)	3.85e+04 (1.63e+05) -	3.63e+03 (4.33e+03) -	1.92e+04 (3.69e+04) -	1.56e+03 (2.94e+03) =	4.38e+04 (1.01e+05) -
WCCI20-MaTSO4-T15	2.25e+00 (4.19e-01)	4.34e+00 (6.80e-01) -	3.33e+00 (5.50e-01) -	3.44e+00 (4.27e-01) -	3.22e+00 (5.39e-01) -	3.32e+00 (7.37e-01) -
WCCI20-MaTSO4-T16	2.40e-02 (9.25e-03)	5.76e+00 (1.71e+00) -	3.47e+00 (1.01e+00) -	9.31e+00 (2.39e+00) -	4.54e-03 (2.01e-03) +	1.77e+00 (4.26e-01) -
WCCI20-MaTSO4-T17	4.39e+02 (3.38e+02)	5.21e+03 (8.77e+03) -	2.21e+04 (4.76e+04) -	2.88e+04 (7.51e+04) -	3.00e+04 (6.32e+04) -	2.76e+04 (4.82e+04) -
WCCI20-MaTSO4-T18	2.05e+00 (5.96e-01)	4.45e+00 (6.76e-01) -	3.30e+00 (4.60e-01) -	3.74e+00 (4.13e-01) -	1.07e+01 (7.84e+00) -	3.44e+00 (6.76e-01) -
WCCI20-MaTSO4-T19	2.26e-02 (1.04e-02)	5.27e+00 (1.80e+00) -	3.43e+00 (9.12e-01) -	9.12e+00 (1.75e+00) -	1.95e+00 (5.77e-01) -	1.97e+00 (4.95e-01) -
WCCI20-MaTSO4-T20	2.18e+02 (1.81e+02)	7.09e+03 (1.50e+04) -	2.11e+04 (5.15e+04) -	9.49e+04 (2.42e+05) -	4.28e+02 (7.41e+02) =	9.19e+03 (1.56e+04) -
WCCI20-MaTSO4-T21	2.15e+00 (3.37e-01)	4.45e+00 (7.49e-01) -	3.29e+00 (4.18e-01) -	3.44e+00 (4.17e-01) -	4.05e+00 (3.76e+00) -	3.31e+00 (5.15e-01) -
WCCI20-MaTSO4-T22	1.89e-02 (1.04e-02)	5.50e+00 (1.40e+00) -	3.31e+00 (7.02e-01) -	9.22e+00 (2.08e+00) -	5.48e-03 (2.25e-03) +	1.77e+00 (4.23e-01) -
WCCI20-MaTSO4-T23	5.91e+02 (4.56e+02)	4.00e+03 (9.31e+03) -	1.22e+04 (2.58e+04) -	4.32e+04 (1.14e+05) -	1.36e+04 (4.64e+04) -	3.52e+03 (3.69e+03) -
WCCI20-MaTSO4-T24	2.23e+00 (5.65e-01)	4.33e+00 (6.57e-01) -	3.50e+00 (4.56e-01) -	3.61e+00 (4.96e-01) -	9.38e+00 (8.97e+00) -	3.09e+00 (4.21e-01) -
WCCI20-MaTSO4-T25	2.41e-02 (1.24e-02)	5.54e+00 (1.37e+00) -	3.16e+00 (8.73e-01) -	1.03e+01 (3.56e+00) -	1.89e+00 (5.33e-01) -	2.11e+00 (7.53e-01) -
WCCI20-MaTSO4-T26	2.50e+02 (1.38e+02)	8.88e+03 (1.81e+04) -	4.25e+03 (7.90e+03) -	3.52e+04 (5.60e+04) -	6.74e+02 (1.54e+03) =	2.37e+04 (4.19e+04) -
WCCI20-MaTSO4-T27	2.06e+00 (5.16e-01)	4.39e+00 (5.63e-01) -	3.46e+00 (4.36e-01) -	3.40e+00 (4.25e-01) -	3.27e+00 (5.59e-01) -	3.26e+00 (5.52e-01) -
WCCI20-MaTSO4-T28	1.44e-02 (5.06e-03)	5.08e+00 (1.24e+00) -	2.90e+00 (9.79e-01) -	8.91e+00 (2.59e+00) -	4.99e-03 (2.22e-03) +	1.78e+00 (3.59e-01) -
WCCI20-MaTSO4-T29	3.99e+02 (2.00e+02)	1.96e+03 (1.90e+03) -	1.40e+04 (3.56e+04) -	1.07e+04 (1.91e+04) -	7.35e+03 (1.96e+04) -	1.54e+04 (4.05e+04) -
WCCI20-MaTSO4-T30	2.34e+00 (5.41e-01)	4.20e+00 (6.23e-01) -	3.23e+00 (4.61e-01) -	3.62e+00 (5.92e-01) -	1.20e+01 (8.71e+00) -	3.32e+00 (5.02e-01) -
WCCI20-MaTSO4-T31	2.01e-02 (8.53e-03)	6.26e+00 (1.83e+00) -	3.17e+00 (8.82e-01) -	8.52e+00 (2.08e+00) -	2.17e+00 (6.56e-01) -	1.87e+00 (7.82e-01) -
WCCI20-MaTSO4-T32	8.12e+02 (6.48e+02)	2.22e+03 (2.03e+03) -	2.73e+04 (1.05e+05) -	1.06e+04 (2.38e+04) -	9.51e+02 (1.87e+03) =	1.29e+04 (2.75e+04) -
WCCI20-MaTSO4-T33	2.31e+00 (3.55e-01)	4.39e+00 (4.79e-01) -	3.08e+00 (4.85e-01) -	3.78e+00 (4.29e-01) -	3.33e+00 (3.51e-01) -	3.25e+00 (4.61e-01) -
WCCI20-MaTSO4-T34	1.77e-02 (8.90e-03)	5.27e+00 (1.22e+00) -	3.54e+00 (8.17e-01) -	8.77e+00 (2.33e+00) -	3.95e-03 (1.41e-03) +	2.10e+00 (5.37e-01) -
WCCI20-MaTSO4-T35	1.58e+03 (9.34e+02)	2.55e+03 (1.87e+03) =	1.28e+04 (3.23e+04) =	1.78e+04 (5.71e+04) -	3.93e+03 (5.41e+03) =	6.85e+03 (9.94e+03) =
WCCI20-MaTSO4-T36	2.20e+00 (3.69e-01)	4.28e+00 (6.71e-01) -	3.21e+00 (6.18e-01) -	3.63e+00 (4.03e-01) -	9.66e+00 (7.23e+00) -	3.46e+00 (5.58e-01) -
WCCI20-MaTSO4-T37	2.57e-02 (1.30e-02)	5.30e+00 (1.48e+00) -	3.39e+00 (8.65e-01) -	9.13e+00 (2.97e+00) -	1.92e+00 (6.49e-01) -	2.06e+00 (6.04e-01) -
WCCI20-MaTSO4-T38	9.50e+02 (6.78e+02)	2.36e+04 (9.34e+04) -	3.41e+03 (3.21e+03) -	2.91e+04 (6.36e+04) -	1.10e+03 (1.48e+03) =	3.68e+03 (4.32e+03) -
WCCI20-MaTSO4-T39	2.15e+00 (3.43e-01)	4.34e+00 (7.03e-01) -	3.18e+00 (4.37e-01) -	3.60e+00 (3.87e-01) -	3.28e+00 (6.10e-01) -	3.28e+00 (4.47e-01) -
WCCI20-MaTSO4-T40	2.00e-02 (1.21e-02)	6.09e+00 (1.55e+00) -	2.94e+00 (7.56e-01) -	9.35e+00 (2.46e+00) -	5.04e-03 (1.81e-03) +	1.86e+00 (5.97e-01) -
WCCI20-MaTSO4-T41	2.09e+02 (9.00e+01)	6.73e+03 (1.48e+04) -	2.38e+04 (7.09e+04) -	8.81e+04 (1.95e+05) -	1.53e+04 (5.88e+04) -	2.23e+04 (5.18e+04) -
WCCI20-MaTSO4-T42	2.20e+00 (4.75e-01)	4.33e+00 (9.89e-01) -	3.30e+00 (5.76e-01) -	3.60e+00 (5.80e-01) -	9.43e+00 (7.08e+00) -	3.30e+00 (4.91e-01) -
WCCI20-MaTSO4-T43	3.34e-02 (1.78e-02)	5.82e+00 (1.37e+00) -	3.36e+00 (7.51e-01) -	9.03e+00 (1.96e+00) -	1.96e+00 (4.48e-01) -	1.88e+00 (5.58e-01) -
WCCI20-MaTSO4-T44	5.44e+02 (4.92e+02)	3.45e+03 (6.07e+03) -	3.79e+03 (5.85e+03) -	3.25e+04 (6.68e+04) -	1.45e+03 (2.13e+03) =	3.10e+04 (8.06e+04) -
WCCI20-MaTSO4-T45	2.27e+00 (3.73e-01)	4.42e+00 (6.64e-01) -	3.51e+00 (4.54e-01) -	3.53e+00 (6.02e-01) -	4.04e+00 (4.05e+00) -	3.45e+00 (5.64e-01) -
WCCI20-MaTSO4-T46	2.35e-02 (1.41e-02)	5.22e+00 (1.01e+00) -	2.99e+00 (9.83e-01) -	9.66e+00 (3.23e+00) -	4.58e-03 (1.55e-03) +	1.75e+00 (4.71e-01) -
WCCI20-MaTSO4-T47	1.53e+02 (7.40e+01)	6.57e+03 (1.51e+04) -	9.25e+03 (1.47e+04) -	1.03e+05 (2.24e+05) -	5.03e+04 (1.31e+05) -	1.58e+04 (2.90e+04) -
WCCI20-MaTSO4-T48	2.39e+00 (5.05e-01)	4.33e+00 (6.92e-01) -	3.31e+00 (5.74e-01) -	3.53e+00 (4.88e-01) -	9.93e+00 (8.98e+00) -	3.51e+00 (5.13e-01) -
WCCI20-MaTSO4-T49	1.55e-02 (4.93e-03)	4.98e+00 (1.09e+00) -	3.48e+00 (8.62e-01) -	8.85e+00 (1.88e+00) -	2.13e+00 (6.34e-01) -	2.03e+00 (4.71e-01) -
WCCI20-MaTSO4-T50	7.86e+02 (5.95e+02)	1.73e+03 (1.14e+03) -	3.50e+03 (7.47e+03) -	4.97e+04 (1.69e+05) -	1.18e+03 (2.02e+03) -	2.31e+04 (6.03e+04) -
+/-/=	Base	0/49/1	0/49/1	0/50/0	9/32/9	0/49/1

TABLE S34

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO5 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO5 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO5-T1	2.13e+02 (4.50e+01)	5.69e+02 (1.25e+02) -	3.42e+02 (7.08e+01) -	3.21e+02 (5.17e+01) -	3.08e+02 (4.61e+01) -	3.26e+02 (5.53e+01) -
WCCI20-MaTSO5-T2	3.75e-02 (1.26e-02)	3.03e-01 (5.67e-02) -	2.17e-01 (4.61e-02) -	3.62e-01 (5.31e-02) -	1.75e-01 (3.57e-02) -	1.66e-01 (3.68e-02) -
WCCI20-MaTSO5-T3	1.71e+01 (2.72e+00)	4.33e+01 (4.91e+00) -	3.93e+01 (3.74e+00) -	4.04e+01 (3.77e+00) -	3.98e+01 (4.23e+00) -	3.96e+01 (4.22e+00) -
WCCI20-MaTSO5-T4	2.49e+02 (7.64e+01)	5.08e+02 (1.13e+02) -	3.17e+02 (7.15e+01) -	3.37e+02 (6.28e+01) -	3.51e+02 (7.06e+01) -	3.11e+02 (6.74e+01) -
WCCI20-MaTSO5-T5	3.37e-02 (1.40e-02)	2.94e-01 (6.63e-02) -	2.27e-01 (4.79e-02) -	3.72e-01 (6.44e-02) -	1.74e-01 (3.99e-02) -	1.62e-01 (3.34e-02) -
WCCI20-MaTSO5-T6	1.70e+01 (2.34e+00)	4.08e+01 (5.44e+00) -	3.77e+01 (3.19e+00) -	3.64e+01 (4.14e+00) -	3.77e+01 (4.04e+00) -	3.88e+01 (3.22e+00) -
WCCI20-MaTSO5-T7	2.00e+02 (4.70e+01)	5.18e+02 (1.18e+02) -	3.40e+02 (6.72e+01) -	3.45e+02 (7.36e+01) -	3.21e+02 (7.04e+01) -	3.26e+02 (6.81e+01) -
WCCI20-MaTSO5-T8	3.70e-02 (1.10e-02)	3.21e-01 (6.47e-02) -	2.17e-01 (4.89e-02) -	3.71e-01 (7.24e-02) -	1.64e-01 (3.37e-02) -	1.57e-01 (4.41e-02) -
WCCI20-MaTSO5-T9	1.73e+01 (2.94e+00)	4.09e+01 (7.90e+00) -	3.79e+01 (4.31e+00) -	3.88e+01 (5.05e+00) -	4.05e+01 (4.57e+00) -	3.93e+01 (4.31e+00) -
WCCI20-MaTSO5-T10	2.03e+02 (3.54e+01)	5.07e+02 (5.70e+01) -	3.30e+02 (4.84e+01) -	3.39e+02 (6.30e+01) -	2.96e+02 (6.90e+01) -	3.51e+02 (8.33e+01) -
WCCI20-MaTSO5-T11	3.09e-02 (1.04e-02)	3.23e-01 (5.62e-02) -	2.10e-01 (3.85e-02) -	3.65e-01 (5.99e-02) -	1.63e-01 (3.13e-02) -	1.63e-01 (3.76e-02) -
WCCI20-MaTSO5-T12	1.75e+01 (2.97e+00)	4.25e+01 (6.10e+00) -	3.80e+01 (3.82e+00) -	3.85e+01 (3.23e+00) -	3.97e+01 (4.94e+00) -	4.02e+01 (4.11e+00) -
WCCI20-MaTSO5-T13	1.98e+02 (3.88e+01)	5.28e+02 (1.15e+02) -	3.20e+02 (6.73e+01) -	3.48e+02 (6.14e+01) -	3.34e+02 (5.39e+01) -	3.06e+02 (5.72e+01) -
WCCI20-MaTSO5-T14	3.60e-02 (1.25e-02)	2.96e-01 (5.84e-02) -	2.01e-01 (4.86e-02) -	3.43e-01 (6.94e-02) -	1.74e-01 (3.18e-02) -	1.81e-01 (4.01e-02) -
WCCI20-MaTSO5-T15	1.68e+01 (2.77e+00)	4.16e+01 (6.88e+00) -	3.91e+01 (4.27e+00) -	3.85e+01 (4.36e+00) -	3.76e+01 (4.09e+00) -	3.99e+01 (3.43e+00) -
WCCI20-MaTSO5-T16	2.19e+02 (4.15e+01)	5.05e+02 (1.09e+02) -	3.25e+02 (5.60e+01) -	3.42e+02 (5.12e+01) -	3.39e+02 (6.50e+01) -	3.45e+02 (7.63e+01) -
WCCI20-MaTSO5-T17	3.31e-02 (1.04e-02)	3.20e-01 (5.87e-02) -	2.27e-01 (4.00e-02) -	3.65e-01 (7.11e-02) -	1.74e-01 (4.21e-02) -	1.68e-01 (3.57e-02) -
WCCI20-MaTSO5-T18	1.68e+01 (3.15e+00)	4.28e+01 (6.67e+00) -	3.61e+01 (4.16e+00) -	3.73e+01 (4.82e+00) -	3.93e+01 (3.78e+00) -	4.00e+01 (5.68e+00) -
WCCI20-MaTSO5-T19	2.32e+02 (6.16e+01)	5.13e+02 (1.19e+02) -	3.39e+02 (5.71e+01) -	3.31e+02 (5.08e+01) -	3.22e+02 (5.84e+01) -	3.54e+02 (5.96e+01) -
WCCI20-MaTSO5-T20	3.88e-02 (1.43e-02)	2.94e-01 (6.18e-02) -	2.36e-01 (6.00e-02) -	3.51e-01 (7.23e-02) -	1.63e-01 (3.08e-02) -	1.61e-01 (3.81e-02) -
WCCI20-MaTSO5-T21	1.79e+01 (2.70e+00)	3.98e+01 (7.89e+00) -	3.78e+01 (3.19e+00) -	3.90e+01 (3.47e+00) -	3.84e+01 (4.09e+00) -	3.83e+01 (3.74e+00) -
WCCI20-MaTSO5-T22	2.14e+02 (4.83e+01)	4.81e+02 (8.89e+01) -	3.33e+02 (5.43e+01) -	3.57e+02 (4.58e+01) -	3.20e+02 (6.04e+01) -	3.22e+02 (6.61e+01) -
WCCI20-MaTSO5-T23	3.52e-02 (1.59e-02)	2.98e-01 (5.66e-02) -	2.30e-01 (6.09e-02) -	3.59e-01 (5.74e-02) -	1.65e-01 (2.81e-02) -	1.69e-01 (3.18e-02) -
WCCI20-MaTSO5-T24	1.73e+01 (3.08e+00)	4.27e+01 (5.08e+00) -	3.72e+01 (4.65e+00) -	3.82e+01 (4.03e+00) -	3.88e+01 (5.17e+00) -	3.83e+01 (5.20e+00) -
WCCI20-MaTSO5-T25	2.00e+02 (3.62e+01)	5.61e+02 (9.65e+01) -	3.18e+02 (6.40e+01) -	3.58e+02 (8.47e+01) -	3.14e+02 (6.45e+01) -	3.28e+02 (9.15e+01) -
WCCI20-MaTSO5-T26	4.11e-02 (1.22e-02)	3.12e-01 (4.57e-02) -	2.24e-01 (4.06e-02) -	3.68e-01 (5.91e-02) -	1.71e-01 (4.53e-02) -	1.71e-01 (4.46e-02) -
WCCI20-MaTSO5-T27	1.97e+01 (3.42e+00)	4.42e+01 (6.22e+00) -	3.77e+01 (3.74e+00) -	3.75e+01 (3.61e+00) -	3.91e+01 (3.40e+00) -	3.76e+01 (2.90e+00) -
WCCI20-MaTSO5-T28	2.36e+02 (4.97e+01)	5.08e+02 (1.23e+02) -	3.21e+02 (5.42e+01) -	3.45e+02 (6.47e+01) -	3.13e+02 (6.52e+01) -	3.33e+02 (8.29e+01) -
WCCI20-MaTSO5-T29	3.78e-02 (1.57e-02)	3.13e-01 (6.61e-02) -	2.26e-01 (4.08e-02) -	3.65e-01 (6.51e-02) -	1.67e-01 (3.74e-02) -	1.66e-01 (2.90e-02) -
WCCI20-MaTSO5-T30	1.87e+01 (3.54e+00)	4.35e+01 (4.87e+00) -	3.84e+01 (4.40e+00) -	3.85e+01 (4.54e+00) -	3.88e+01 (3.62e+00) -	3.95e+01 (5.87e+00) -
WCCI20-MaTSO5-T31	1.98e+02 (5.51e+01)	5.30e+02 (1.04e+02) -	3.15e+02 (6.05e+01) -	3.41e+02 (5.51e+01) -	3.20e+02 (6.16e+01) -	3.21e+02 (4.73e+01) -
WCCI20-MaTSO5-T32	3.27e-02 (1.15e-02)	2.92e-01 (6.59e-02) -	2.11e-01 (3.99e-02) -	4.00e-01 (7.29e-02) -	1.68e-01 (3.63e-02) -	1.58e-01 (2.67e-02) -
WCCI20-MaTSO5-T33	1.68e+01 (2.21e+00)	4.21e+01 (5.36e+00) -	4.05e+01 (4.05e+00) -	3.88e+01 (3.40e+00) -	3.97e+01 (2.99e+00) -	3.85e+01 (5.57e+00) -
WCCI20-MaTSO5-T34	2.31e+02 (5.39e+01)	4.89e+02 (1.10e+02) -	3.23e+02 (5.55e+01) -	3.49e+02 (5.57e+01) -	3.37e+02 (5.66e+01) -	3.05e+02 (6.10e+01) -
WCCI20-MaTSO5-T35	3.57e-02 (1.48e-02)	3.27e-01 (5.37e-02) -	2.19e-01 (4.49e-02) -	3.60e-01 (5.81e-02) -	1.70e-01 (4.02e-02) -	1.70e-01 (3.29e-02) -
WCCI20-MaTSO5-T36	1.64e+01 (2.68e+00)	4.38e+01 (5.19e+00) -	3.75e+01 (4.10e+00) -	3.87e+01 (4.79e+00) -	3.87e+01 (3.56e+00) -	3.93e+01 (5.16e+00) -
WCCI20-MaTSO5-T37	2.03e+02 (4.62e+01)	5.27e+02 (1.21e+02) -	3.28e+02 (7.54e+01) -	3.37e+02 (4.53e+01) -	3.23e+02 (6.65e+01) -	3.45e+02 (4.90e+01) -
WCCI20-MaTSO5-T38	3.13e-02 (1.31e-02)	2.92e-01 (5.45e-02) -	2.24e-01 (4.14e-02) -	3.95e-01 (5.93e-02) -	1.62e-01 (3.77e-02) -	1.67e-01 (3.08e-02) -
WCCI20-MaTSO5-T39	1.99e+01 (2.31e+00)	4.22e+01 (3.97e+00) -	3.78e+01 (3.70e+00) -	3.69e+01 (2.90e+00) -	3.84e+01 (5.33e+00) -	3.76e+01 (4.18e+00) -
WCCI20-MaTSO5-T40	2.15e+02 (5.00e+01)	5.11e+02 (7.91e+01) -	3.16e+02 (6.25e+01) -	3.53e+02 (6.13e+01) -	3.41e+02 (7.03e+01) -	3.40e+02 (6.34e+01) -
WCCI20-MaTSO5-T41	2.94e-02 (1.08e-02)	3.26e-01 (6.79e-02) -	2.11e-01 (5.33e-02) -	3.41e-01 (5.21e-02) -	1.62e-01 (3.09e-02) -	1.64e-01 (5.56e-02) -
WCCI20-MaTSO5-T42	1.67e+01 (3.07e+00)	4.13e+01 (6.70e+00) -	3.86e+01 (4.94e+00) -	3.70e+01 (3.23e+00) -	3.91e+01 (4.05e+00) -	3.84e+01 (4.72e+00) -
WCCI20-MaTSO5-T43	2.13e+02 (3.72e+01)	5.28e+02 (8.07e+01) -	3.20e+02 (8.82e+01) -	3.41e+02 (5.68e+01) -	3.24e+02 (5.99e+01) -	3.18e+02 (5.20e+01) -
WCCI20-MaTSO5-T44	3.34e-02 (8.47e-03)	3.11e-01 (5.30e-02) -	2.15e-01 (4.22e-02) -	3.81e-01 (6.17e-02) -	1.65e-01 (3.07e-02) -	1.75e-01 (4.15e-02) -
WCCI20-MaTSO5-T45	1.66e+01 (3.08e+00)	4.16e+01 (7.46e+00) -	3.77e+01 (3.75e+00) -	3.86e+01 (4.25e+00) -	3.77e+01 (4.58e+00) -	3.73e+01 (3.85e+00) -
WCCI20-MaTSO5-T46	2.05e+02 (3.37e+01)	5.54e+02 (1.30e+02) -	3.49e+02 (7.74e+01) -	3.31e+02 (5.37e+01) -	3.19e+02 (6.15e+01) -	3.44e+02 (7.18e+01) -
WCCI20-MaTSO5-T47	3.18e-02 (7.99e-03)	3.04e-01 (4.90e-02) -	2.11e-01 (4.40e-02) -	3.80e-01 (7.15e-02) -	1.76e-01 (3.52e-02) -	1.67e-01 (4.57e-02) -
WCCI20-MaTSO5-T48	1.80e+01 (2.71e+00)	4.10e+01 (5.29e+00) -	3.71e+01 (3.64e+00) -	3.73e+01 (5.00e+00) -	4.01e+01 (5.30e+00) -	3.63e+01 (4.59e+00) -
WCCI20-MaTSO5-T49	2.09e+02 (5.17e+01)	4.89e+02 (8.52e+01) -	3.26e+02 (5.60e+01) -	3.56e+02 (8.87e+01) -	3.35e+02 (7.00e+01) -	3.10e+02 (6.31e+01) -
WCCI20-MaTSO5-T50	3.19e-02 (1.63e-02)	3.32e-01 (5.28e-02) -	2.35e-01 (5.41e-02) -	3.98e-01 (7.70e-02) -	1.69e-01 (3.82e-02) -	1.75e-01 (4.15e-02) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S35

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO6 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO6 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO6-T1	6.31e+02 (5.47e+02)	9.28e+03 (1.98e+04) -	1.07e+04 (3.03e+04) -	2.17e+04 (7.55e+04) -	2.09e+04 (5.16e+04) -	6.81e+03 (1.08e+04) -
WCCI20-MaTSO6-T2	3.28e-02 (1.29e-02)	3.10e-01 (4.14e-02) -	2.28e-01 (3.53e-02) -	3.72e-01 (7.70e-02) -	1.60e-01 (4.35e-02) -	1.61e-01 (3.39e-02) -
WCCI20-MaTSO6-T3	5.21e+03 (1.05e+03)	7.03e+03 (8.64e+02) -	6.91e+03 (8.07e+02) -	6.74e+03 (1.09e+03) -	6.89e+03 (9.27e+02) -	6.81e+03 (6.98e+02) -
WCCI20-MaTSO6-T4	2.87e+02 (2.38e+02)	3.04e+04 (7.96e+04) -	4.93e+04 (8.15e+04) -	4.00e+04 (8.96e+04) -	3.23e+04 (9.25e+04) -	2.98e+03 (4.23e+03) -
WCCI20-MaTSO6-T5	3.26e-02 (1.77e-02)	3.11e-01 (5.58e-02) -	2.28e-01 (6.79e-02) -	3.93e-01 (6.12e-02) -	1.77e-01 (2.69e-02) -	1.63e-01 (4.46e-02) -
WCCI20-MaTSO6-T6	5.32e+03 (1.53e+03)	7.32e+03 (8.46e+02) -	7.23e+03 (6.83e+02) -	6.90e+03 (8.10e+02) -	6.49e+03 (7.37e+02) -	6.92e+03 (1.28e+03) -
WCCI20-MaTSO6-T7	2.85e+02 (2.13e+02)	3.42e+04 (9.11e+04) -	4.47e+04 (1.21e+05) -	2.12e+04 (3.92e+04) -	3.31e+04 (1.20e+05) -	1.74e+04 (3.46e+04) -
WCCI20-MaTSO6-T8	3.30e-02 (8.17e-03)	3.03e-01 (6.44e-02) -	2.25e-01 (4.46e-02) -	3.79e-01 (5.69e-02) -	1.60e-01 (3.77e-02) -	1.74e-01 (4.33e-02) -
WCCI20-MaTSO6-T9	5.45e+03 (1.14e+03)	7.28e+03 (1.02e+03) -	7.04e+03 (8.52e+02) -	7.05e+03 (8.13e+02) -	6.90e+03 (8.37e+02) -	7.04e+03 (7.63e+02) -
WCCI20-MaTSO6-T10	4.90e+02 (5.24e+02)	2.53e+04 (6.90e+04) -	6.17e+03 (1.25e+04) -	5.05e+04 (7.06e+03) -	4.81e+04 (7.96e+03) -	6.21e+03 (1.54e+04) -
WCCI20-MaTSO6-T11	3.13e-02 (8.56e-03)	3.31e-01 (5.90e-02) -	2.07e-01 (4.62e-02) -	3.76e-01 (7.08e-02) -	1.69e-01 (3.72e-02) -	1.65e-01 (3.87e-02) -
WCCI20-MaTSO6-T12	5.44e+03 (9.25e+02)	7.04e+03 (8.14e+02) -	7.23e+03 (9.49e+02) -	6.93e+03 (1.09e+03) -	7.12e+03 (8.86e+02) -	6.52e+03 (6.95e+02) -
WCCI20-MaTSO6-T13	2.10e+02 (1.22e+02)	3.27e+04 (4.99e+04) -	8.80e+03 (1.56e+04) -	1.75e+04 (2.65e+04) -	7.83e+04 (1.89e+05) -	4.01e+04 (8.79e+04) -
WCCI20-MaTSO6-T14	3.12e-02 (1.18e-02)	3.24e-01 (6.08e-02) -	2.26e-01 (4.62e-02) -	3.71e-01 (6.64e-02) -	1.76e-01 (4.49e-02) -	1.80e-01 (3.77e-02) -
WCCI20-MaTSO6-T15	5.17e+03 (1.46e+03)	6.98e+03 (1.11e+03) -	6.92e+03 (9.51e+02) -	7.10e+03 (7.92e+02) -	7.08e+03 (8.55e+02) -	6.72e+03 (7.05e+02) -
WCCI20-MaTSO6-T16	3.04e+02 (3.05e+02)	6.28e+03 (7.65e+03) -	5.36e+03 (7.34e+03) -	2.09e+04 (4.55e+04) -	2.53e+04 (6.17e+04) -	2.05e+04 (5.28e+04) -
WCCI20-MaTSO6-T17	3.37e-02 (1.32e-02)	3.28e-01 (4.50e-02) -	2.31e-01 (4.47e-02) -	3.61e-01 (5.99e-02) -	1.74e-01 (3.13e-02) -	1.66e-01 (3.78e-02) -
WCCI20-MaTSO6-T18	5.42e+03 (1.21e+03)	7.29e+03 (1.09e+03) -	7.10e+03 (9.56e+02) -	6.76e+03 (8.21e+02) -	6.94e+03 (9.55e+02) -	6.66e+03 (7.42e+02) -
WCCI20-MaTSO6-T19	2.49e+02 (1.24e+02)	8.39e+03 (1.01e+04) -	4.63e+04 (9.95e+04) -	1.29e+05 (2.28e+05) -	3.51e+04 (5.47e+04) -	2.60e+04 (6.70e+04) -
WCCI20-MaTSO6-T20	3.36e-02 (1.41e-02)	2.97e-01 (3.38e-02) -	2.18e-01 (5.43e-02) -	3.85e-01 (8.94e-02) -	1.74e-01 (3.26e-02) -	1.81e-01 (3.88e-02) -
WCCI20-MaTSO6-T21	5.43e+03 (1.33e+03)	7.54e+03 (1.04e+03) -	6.49e+03 (8.64e+02) -	6.92e+03 (9.86e+02) -	7.05e+03 (9.17e+02) -	7.25e+03 (8.75e+02) -
WCCI20-MaTSO6-T22	1.03e+03 (7.76e+02)	1.15e+04 (1.98e+04) -	4.43e+03 (6.09e+03) -	6.96e+03 (1.14e+04) -	2.41e+04 (4.41e+04) -	6.93e+03 (1.20e+04) -
WCCI20-MaTSO6-T23	3.11e-02 (1.25e-02)	3.14e-01 (5.82e-02) -	2.09e-01 (4.72e-02) -	3.57e-01 (6.03e-02) -	1.63e-01 (4.21e-02) -	1.71e-01 (3.73e-02) -
WCCI20-MaTSO6-T24	5.94e+03 (1.18e+03)	7.41e+03 (9.61e+02) -	6.60e+03 (6.90e+02) =	6.85e+03 (8.11e+02) -	6.98e+03 (9.95e+02) -	6.79e+03 (7.96e+02) -
WCCI20-MaTSO6-T25	3.75e+02 (3.13e+02)	1.05e+04 (2.63e+04) -	5.46e+03 (1.29e+04) -	4.92e+04 (8.77e+04) -	9.60e+03 (1.48e+04) -	7.66e+03 (1.51e+04) -
WCCI20-MaTSO6-T26	3.27e-02 (1.02e-02)	2.94e-01 (4.88e-02) -	1.99e-01 (3.52e-02) -	3.62e-01 (6.23e-02) -	1.55e-01 (4.16e-02) -	1.86e-01 (3.94e-02) -
WCCI20-MaTSO6-T27	4.94e+03 (1.04e+03)	6.96e+03 (1.03e+03) -	6.66e+03 (1.12e+03) -	6.48e+03 (7.73e+02) -	6.83e+03 (7.87e+02) -	6.73e+03 (1.01e+03) -
WCCI20-MaTSO6-T28	2.48e+02 (9.18e+01)	2.62e+04 (4.27e+04) -	4.88e+03 (9.44e+03) -	1.91e+04 (3.74e+04) -	2.39e+04 (4.45e+04) -	2.51e+04 (8.15e+04) -
WCCI20-MaTSO6-T29	3.17e-02 (1.07e-02)	3.21e-01 (7.19e-02) -	2.12e-01 (4.78e-02) -	3.74e-01 (6.41e-02) -	1.75e-01 (3.92e-02) -	1.86e-01 (2.97e-02) -
WCCI20-MaTSO6-T30	5.17e+03 (8.09e+02)	7.32e+03 (1.01e+03) -	6.83e+03 (8.90e+02) -	6.76e+03 (5.73e+02) -	6.68e+03 (7.62e+02) -	7.01e+03 (1.12e+03) -
WCCI20-MaTSO6-T31	5.09e+02 (3.91e+02)	7.26e+03 (2.13e+04) -	2.27e+04 (6.78e+04) -	1.59e+04 (3.02e+04) -	1.18e+04 (2.05e+04) -	1.62e+04 (2.78e+04) -
WCCI20-MaTSO6-T32	3.04e-02 (1.06e-02)	3.41e-01 (5.47e-02) -	2.26e-01 (4.89e-02) -	3.47e-01 (5.65e-02) -	1.55e-01 (2.82e-02) -	1.64e-01 (3.75e-02) -
WCCI20-MaTSO6-T33	5.35e+03 (1.03e+03)	7.11e+03 (5.71e+02) -	6.95e+03 (8.96e+02) -	6.84e+03 (8.09e+02) -	6.81e+03 (9.59e+02) -	6.72e+03 (1.03e+03) -
WCCI20-MaTSO6-T34	1.72e+02 (1.27e+02)	3.39e+04 (6.02e+04) -	1.05e+04 (2.33e+04) -	2.50e+04 (5.39e+04) -	1.17e+04 (1.77e+04) -	1.25e+04 (1.78e+04) -
WCCI20-MaTSO6-T35	3.20e-02 (1.03e-02)	2.96e-01 (7.44e-02) -	2.21e-01 (4.78e-02) -	3.85e-01 (6.67e-02) -	1.63e-01 (3.51e-02) -	1.63e-01 (3.76e-02) -
WCCI20-MaTSO6-T36	5.68e+03 (8.81e+02)	7.59e+03 (1.05e+03) -	7.01e+03 (8.75e+02) -	6.49e+03 (9.23e+02) -	6.89e+03 (1.03e+03) -	6.75e+03 (7.83e+02) -
WCCI20-MaTSO6-T37	2.79e+02 (1.04e+02)	6.69e+03 (1.53e+04) -	2.36e+04 (4.16e+04) -	3.10e+04 (7.40e+04) -	7.56e+03 (1.59e+04) -	2.24e+04 (4.15e+04) -
WCCI20-MaTSO6-T38	3.23e-02 (1.06e-02)	3.04e-01 (5.53e-02) -	2.22e-01 (3.32e-02) -	3.47e-01 (8.32e-02) -	1.56e-01 (4.16e-02) -	1.62e-01 (3.29e-02) -
WCCI20-MaTSO6-T39	5.18e+03 (8.99e+02)	7.19e+03 (1.07e+03) -	6.88e+03 (7.89e+02) -	6.86e+03 (8.44e+02) -	6.94e+03 (7.15e+02) -	6.89e+03 (8.38e+02) -
WCCI20-MaTSO6-T40	1.09e+03 (7.22e+02)	2.87e+04 (7.53e+04) -	5.35e+03 (1.08e+04) =	1.18e+04 (2.56e+04) -	6.91e+03 (1.90e+04) =	7.91e+03 (1.22e+04) -
WCCI20-MaTSO6-T41	2.70e-02 (1.07e-02)	3.09e-01 (6.55e-02) -	2.21e-01 (3.34e-02) -	3.77e-01 (8.30e-02) -	1.67e-01 (3.45e-02) -	1.74e-01 (2.66e-02) -
WCCI20-MaTSO6-T42	5.46e+03 (1.37e+03)	7.08e+03 (8.56e+02) -	6.94e+03 (8.54e+02) -	7.18e+03 (8.34e+02) -	6.99e+03 (8.33e+02) -	6.84e+03 (9.83e+02) -
WCCI20-MaTSO6-T43	7.89e+02 (7.23e+02)	3.81e+03 (6.19e+03) -	2.56e+04 (7.02e+04) -	2.23e+04 (4.69e+04) -	2.73e+03 (3.44e+03) -	1.12e+04 (2.60e+04) -
WCCI20-MaTSO6-T44	2.29e-02 (8.72e-03)	3.19e-01 (3.88e-02) -	2.03e-01 (4.36e-02) -	3.35e-01 (4.26e-02) -	1.59e-01 (3.50e-02) -	1.71e-01 (4.23e-02) -
WCCI20-MaTSO6-T45	5.58e+03 (7.04e+02)	7.22e+03 (9.49e+02) -	6.51e+03 (1.11e+03) -	6.89e+03 (1.23e+03) -	7.23e+03 (9.07e+02) -	6.67e+03 (8.74e+02) -
WCCI20-MaTSO6-T46	1.31e+03 (7.47e+02)	3.96e+03 (3.29e+03) -	4.56e+03 (7.20e+03) =	1.32e+04 (2.76e+04) -	6.60e+03 (9.08e+03) -	1.02e+04 (2.26e+04) =
WCCI20-MaTSO6-T47	3.29e-02 (1.13e-02)	3.33e-01 (6.04e-02) -	2.24e-01 (5.42e-02) -	3.64e-01 (8.34e-02) -	1.73e-01 (4.12e-02) -	1.66e-01 (3.92e-02) -
WCCI20-MaTSO6-T48	5.48e+03 (1.23e+03)	7.50e+03 (1.04e+03) -	7.03e+03 (7.92e+02) -	6.85e+03 (7.29e+02) -	6.79e+03 (1.07e+03) -	7.29e+03 (8.15e+02) -
WCCI20-MaTSO6-T49	4.03e+02 (2.96e+02)	1.16e+04 (1.96e+04) -	1.04e+04 (2.77e+04) -	1.63e+04 (3.50e+04) -	1.18e+04 (1.68e+04) -	1.05e+04 (2.25e+04) -
WCCI20-MaTSO6-T50	3.19e-02 (1.52e-02)	3.07e-01 (6.22e-02) -	2.42e-01 (4.42e-02) -	3.66e-01 (4.95e-02) -	1.69e-01 (2.84e-02) -	1.70e-01 (3.64e-02) -
+/-/=	Base	0/50/0	0/47/3	0/50/0	0/49/1	0/49/1

TABLE S36

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO7 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO7 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO7-T1	2.31e+00 (3.58e-01)	4.35e+00 (6.03e-01) -	3.26e+00 (6.09e-01) -	3.45e+00 (6.26e-01) -	3.27e+00 (4.37e-01) -	3.15e+00 (6.12e-01) -
WCCI20-MaTSO7-T2	2.14e+02 (4.58e+01)	5.17e+02 (1.29e+02) -	3.13e+02 (5.61e+01) -	3.41e+02 (5.45e+01) -	3.26e+02 (4.91e+01) -	3.15e+02 (7.90e+01) -
WCCI20-MaTSO7-T3	1.76e+01 (2.48e+00)	4.40e+01 (4.74e+00) -	3.81e+01 (3.92e+00) -	3.89e+01 (3.61e+00) -	3.77e+01 (3.14e+00) -	3.89e+01 (3.41e+00) -
WCCI20-MaTSO7-T4	2.23e+00 (4.93e-01)	4.63e+00 (7.44e-01) -	3.34e+00 (5.03e-01) -	3.41e+00 (5.22e-01) -	3.39e+00 (5.22e-01) -	4.31e+00 (3.70e+00) -
WCCI20-MaTSO7-T5	2.25e+02 (4.35e+01)	5.20e+02 (8.49e+01) -	3.31e+02 (5.70e+01) -	3.54e+02 (4.92e+01) -	3.13e+02 (6.13e+01) -	3.22e+02 (4.16e+01) -
WCCI20-MaTSO7-T6	1.75e+01 (3.13e+00)	4.45e+01 (4.07e+00) -	4.05e+01 (3.48e+00) -	3.99e+01 (4.41e+00) -	3.75e+01 (3.69e+00) -	3.83e+01 (3.32e+00) -
WCCI20-MaTSO7-T7	2.43e+00 (3.11e-01)	4.40e+00 (8.53e-01) -	3.36e+00 (3.83e-01) -	3.53e+00 (4.10e-01) -	3.68e+00 (1.91e+00) -	3.26e+00 (5.34e-01) -
WCCI20-MaTSO7-T8	2.08e+02 (3.74e+01)	5.20e+02 (1.29e+02) -	3.28e+02 (5.20e+01) -	3.43e+02 (6.08e+01) -	3.14e+02 (6.21e+01) -	3.12e+02 (6.82e+01) -
WCCI20-MaTSO7-T9	1.75e+01 (3.53e+00)	4.35e+01 (5.08e+00) -	3.74e+01 (3.90e+00) -	3.94e+01 (3.59e+00) -	3.62e+01 (4.17e+00) -	3.97e+01 (2.92e+00) -
WCCI20-MaTSO7-T10	2.61e+00 (5.94e-01)	4.12e+00 (8.84e-01) -	3.36e+00 (4.92e-01) -	3.45e+00 (3.24e-01) -	4.11e+00 (3.78e+00) -	3.19e+00 (4.76e-01) -
WCCI20-MaTSO7-T11	2.06e+02 (5.16e+01)	4.92e+02 (1.20e+02) -	3.22e+02 (5.25e+01) -	3.28e+02 (4.88e+01) -	3.03e+02 (5.67e+01) -	3.12e+02 (6.12e+01) -
WCCI20-MaTSO7-T12	1.70e+01 (2.94e+00)	4.32e+01 (5.03e+00) -	3.89e+01 (3.11e+00) -	3.85e+01 (4.03e+00) -	3.75e+01 (4.19e+00) -	3.72e+01 (4.05e+00) -
WCCI20-MaTSO7-T13	2.31e+00 (5.46e-01)	4.47e+00 (6.21e-01) -	3.42e+00 (4.77e-01) -	3.59e+00 (5.70e-01) -	3.47e+00 (5.81e-01) -	3.44e+00 (4.82e-01) -
WCCI20-MaTSO7-T14	2.06e+02 (4.29e+01)	5.38e+02 (8.63e+01) -	3.22e+02 (7.03e+01) -	3.60e+02 (6.34e+01) -	3.30e+02 (5.04e+01) -	3.48e+02 (5.41e+01) -
WCCI20-MaTSO7-T15	1.93e+01 (2.96e+00)	4.41e+01 (3.97e+00) -	3.94e+01 (3.53e+00) -	3.83e+01 (4.04e+00) -	3.82e+01 (4.85e+00) -	3.86e+01 (4.92e+00) -
WCCI20-MaTSO7-T16	2.32e+00 (3.08e-01)	4.52e+00 (8.62e-01) -	3.26e+00 (5.68e-01) -	3.47e+00 (6.36e-01) -	3.45e+00 (5.06e-01) -	3.24e+00 (5.48e-01) -
WCCI20-MaTSO7-T17	2.15e+02 (4.23e+01)	5.60e+02 (1.05e+02) -	3.23e+02 (6.79e+01) -	3.61e+02 (6.22e+01) -	3.64e+02 (8.16e+01) -	3.13e+02 (6.15e+01) -
WCCI20-MaTSO7-T18	1.87e+01 (3.15e+00)	4.36e+01 (3.46e+00) -	3.72e+01 (4.04e+00) -	3.95e+01 (2.94e+00) -	3.94e+01 (4.88e+00) -	3.90e+01 (3.80e+00) -
WCCI20-MaTSO7-T19	2.37e+00 (3.33e-01)	4.53e+00 (5.61e-01) -	3.41e+00 (5.80e-01) -	3.43e+00 (4.59e-01) -	3.51e+00 (7.18e-01) -	3.30e+00 (4.27e-01) -
WCCI20-MaTSO7-T20	1.99e+02 (4.14e+01)	5.78e+02 (1.30e+02) -	2.93e+02 (6.45e+01) -	3.19e+02 (5.30e+01) -	3.31e+02 (6.39e+01) -	3.13e+02 (6.87e+01) -
WCCI20-MaTSO7-T21	1.82e+01 (3.12e+00)	4.60e+01 (4.55e+00) -	3.82e+01 (4.09e+00) -	3.80e+01 (3.80e+00) -	3.80e+01 (3.38e+00) -	3.65e+01 (4.38e+00) -
WCCI20-MaTSO7-T22	2.36e+00 (4.12e-01)	4.36e+00 (5.91e-01) -	3.17e+00 (5.06e-01) -	3.58e+00 (4.90e-01) -	3.27e+00 (4.09e-01) -	4.12e+00 (3.76e+00) -
WCCI20-MaTSO7-T23	2.39e+02 (5.69e+01)	5.01e+02 (1.05e+02) -	3.30e+02 (5.41e+01) -	3.57e+02 (6.62e+01) -	3.44e+02 (6.51e+01) -	3.26e+02 (6.86e+01) -
WCCI20-MaTSO7-T24	1.84e+01 (2.46e+00)	4.49e+01 (4.72e+00) -	3.78e+01 (3.51e+00) -	3.85e+01 (4.88e+00) -	3.98e+01 (4.56e+00) -	3.86e+01 (3.92e+00) -
WCCI20-MaTSO7-T25	2.26e+00 (4.19e-01)	4.29e+00 (7.11e-01) -	3.15e+00 (4.67e-01) -	3.55e+00 (3.41e-01) -	3.21e+00 (4.38e-01) -	3.31e+00 (4.65e-01) -
WCCI20-MaTSO7-T26	2.15e+02 (4.78e+01)	5.60e+02 (9.46e+01) -	3.12e+02 (5.30e+01) -	3.44e+02 (7.48e+01) -	3.25e+02 (5.31e+01) -	3.29e+02 (6.40e+01) -
WCCI20-MaTSO7-T27	1.73e+01 (1.94e+00)	4.30e+01 (5.65e+00) -	3.98e+01 (3.74e+00) -	3.91e+01 (4.16e+00) -	3.97e+01 (4.98e+00) -	3.80e+01 (4.07e+00) -
WCCI20-MaTSO7-T28	2.29e+00 (5.07e-01)	4.38e+00 (6.80e-01) -	3.41e+00 (4.74e-01) -	3.55e+00 (5.04e-01) -	3.51e+00 (5.88e-01) -	3.78e+00 (1.87e+00) -
WCCI20-MaTSO7-T29	2.02e+02 (3.77e+01)	5.27e+02 (1.05e+02) -	3.33e+02 (5.22e+01) -	3.35e+02 (4.88e+01) -	3.22e+02 (4.43e+01) -	3.57e+02 (6.45e+01) -
WCCI20-MaTSO7-T30	1.80e+01 (2.02e+00)	4.30e+01 (4.98e+00) -	3.87e+01 (4.07e+00) -	3.95e+01 (4.45e+00) -	3.67e+01 (4.75e+00) -	3.77e+01 (3.74e+00) -
WCCI20-MaTSO7-T31	2.51e+00 (3.36e-01)	4.67e+00 (2.18e+00) -	3.21e+00 (4.11e-01) -	3.62e+00 (6.84e-01) -	3.43e+00 (5.83e-01) -	3.35e+00 (5.15e-01) -
WCCI20-MaTSO7-T32	2.12e+02 (5.81e+01)	5.25e+02 (7.14e+01) -	3.35e+02 (6.28e+01) -	3.48e+02 (7.17e+01) -	3.20e+02 (4.57e+01) -	3.14e+02 (6.74e+01) -
WCCI20-MaTSO7-T33	1.76e+01 (2.49e+00)	4.33e+01 (5.40e+00) -	3.82e+01 (3.91e+00) -	3.87e+01 (3.12e+00) -	3.87e+01 (4.42e+00) -	3.88e+01 (4.29e+00) -
WCCI20-MaTSO7-T34	2.29e+00 (3.65e-01)	4.27e+00 (8.54e-01) -	3.38e+00 (5.63e-01) -	3.73e+00 (5.25e-01) -	3.29e+00 (5.59e-01) -	3.69e+00 (5.05e-01) -
WCCI20-MaTSO7-T35	2.11e+02 (4.80e+01)	5.37e+02 (1.05e+02) -	3.00e+02 (6.86e+01) -	3.58e+02 (6.24e+01) -	3.54e+02 (8.25e+01) -	3.10e+02 (8.30e+01) -
WCCI20-MaTSO7-T36	1.76e+01 (2.65e+00)	4.27e+01 (4.97e+00) -	3.86e+01 (3.95e+00) -	3.98e+01 (3.49e+00) -	3.84e+01 (3.84e+00) -	3.81e+01 (5.42e+00) -
WCCI20-MaTSO7-T37	2.37e+00 (3.93e-01)	4.23e+00 (5.01e-01) -	3.33e+00 (4.83e-01) -	3.49e+00 (4.82e-01) -	3.12e+00 (4.30e-01) -	3.21e+00 (4.03e-01) -
WCCI20-MaTSO7-T38	2.03e+02 (3.75e+01)	5.23e+02 (1.03e+02) -	2.97e+02 (7.03e+01) -	3.50e+02 (6.40e+01) -	3.14e+02 (4.95e+01) -	3.31e+02 (6.86e+01) -
WCCI20-MaTSO7-T39	1.82e+01 (2.85e+00)	4.17e+01 (6.80e+00) -	3.76e+01 (5.48e+00) -	3.80e+01 (4.30e+00) -	3.68e+01 (4.29e+00) -	4.03e+01 (4.29e+00) -
WCCI20-MaTSO7-T40	2.42e+00 (3.04e-01)	4.33e+00 (8.22e-01) -	3.60e+00 (3.46e-01) -	3.57e+00 (4.84e-01) -	3.41e+00 (4.91e-01) -	3.35e+00 (5.65e-01) -
WCCI20-MaTSO7-T41	2.07e+02 (4.02e+01)	5.53e+02 (9.84e+01) -	3.50e+02 (6.64e+01) -	3.61e+02 (8.60e+01) -	3.25e+02 (7.74e+01) -	3.34e+02 (5.02e+01) -
WCCI20-MaTSO7-T42	1.96e+01 (2.61e+00)	4.56e+01 (2.62e+00) -	3.83e+01 (2.84e+00) -	3.90e+01 (4.35e+00) -	3.91e+01 (5.71e+00) -	3.77e+01 (5.16e+00) -
WCCI20-MaTSO7-T43	2.62e+00 (6.78e-01)	4.58e+00 (6.91e-01) -	3.37e+00 (4.70e-01) -	3.60e+00 (3.75e-01) -	3.38e+00 (5.50e-01) -	3.35e+00 (3.97e-01) -
WCCI20-MaTSO7-T44	1.81e+02 (4.00e+01)	5.21e+02 (1.11e+02) -	3.30e+02 (6.84e+01) -	3.35e+02 (5.63e+01) -	3.06e+02 (5.96e+01) -	3.33e+02 (6.35e+01) -
WCCI20-MaTSO7-T45	1.86e+01 (3.04e+00)	4.42e+01 (3.08e+00) -	3.91e+01 (3.20e+00) -	3.71e+01 (4.28e+00) -	3.87e+01 (3.72e+00) -	3.83e+01 (4.70e+00) -
WCCI20-MaTSO7-T46	2.28e+00 (4.32e-01)	4.58e+00 (7.21e-01) -	3.35e+00 (5.91e-01) -	3.59e+00 (3.90e-01) -	3.44e+00 (6.34e-01) -	3.23e+00 (6.03e-01) -
WCCI20-MaTSO7-T47	2.09e+02 (4.00e+01)	5.24e+02 (8.70e+01) -	3.38e+02 (5.12e+01) -	3.76e+02 (8.71e+01) -	3.45e+02 (6.46e+01) -	3.22e+02 (6.19e+01) -
WCCI20-MaTSO7-T48	1.72e+01 (2.52e+00)	4.21e+01 (6.80e+00) -	3.81e+01 (4.53e+00) -	3.92e+01 (5.23e+00) -	3.80e+01 (3.40e+00) -	3.87e+01 (5.28e+00) -
WCCI20-MaTSO7-T49	2.20e+00 (5.03e-01)	4.36e+00 (6.21e-01) -	3.30e+00 (5.19e-01) -	3.56e+00 (3.92e-01) -	3.34e+00 (5.44e-01) -	3.32e+00 (5.64e-01) -
WCCI20-MaTSO7-T50	2.09e+02 (4.26e+01)	4.73e+02 (9.66e+01) -	3.15e+02 (5.35e+01) -	3.54e+02 (7.11e+01) -	3.14e+02 (6.32e+01) -	3.25e+02 (6.86e+01) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S37

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO8 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO8 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO8-T1	4.24e+02 (4.42e+02)	1.45e+04 (2.62e+04) -	2.03e+04 (3.12e+04) -	2.73e+04 (5.12e+04) -	1.06e+04 (1.83e+04) -	1.09e+04 (1.91e+04) -
WCCI20-MaTSO8-T2	2.45e+00 (3.65e-01)	1.77e+01 (5.70e+00) -	3.42e+00 (5.78e-01) -	9.05e+00 (7.13e+00) -	5.00e+00 (4.34e+00) -	4.46e+00 (3.99e+00) -
WCCI20-MaTSO8-T3	2.33e+02 (5.47e+01)	5.91e+02 (1.24e+02) -	3.20e+02 (6.33e+01) -	3.43e+02 (6.73e+01) -	3.03e+02 (5.94e+01) -	3.25e+02 (8.37e+01) -
WCCI20-MaTSO8-T4	3.36e-02 (9.44e-03)	3.30e-01 (7.10e-02) -	2.36e-01 (5.98e-02) -	3.73e-01 (7.91e-02) -	1.54e-01 (3.36e-02) -	1.71e-01 (3.79e-02) -
WCCI20-MaTSO8-T5	2.62e+01 (3.97e+00)	4.34e+01 (4.19e+00) -	4.01e+01 (2.87e+00) -	4.15e+01 (3.46e+00) -	4.10e+01 (4.34e+00) -	4.00e+01 (4.45e+00) -
WCCI20-MaTSO8-T6	3.83e+02 (3.52e+02)	2.56e+04 (5.95e+04) -	1.95e+04 (3.85e+04) -	2.62e+04 (5.59e+04) -	4.88e+04 (1.28e+05) -	1.44e+04 (2.34e+04) -
WCCI20-MaTSO8-T7	2.15e+00 (4.08e-01)	1.37e+01 (7.93e+00) -	3.42e+00 (4.91e-01) -	3.84e+00 (5.35e-01) -	3.33e+00 (6.56e-01) -	3.54e+00 (7.87e-01) -
WCCI20-MaTSO8-T8	2.32e+02 (4.90e+01)	5.63e+02 (1.01e+02) -	3.24e+02 (5.99e+01) -	3.01e+02 (4.99e+01) -	3.28e+02 (5.61e+01) -	3.13e+02 (6.59e+01) -
WCCI20-MaTSO8-T9	3.30e-02 (9.88e-03)	3.57e-01 (5.81e-02) -	2.14e-01 (4.98e-02) -	3.72e-01 (7.21e-02) -	1.76e-01 (4.68e-02) -	1.61e-01 (2.96e-02) -
WCCI20-MaTSO8-T10	2.92e+01 (3.54e+00)	4.56e+01 (4.49e+00) -	3.97e+01 (3.95e+00) -	3.97e+01 (3.69e+00) -	3.91e+01 (4.93e+00) -	4.01e+01 (4.14e+00) -
WCCI20-MaTSO8-T11	6.45e+02 (8.15e+02)	3.93e+04 (4.92e+04) -	3.57e+04 (8.00e+04) -	7.88e+04 (1.84e+05) -	5.70e+04 (7.42e+04) -	3.39e+04 (6.67e+04) -
WCCI20-MaTSO8-T12	2.06e+00 (5.38e-01)	1.32e+01 (7.78e+00) -	3.53e+00 (4.12e-01) -	3.77e+00 (6.78e-01) -	4.77e+00 (4.18e+00) -	3.47e+00 (5.62e-01) -
WCCI20-MaTSO8-T13	2.35e+02 (4.33e+01)	5.50e+02 (8.20e+01) -	3.30e+02 (6.43e+01) -	3.40e+02 (6.33e+01) -	3.39e+02 (5.72e+01) -	3.07e+02 (4.35e+01) -
WCCI20-MaTSO8-T14	3.52e-02 (1.31e-02)	3.40e-01 (7.49e-02) -	2.37e-01 (5.62e-02) -	3.70e-01 (6.27e-02) -	1.75e-01 (3.60e-02) -	1.84e-01 (3.98e-02) -
WCCI20-MaTSO8-T15	2.65e+01 (2.73e+00)	4.47e+01 (4.43e+00) -	3.99e+01 (5.22e+00) -	3.94e+01 (4.26e+00) -	3.96e+01 (3.55e+00) -	4.12e+01 (5.03e+00) -
WCCI20-MaTSO8-T16	4.72e+02 (4.57e+02)	1.70e+04 (3.16e+04) -	7.18e+03 (1.42e+04) -	1.97e+04 (3.16e+04) -	5.64e+03 (1.03e+04) -	2.75e+04 (6.83e+04) -
WCCI20-MaTSO8-T17	2.36e+00 (4.07e-01)	1.55e+01 (7.20e+00) -	3.16e+00 (4.49e-01) -	3.74e+00 (5.10e-01) -	3.86e+00 (2.38e+00) -	5.70e+00 (5.26e+00) -
WCCI20-MaTSO8-T18	2.15e+02 (4.26e+01)	5.15e+02 (9.00e+01) -	3.46e+02 (6.02e+01) -	3.52e+02 (5.85e+01) -	2.96e+02 (5.35e+01) -	3.36e+02 (8.34e+01) -
WCCI20-MaTSO8-T19	4.55e-02 (1.58e-02)	3.70e-01 (5.21e-02) -	2.21e-01 (5.61e-02) -	3.46e-01 (5.38e-02) -	1.68e-01 (3.78e-02) -	1.81e-01 (3.78e-02) -
WCCI20-MaTSO8-T20	2.83e+01 (3.87e+00)	4.48e+01 (4.35e+00) -	4.12e+01 (4.47e+00) -	3.94e+01 (4.01e+00) -	3.98e+01 (4.41e+00) -	3.82e+01 (3.91e+00) -
WCCI20-MaTSO8-T21	3.15e+03 (3.64e+03)	9.61e+04 (1.63e+05) -	9.64e+04 (1.08e+05) -	3.49e+04 (5.39e+04) -	3.67e+04 (4.72e+04) -	1.06e+05 (1.86e+05) =
WCCI20-MaTSO8-T22	2.37e+00 (4.08e-01)	1.76e+01 (5.83e+00) -	3.40e+00 (4.81e-01) -	4.91e+00 (3.75e+00) -	7.13e+00 (7.04e+00) -	7.20e+00 (7.19e+00) -
WCCI20-MaTSO8-T23	2.05e+02 (5.21e+01)	5.73e+02 (1.24e+02) -	3.07e+02 (4.66e+01) -	3.46e+02 (6.38e+01) -	3.22e+02 (5.69e+01) -	3.50e+02 (8.72e+01) -
WCCI20-MaTSO8-T24	3.24e-02 (7.76e-03)	3.25e-01 (4.54e-02) -	2.05e-01 (4.33e-02) -	3.85e-01 (7.04e-02) -	1.75e-01 (3.98e-02) -	1.58e-01 (4.21e-02) -
WCCI20-MaTSO8-T25	2.73e+01 (4.68e+00)	4.41e+01 (3.79e+00) -	4.07e+01 (2.85e+00) -	4.06e+01 (3.92e+00) -	3.93e+01 (3.42e+00) -	4.08e+01 (4.42e+00) -
WCCI20-MaTSO8-T26	8.87e+02 (8.75e+02)	2.28e+04 (4.95e+04) -	9.85e+03 (2.60e+04) -	2.43e+04 (7.28e+04) -	2.21e+04 (3.10e+04) -	1.16e+04 (2.87e+04) -
WCCI20-MaTSO8-T27	2.35e+00 (3.67e-01)	1.47e+01 (7.55e+00) -	3.45e+00 (3.93e-01) -	3.87e+00 (4.84e-01) -	4.02e+00 (3.76e+00) -	4.34e+00 (3.76e+00) -
WCCI20-MaTSO8-T28	2.12e+02 (4.00e+01)	5.49e+02 (9.99e+01) -	3.44e+02 (5.63e+01) -	3.43e+02 (6.92e+01) -	3.19e+02 (4.63e+01) -	3.22e+02 (5.74e+01) -
WCCI20-MaTSO8-T29	3.76e-02 (1.42e-02)	3.50e-01 (6.57e-02) -	2.14e-01 (4.35e-02) -	3.64e-01 (5.27e-02) -	1.67e-01 (3.36e-02) -	1.60e-01 (3.13e-02) -
WCCI20-MaTSO8-T30	2.63e+01 (5.29e+00)	4.57e+01 (4.73e+00) -	4.01e+01 (4.11e+00) -	4.13e+01 (3.20e+00) -	4.08e+01 (3.28e+00) -	4.07e+01 (5.94e+00) -
WCCI20-MaTSO8-T31	5.12e+02 (4.19e+02)	2.81e+04 (8.14e+04) -	9.00e+03 (2.32e+04) -	1.61e+04 (4.24e+04) -	1.66e+04 (3.90e+04) -	7.82e+03 (8.62e+03) -
WCCI20-MaTSO8-T32	2.50e+00 (3.46e-01)	1.23e+01 (8.02e+00) -	3.33e+00 (4.94e-01) -	3.66e+00 (6.18e-01) -	8.00e+00 (7.41e+00) -	6.27e+00 (6.48e+00) -
WCCI20-MaTSO8-T33	2.23e+02 (5.38e+01)	5.66e+02 (1.13e+02) -	3.45e+02 (6.27e+01) -	3.49e+02 (5.88e+01) -	3.46e+02 (3.95e+01) -	3.21e+02 (6.00e+01) -
WCCI20-MaTSO8-T34	4.00e-02 (1.38e-02)	3.46e-01 (5.69e-02) -	2.28e-01 (4.65e-02) -	3.74e-01 (6.06e-02) -	1.63e-01 (3.92e-02) -	1.68e-01 (4.03e-02) -
WCCI20-MaTSO8-T35	2.74e+01 (4.34e+00)	4.71e+01 (4.07e+00) -	4.03e+01 (4.06e+00) -	4.05e+01 (3.83e+00) -	4.13e+01 (3.96e+00) -	4.04e+01 (3.62e+00) -
WCCI20-MaTSO8-T36	6.68e+02 (6.44e+02)	1.27e+04 (1.99e+04) -	7.56e+03 (9.65e+03) -	3.51e+04 (6.90e+04) -	1.62e+04 (3.16e+04) -	3.61e+03 (7.41e+03) -
WCCI20-MaTSO8-T37	2.27e+00 (3.20e-01)	1.44e+01 (7.76e+00) -	3.24e+00 (5.14e-01) -	5.57e+00 (5.03e+00) -	7.62e+00 (7.62e+00) -	6.91e+00 (7.17e+00) -
WCCI20-MaTSO8-T38	2.24e+02 (5.36e+01)	5.31e+02 (1.11e+02) -	3.21e+02 (4.97e+01) -	3.30e+02 (6.01e+01) -	3.16e+02 (5.72e+01) -	3.14e+02 (4.28e+01) -
WCCI20-MaTSO8-T39	3.71e-02 (1.40e-02)	3.59e-01 (6.65e-02) -	2.19e-01 (4.15e-02) -	3.65e-01 (7.58e-02) -	1.69e-01 (4.08e-02) -	1.71e-01 (3.24e-02) -
WCCI20-MaTSO8-T40	2.68e+01 (3.99e+00)	4.64e+01 (3.86e+00) -	4.10e+01 (4.52e+00) -	4.00e+01 (4.62e+00) -	4.10e+01 (3.17e+00) -	3.87e+01 (4.90e+00) -
WCCI20-MaTSO8-T41	9.69e+02 (7.97e+02)	1.37e+04 (3.72e+04) -	3.12e+04 (8.55e+04) -	2.76e+04 (5.48e+04) -	1.08e+04 (2.51e+04) -	2.46e+04 (8.18e+04) -
WCCI20-MaTSO8-T42	2.51e+00 (4.65e-01)	1.46e+01 (7.64e+00) -	3.41e+00 (3.65e-01) -	3.73e+00 (5.43e-01) -	6.03e+00 (6.26e+00) -	5.36e+00 (5.57e+00) -
WCCI20-MaTSO8-T43	2.42e+02 (5.68e+01)	5.67e+02 (9.59e+01) -	3.11e+02 (4.19e+01) -	3.23e+02 (5.77e+01) -	3.18e+02 (6.54e+01) -	3.50e+02 (6.89e+01) -
WCCI20-MaTSO8-T44	3.47e-02 (1.49e-02)	3.44e-01 (6.85e-02) -	2.44e-01 (4.44e-02) -	3.74e-01 (5.44e-02) -	1.62e-01 (4.52e-02) -	1.69e-01 (3.71e-02) -
WCCI20-MaTSO8-T45	2.64e+01 (3.83e+00)	4.30e+01 (4.28e+00) -	3.86e+01 (4.52e+00) -	3.92e+01 (4.02e+00) -	3.98e+01 (4.26e+00) -	4.06e+01 (3.89e+00) -
WCCI20-MaTSO8-T46	3.56e+02 (4.08e+02)	2.07e+04 (7.46e+04) -	2.63e+04 (4.41e+04) -	1.54e+04 (2.11e+04) -	1.12e+04 (2.62e+04) -	1.21e+04 (2.43e+04) -
WCCI20-MaTSO8-T47	2.40e+00 (3.67e-01)	1.71e+01 (6.12e+00) -	3.38e+00 (4.33e-01) -	4.13e+00 (8.22e-01) -	6.89e+00 (6.82e+00) -	6.45e+00 (6.55e+00) -
WCCI20-MaTSO8-T48	2.16e+02 (5.38e+01)	5.30e+02 (1.26e+02) -	3.36e+02 (6.49e+01) -	3.41e+02 (4.22e+01) -	3.24e+02 (4.32e+01) -	2.98e+02 (4.84e+01) -
WCCI20-MaTSO8-T49	3.51e-02 (8.43e-03)	3.29e-01 (4.84e-02) -	2.44e-01 (4.20e-02) -	3.55e-01 (6.14e-02) -	1.59e-01 (2.81e-02) -	1.61e-01 (2.94e-02) -
WCCI20-MaTSO8-T50	2.53e+01 (3.63e+00)	4.52e+01 (4.16e+00) -	3.98e+01 (4.03e+00) -	4.00e+01 (4.24e+00) -	4.02e+01 (4.91e+00) -	3.97e+01 (4.19e+00) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S38

COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO9 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO9 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO9-T1	5.62e+02 (6.37e+02)	1.07e+04 (2.14e+04) -	9.26e+03 (1.52e+04) -	1.85e+04 (3.92e+04) -	9.50e+03 (1.98e+04) -	2.99e+03 (3.81e+03) -
WCCI20-MaTSO9-T2	2.39e+00 (4.24e-01)	1.22e+01 (7.97e+00) -	3.35e+00 (5.05e-01) -	3.78e+00 (4.86e-01) -	5.66e+00 (5.55e+00) -	6.70e+00 (6.80e+00) -
WCCI20-MaTSO9-T3	2.26e+02 (5.70e+01)	5.34e+02 (1.17e+02) -	3.49e+02 (5.21e+01) -	3.41e+02 (6.39e+01) -	3.14e+02 (6.47e+01) -	3.40e+02 (7.99e+01) -
WCCI20-MaTSO9-T4	3.32e-02 (1.22e-02)	3.51e-01 (4.94e-02) -	2.35e-01 (5.36e-02) -	3.78e-01 (5.93e-02) -	1.59e-01 (2.49e-02) -	1.63e-01 (3.66e-02) -
WCCI20-MaTSO9-T5	2.87e+01 (3.87e+00)	4.46e+01 (5.38e+00) -	3.87e+01 (3.52e+00) -	3.99e+01 (4.82e+00) -	3.94e+01 (4.27e+00) -	4.08e+01 (4.79e+00) -
WCCI20-MaTSO9-T6	4.40e+03 (1.24e+03)	5.42e+03 (1.03e+03) -	5.03e+03 (1.19e+03) =	4.85e+03 (1.21e+03) =	5.50e+03 (1.49e+03) -	5.24e+03 (9.04e+02) -
WCCI20-MaTSO9-T7	8.42e+02 (9.57e+02)	5.18e+04 (6.52e+04) -	2.92e+04 (4.27e+04) -	7.41e+04 (1.17e+05) -	4.34e+04 (7.10e+04) -	2.26e+04 (5.84e+04) -
WCCI20-MaTSO9-T8	2.36e+00 (4.12e-01)	1.54e+01 (7.35e+00) -	3.42e+00 (4.61e-01) -	3.64e+00 (5.33e-01) -	6.89e+00 (7.18e+00) -	5.25e+00 (5.48e+00) -
WCCI20-MaTSO9-T9	2.25e+02 (3.50e+01)	5.81e+02 (9.62e+01) -	3.30e+02 (6.19e+01) -	3.49e+02 (4.90e+01) -	3.49e+02 (6.39e+01) -	3.27e+02 (5.00e+01) -
WCCI20-MaTSO9-T10	4.19e-02 (1.56e-02)	3.04e-01 (6.90e-02) -	2.34e-01 (4.07e-02) -	3.71e-01 (7.35e-02) -	1.69e-01 (3.78e-02) -	1.76e-01 (4.19e-02) -
WCCI20-MaTSO9-T11	2.74e+01 (4.01e+00)	4.56e+01 (5.40e+00) -	4.01e+01 (4.74e+00) -	4.06e+01 (3.86e+00) -	3.85e+01 (3.94e+00) -	4.06e+01 (4.49e+00) -
WCCI20-MaTSO9-T12	3.67e+03 (1.32e+03)	5.18e+03 (1.13e+03) -	4.69e+03 (1.13e+03) -	4.86e+03 (9.56e+02) -	4.82e+03 (1.29e+03) -	5.41e+03 (1.19e+03) -
WCCI20-MaTSO9-T13	6.51e+02 (4.84e+02)	3.18e+04 (5.26e+04) -	2.49e+04 (4.68e+04) -	3.85e+04 (7.03e+04) -	9.75e+03 (1.93e+04) -	1.70e+04 (3.19e+04) -
WCCI20-MaTSO9-T14	2.36e+00 (4.33e-01)	1.53e+01 (7.37e+00) -	3.39e+00 (6.25e-01) -	3.81e+00 (5.26e-01) -	4.20e+00 (4.02e+00) -	4.25e+00 (3.75e+00) -
WCCI20-MaTSO9-T15	2.18e+02 (4.35e+01)	5.64e+02 (1.10e+02) -	3.21e+02 (6.28e+01) -	3.34e+02 (6.09e+01) -	3.33e+02 (4.94e+01) -	3.19e+02 (7.55e+01) -
WCCI20-MaTSO9-T16	3.60e-02 (1.17e-02)	3.60e-01 (7.52e-02) -	2.39e-01 (4.96e-02) -	3.75e-01 (4.70e-02) -	1.76e-01 (3.66e-02) -	1.73e-01 (3.03e-02) -
WCCI20-MaTSO9-T17	2.80e+01 (3.43e+00)	4.68e+01 (3.41e+00) -	3.96e+01 (4.00e+00) -	4.07e+01 (4.32e+00) -	3.99e+01 (3.38e+00) -	4.00e+01 (4.40e+00) -
WCCI20-MaTSO9-T18	4.14e+03 (1.14e+03)	5.72e+03 (1.49e+03) -	5.51e+03 (1.07e+03) -	5.37e+03 (9.42e+02) -	5.67e+03 (1.26e+03) -	5.44e+03 (1.12e+03) -
WCCI20-MaTSO9-T19	4.41e+02 (5.22e+02)	3.05e+04 (4.72e+04) -	2.02e+04 (3.69e+04) -	4.75e+04 (1.11e+05) -	2.25e+04 (4.89e+04) -	1.88e+04 (3.04e+04) -
WCCI20-MaTSO9-T20	2.24e+00 (4.96e-01)	1.85e+01 (4.78e+00) -	3.22e+00 (4.64e-01) -	4.42e+00 (1.58e+00) -	6.26e+00 (6.38e+00) -	5.16e+00 (5.49e+00) -
WCCI20-MaTSO9-T21	2.30e+02 (5.78e+01)	5.06e+02 (8.77e+01) -	2.99e+02 (6.16e+01) -	3.40e+02 (5.15e+01) -	3.36e+02 (7.10e+01) -	2.97e+02 (7.60e+01) -
WCCI20-MaTSO9-T22	4.53e-02 (1.95e-02)	3.52e-01 (7.30e-02) -	2.37e-01 (3.64e-02) -	3.48e-01 (6.16e-02) -	1.77e-01 (4.21e-02) -	1.78e-01 (2.80e-02) -
WCCI20-MaTSO9-T23	2.89e+01 (3.95e+00)	4.74e+01 (6.02e+00) -	4.01e+01 (3.28e+00) -	3.93e+01 (4.30e+00) -	3.93e+01 (3.16e+00) -	4.18e+01 (2.39e+00) -
WCCI20-MaTSO9-T24	3.50e+03 (1.82e+03)	5.52e+03 (1.20e+03) -	5.02e+03 (1.05e+03) -	5.00e+03 (1.36e+03) -	5.12e+03 (1.23e+03) -	5.18e+03 (1.21e+03) -
WCCI20-MaTSO9-T25	1.41e+03 (1.25e+03)	1.13e+04 (1.96e+04) -	1.12e+04 (2.28e+04) -	1.44e+04 (4.30e+04) -	7.54e+03 (2.09e+04) =	1.87e+03 (1.47e+03) =
WCCI20-MaTSO9-T26	2.34e+00 (4.99e-01)	1.35e+01 (8.17e+00) -	3.40e+00 (5.67e-01) -	5.20e+00 (4.10e+00) -	6.90e+00 (7.13e+00) -	7.54e+00 (7.03e+00) -
WCCI20-MaTSO9-T27	2.25e+02 (4.35e+01)	5.21e+02 (7.56e+01) -	3.29e+02 (4.55e+01) -	3.50e+02 (5.40e+01) -	3.14e+02 (7.15e+01) -	3.27e+02 (7.33e+01) -
WCCI20-MaTSO9-T28	4.16e-02 (1.85e-02)	3.48e-01 (5.87e-02) -	2.34e-01 (4.41e-02) -	3.79e-01 (9.06e-02) -	1.61e-01 (3.24e-02) -	1.81e-01 (4.25e-02) -
WCCI20-MaTSO9-T29	2.67e+01 (3.25e+00)	4.46e+01 (4.85e+00) -	3.98e+01 (4.51e+00) -	3.90e+01 (4.89e+00) -	4.14e+01 (3.64e+00) -	3.93e+01 (4.50e+00) -
WCCI20-MaTSO9-T30	4.44e+03 (1.22e+03)	5.89e+03 (1.24e+03) -	5.60e+03 (1.04e+03) -	5.91e+03 (1.23e+03) -	5.34e+03 (1.11e+03) -	5.28e+03 (7.24e+02) -
WCCI20-MaTSO9-T31	1.27e+03 (9.98e+02)	1.71e+04 (2.82e+04) -	4.72e+03 (7.57e+03) -	1.60e+04 (3.01e+04) -	1.64e+04 (2.39e+04) -	7.50e+03 (1.40e+04) -
WCCI20-MaTSO9-T32	2.35e+00 (4.75e-01)	1.29e+01 (8.08e+00) -	3.39e+00 (5.44e-01) -	3.75e+00 (4.39e-01) -	6.61e+00 (6.59e+00) -	4.59e+00 (3.88e+00) -
WCCI20-MaTSO9-T33	2.49e+02 (5.81e+01)	5.50e+02 (1.27e+02) -	3.32e+02 (5.30e+01) -	3.47e+02 (5.85e+01) -	3.37e+02 (6.69e+01) -	3.41e+02 (6.79e+01) -
WCCI20-MaTSO9-T34	3.76e-02 (1.27e-02)	3.22e-01 (5.59e-02) -	2.40e-01 (4.12e-02) -	3.79e-01 (5.34e-02) -	1.73e-01 (4.28e-02) -	1.73e-01 (3.44e-02) -
WCCI20-MaTSO9-T35	2.95e+01 (4.23e+00)	4.64e+01 (3.34e+00) -	3.98e+01 (4.14e+00) -	4.11e+01 (3.15e+00) -	4.02e+01 (3.57e+00) -	4.06e+01 (4.12e+00) -
WCCI20-MaTSO9-T36	4.56e+03 (1.26e+03)	5.60e+03 (1.49e+03) -	5.52e+03 (1.37e+03) -	5.19e+03 (1.06e+03) =	5.44e+03 (9.04e+02) -	5.82e+03 (1.11e+03) -
WCCI20-MaTSO9-T37	3.29e+02 (1.35e+02)	1.92e+04 (2.85e+04) -	2.78e+04 (4.76e+04) -	4.62e+04 (7.40e+04) -	2.07e+04 (5.11e+04) -	3.00e+04 (6.91e+04) -
WCCI20-MaTSO9-T38	2.47e+00 (4.70e-01)	1.31e+01 (7.91e+00) -	3.24e+00 (5.01e-01) -	4.72e+00 (3.87e+00) -	5.11e+00 (5.50e+00) -	4.24e+00 (3.86e+00) -
WCCI20-MaTSO9-T39	2.27e+02 (3.75e+01)	5.64e+02 (9.52e+01) -	3.47e+02 (6.43e+01) -	3.50e+02 (6.28e+01) -	3.71e+02 (9.83e+01) -	3.46e+02 (7.95e+01) -
WCCI20-MaTSO9-T40	3.93e-02 (1.22e-02)	3.31e-01 (7.09e-02) -	2.30e-01 (6.18e-02) -	3.86e-01 (5.77e-02) -	1.76e-01 (3.98e-02) -	1.63e-01 (3.76e-02) -
WCCI20-MaTSO9-T41	2.75e+01 (4.27e+00)	4.55e+01 (3.38e+00) -	3.98e+01 (3.67e+00) -	3.85e+01 (3.51e+00) -	3.98e+01 (4.41e+00) -	3.86e+01 (2.56e+00) -
WCCI20-MaTSO9-T42	3.78e+03 (1.07e+03)	5.14e+03 (8.44e+02) -	4.68e+03 (9.94e+02) -	4.56e+03 (1.33e+03) -	4.61e+03 (1.07e+03) -	4.33e+03 (9.18e+02) =
WCCI20-MaTSO9-T43	5.51e+02 (4.42e+02)	2.21e+04 (4.19e+04) -	1.84e+04 (3.05e+04) -	3.45e+04 (5.56e+04) -	1.42e+04 (4.48e+04) -	1.63e+04 (3.32e+04) -
WCCI20-MaTSO9-T44	2.48e+00 (4.09e-01)	1.37e+01 (7.89e+00) -	3.46e+00 (5.29e-01) -	3.61e+00 (4.27e-01) -	4.51e+00 (3.98e+00) -	7.13e+00 (7.06e+00) -
WCCI20-MaTSO9-T45	2.42e+02 (5.21e+01)	5.50e+02 (9.83e+01) -	3.35e+02 (6.99e+01) -	3.54e+02 (6.25e+01) -	3.14e+02 (6.82e+01) -	3.04e+02 (4.98e+01) -
WCCI20-MaTSO9-T46	3.28e-02 (1.39e-02)	3.35e-01 (6.29e-02) -	2.21e-01 (5.41e-02) -	3.98e-01 (6.07e-02) -	1.62e-01 (4.20e-02) -	1.73e-01 (3.10e-02) -
WCCI20-MaTSO9-T47	2.76e+01 (3.78e+00)	4.32e+01 (4.02e+00) -	4.05e+01 (3.89e+00) -	4.04e+01 (4.64e+00) -	4.02e+01 (4.94e+00) -	4.01e+01 (3.83e+00) -
WCCI20-MaTSO9-T48	4.04e+03 (1.48e+03)	5.69e+03 (1.32e+03) -	5.15e+03 (1.19e+03) -	5.19e+03 (1.03e+03) -	5.47e+03 (1.30e+03) -	5.43e+03 (9.81e+02) -
WCCI20-MaTSO9-T49	7.33e+02 (5.85e+02)	5.28e+04 (1.01e+05) -	3.37e+04 (5.99e+04) -	5.02e+04 (1.08e+05) -	3.37e+04 (8.68e+04) -	4.13e+04 (6.96e+04) -
WCCI20-MaTSO9-T50	2.35e+00 (3.98e-01)	1.71e+01 (6.16e+00) -	3.40e+00 (4.15e-01) -	3.71e+00 (6.73e-01) -	5.96e+00 (6.24e+00) -	7.44e+00 (7.15e+00) -
+/=	Base	0/50/0	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S39

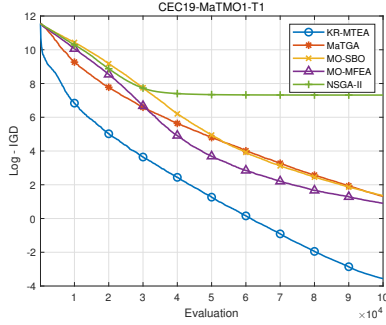
COMPARISON OF KR-MTGA, AEMTO, MATDE, SBO, EMEA, AND GA IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN WCCI20-MATSO10 IN TEST SUITE 4. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-="), OVER ALL 50 COMPONENT TASKS IN WCCI20-MATSO10 IN TEST SUITE 4.

Problem	KR-MTGA	AEMTO	MaTGA	SBO	EMEA	GA
WCCI20-MaTSO10-T1	2.49e+00 (3.78e-01)	1.52e+01 (7.58e+00)	3.44e+00 (3.52e-01)	3.23e+00 (4.43e-01)	6.22e+00 (5.77e+00)	4.75e+00 (4.49e+00)
WCCI20-MaTSO10-T2	2.37e+02 (3.57e+01)	5.36e+02 (8.29e+01)	3.40e+02 (7.13e+01)	3.30e+02 (6.55e+01)	3.26e+02 (5.70e+01)	3.29e+02 (5.95e+01)
WCCI20-MaTSO10-T3	4.15e-02 (1.30e-02)	3.34e-01 (5.94e-02)	2.43e-01 (4.86e-02)	3.65e-01 (5.37e-02)	1.83e-01 (4.02e-02)	1.83e-01 (4.41e-02)
WCCI20-MaTSO10-T4	2.93e+01 (3.68e+00)	4.63e+01 (5.57e+00)	3.79e+01 (3.85e+00)	4.03e+01 (4.44e+00)	3.94e+01 (3.71e+00)	4.07e+01 (4.35e+00)
WCCI20-MaTSO10-T5	4.41e+03 (1.09e+03)	5.31e+03 (1.03e+03)	5.40e+03 (1.01e+03)	5.56e+03 (1.13e+03)	5.23e+03 (8.78e+02)	5.29e+03 (1.19e+03)
WCCI20-MaTSO10-T6	2.32e+00 (5.03e-01)	1.52e+01 (7.52e+00)	3.29e+00 (4.11e-01)	3.70e+00 (5.96e-01)	5.47e+00 (5.24e+00)	5.46e+00 (5.23e+00)
WCCI20-MaTSO10-T7	2.10e+02 (4.47e+01)	5.77e+02 (8.64e+01)	3.63e+02 (6.72e+01)	3.22e+02 (5.52e+01)	3.41e+02 (7.05e+01)	3.27e+02 (8.15e+01)
WCCI20-MaTSO10-T8	4.48e-02 (1.31e-02)	3.34e-01 (5.51e-02)	2.31e-01 (4.10e-02)	3.65e-01 (7.89e-02)	1.66e-01 (2.54e-02)	1.80e-01 (4.03e-02)
WCCI20-MaTSO10-T9	2.74e+01 (3.10e+00)	4.56e+01 (4.41e+00)	4.04e+01 (4.37e+00)	3.95e+01 (3.25e+00)	3.97e+01 (3.37e+00)	3.97e+01 (4.99e+00)
WCCI20-MaTSO10-T10	4.82e+03 (9.54e+02)	6.26e+03 (1.04e+03)	5.49e+03 (1.21e+03)	6.00e+03 (8.88e+02)	5.70e+03 (1.10e+03)	5.63e+03 (8.58e+02)
WCCI20-MaTSO10-T11	2.56e+00 (4.94e-01)	1.44e+01 (7.78e+00)	3.46e+00 (4.69e-01)	6.63e+00 (6.00e+00)	6.19e+00 (6.48e+00)	6.99e+00 (7.00e+00)
WCCI20-MaTSO10-T12	2.25e+02 (4.48e+01)	5.08e+02 (8.55e+01)	3.27e+02 (5.03e+01)	3.04e+02 (4.34e+01)	2.96e+02 (4.44e+01)	3.34e+02 (5.72e+01)
WCCI20-MaTSO10-T13	4.64e-02 (1.66e-02)	3.30e-01 (5.61e-02)	2.21e-01 (5.01e-02)	3.44e-01 (6.52e-02)	1.57e-01 (3.14e-02)	1.68e-01 (4.62e-02)
WCCI20-MaTSO10-T14	2.74e+01 (3.25e+00)	4.76e+01 (5.35e+00)	3.70e+01 (4.16e+00)	4.17e+01 (4.56e+00)	3.95e+01 (3.56e+00)	3.79e+01 (4.95e+00)
WCCI20-MaTSO10-T15	4.34e+03 (1.18e+03)	5.26e+03 (9.78e+02)	5.12e+03 (1.16e+03)	4.94e+03 (1.15e+03)	5.09e+03 (1.06e+03)	5.04e+03 (1.10e+03)
WCCI20-MaTSO10-T16	2.35e+00 (4.17e-01)	1.53e+01 (7.40e+00)	3.58e+00 (5.68e-01)	6.25e+00 (4.69e+00)	5.88e+00 (6.15e+00)	1.03e+01 (8.34e+00)
WCCI20-MaTSO10-T17	2.35e+02 (5.29e+01)	5.71e+02 (1.18e+02)	3.07e+02 (5.78e+01)	3.49e+02 (6.84e+01)	3.11e+02 (3.88e+01)	3.24e+02 (5.62e+01)
WCCI20-MaTSO10-T18	4.55e-02 (1.10e-02)	3.36e-01 (6.17e-02)	2.46e-01 (5.94e-02)	3.57e-01 (5.78e-02)	1.80e-01 (3.40e-02)	1.60e-01 (3.47e-02)
WCCI20-MaTSO10-T19	2.80e+01 (3.76e+00)	4.46e+01 (4.71e+00)	3.95e+01 (3.14e+00)	4.13e+01 (3.67e+00)	4.21e+01 (4.56e+00)	4.00e+01 (3.37e+00)
WCCI20-MaTSO10-T20	4.96e+03 (1.07e+03)	5.71e+03 (9.98e+02)	5.34e+03 (1.20e+03)	5.23e+03 (8.40e+02)	5.17e+03 (6.84e+02)	5.48e+03 (1.05e+03)
WCCI20-MaTSO10-T21	2.37e+00 (5.39e-01)	1.22e+01 (7.97e+00)	3.33e+00 (4.59e-01)	3.60e+00 (3.34e-01)	4.52e+00 (4.10e+00)	7.33e+00 (6.57e+00)
WCCI20-MaTSO10-T22	2.32e+02 (5.78e+01)	5.38e+02 (9.73e+01)	3.47e+02 (5.90e+01)	3.56e+02 (8.66e+01)	3.33e+02 (5.37e+01)	3.26e+02 (5.44e+01)
WCCI20-MaTSO10-T23	4.53e-02 (1.46e-02)	3.41e-01 (7.72e-02)	2.25e-01 (4.98e-02)	3.65e-01 (6.06e-02)	1.68e-01 (3.81e-02)	1.69e-01 (3.35e-02)
WCCI20-MaTSO10-T24	2.68e+01 (2.93e+00)	4.35e+01 (6.32e+00)	4.19e+01 (3.24e+00)	3.99e+01 (3.22e+00)	3.79e+01 (3.72e+00)	3.89e+01 (4.42e+00)
WCCI20-MaTSO10-T25	3.42e+03 (1.44e+03)	5.31e+03 (6.34e+02)	4.36e+03 (1.12e+03)	4.23e+03 (1.09e+03)	4.72e+03 (1.18e+03)	4.61e+03 (9.94e+02)
WCCI20-MaTSO10-T26	2.67e+00 (3.82e-01)	1.45e+01 (7.68e+00)	3.40e+00 (5.04e-01)	4.94e+00 (3.73e+00)	7.34e+00 (7.17e+00)	1.24e+01 (8.73e+00)
WCCI20-MaTSO10-T27	2.22e+02 (5.85e+01)	5.28e+02 (8.66e+01)	3.42e+02 (7.01e+01)	3.62e+02 (5.50e+01)	3.28e+02 (7.48e+01)	3.18e+02 (6.29e+01)
WCCI20-MaTSO10-T28	3.29e-02 (1.46e-02)	3.38e-01 (7.98e-02)	2.33e-01 (6.34e-02)	3.71e-01 (5.73e-02)	1.72e-01 (3.32e-02)	1.58e-01 (3.55e-02)
WCCI20-MaTSO10-T29	2.76e+01 (3.46e+00)	4.62e+01 (5.08e+00)	3.90e+01 (4.59e+00)	4.13e+01 (4.67e+00)	4.19e+01 (3.57e+00)	4.04e+01 (3.53e+00)
WCCI20-MaTSO10-T30	4.70e+03 (1.20e+03)	5.65e+03 (7.26e+02)	5.53e+03 (9.29e+02)	5.25e+03 (1.16e+03)	5.20e+03 (1.03e+03)	4.98e+03 (1.20e+03)
WCCI20-MaTSO10-T31	2.57e+00 (4.80e-01)	1.37e+01 (7.93e+00)	3.60e+00 (5.96e-01)	3.88e+00 (5.99e-01)	6.27e+00 (6.01e+00)	5.44e+00 (5.50e+00)
WCCI20-MaTSO10-T32	2.43e+02 (4.95e+01)	5.51e+02 (1.10e+02)	3.23e+02 (4.15e+01)	3.39e+02 (5.15e+01)	3.45e+02 (6.70e+01)	3.26e+02 (4.54e+01)
WCCI20-MaTSO10-T33	5.00e-02 (1.44e-02)	3.58e-01 (6.54e-02)	2.40e-01 (6.13e-02)	3.86e-01 (7.22e-02)	1.65e-01 (3.77e-02)	1.66e-01 (3.93e-02)
WCCI20-MaTSO10-T34	3.03e+01 (3.56e+00)	4.71e+01 (4.13e+00)	4.06e+01 (4.87e+00)	4.09e+01 (5.66e+00)	3.98e+01 (3.87e+00)	3.84e+01 (6.10e+00)
WCCI20-MaTSO10-T35	4.52e+03 (1.68e+03)	5.34e+03 (9.58e+02)	4.94e+03 (9.33e+02)	5.15e+03 (6.82e+02)	4.83e+03 (6.50e+02)	5.19e+03 (1.17e+03)
WCCI20-MaTSO10-T36	2.45e+00 (5.12e-01)	1.69e+01 (6.49e+00)	3.34e+00 (5.81e-01)	4.41e+00 (2.23e+00)	5.81e+00 (5.62e+00)	4.40e+00 (3.98e+00)
WCCI20-MaTSO10-T37	2.30e+02 (4.77e+01)	5.50e+02 (1.09e+02)	3.28e+02 (5.30e+01)	3.30e+02 (4.62e+01)	3.40e+02 (7.13e+01)	3.42e+02 (5.78e+01)
WCCI20-MaTSO10-T38	4.41e-02 (1.35e-02)	3.39e-01 (6.22e-02)	2.05e-01 (4.69e-02)	3.68e-01 (6.60e-02)	1.69e-01 (3.57e-02)	1.82e-01 (4.27e-02)
WCCI20-MaTSO10-T39	2.65e+01 (4.51e+00)	4.50e+01 (6.76e+00)	4.02e+01 (3.19e+00)	3.89e+01 (4.22e+00)	3.99e+01 (4.32e+00)	4.21e+01 (4.08e+00)
WCCI20-MaTSO10-T40	4.91e+03 (8.87e+02)	6.03e+03 (1.41e+03)	5.25e+03 (9.89e+02)	5.51e+03 (1.17e+03)	5.26e+03 (1.09e+03)	5.27e+03 (9.10e+02)
WCCI20-MaTSO10-T41	2.51e+00 (4.61e-01)	1.68e+01 (6.48e+00)	3.11e+00 (3.96e-01)	5.55e+00 (5.10e+00)	6.25e+00 (6.45e+00)	6.88e+00 (6.33e+00)
WCCI20-MaTSO10-T42	2.12e+02 (4.10e+01)	5.40e+02 (1.05e+02)	3.33e+02 (5.91e+01)	3.54e+02 (7.00e+01)	3.35e+02 (7.57e+01)	3.24e+02 (6.08e+01)
WCCI20-MaTSO10-T43	4.08e-02 (1.56e-02)	3.39e-01 (6.79e-02)	2.25e-01 (3.61e-02)	3.37e-01 (6.83e-02)	1.66e-01 (3.14e-02)	1.71e-01 (4.25e-02)
WCCI20-MaTSO10-T44	2.96e+01 (3.25e+00)	4.81e+01 (4.43e+00)	3.90e+01 (4.04e+00)	3.97e+01 (3.66e+00)	4.05e+01 (3.66e+00)	4.16e+01 (4.12e+00)
WCCI20-MaTSO10-T45	3.70e+03 (1.22e+03)	5.84e+03 (1.11e+03)	5.56e+03 (9.31e+02)	5.58e+03 (9.88e+02)	5.65e+03 (1.11e+03)	5.36e+03 (1.12e+03)
WCCI20-MaTSO10-T46	2.57e+00 (5.17e-01)	1.39e+01 (7.64e+00)	3.27e+00 (4.82e-01)	3.67e+00 (3.33e-01)	8.88e+00 (7.94e+00)	6.03e+00 (5.51e+00)
WCCI20-MaTSO10-T47	2.18e+02 (4.71e+01)	5.50e+02 (9.62e+01)	3.31e+02 (8.86e+01)	3.47e+02 (5.58e+01)	3.31e+02 (6.58e+01)	3.17e+02 (5.55e+01)
WCCI20-MaTSO10-T48	3.57e-02 (1.12e-02)	3.58e-01 (5.08e-02)	2.08e-01 (4.50e-02)	3.44e-01 (4.89e-02)	1.81e-01 (4.87e-02)	1.66e-01 (3.67e-02)
WCCI20-MaTSO10-T49	3.02e+01 (4.25e+00)	4.40e+01 (5.29e+00)	3.94e+01 (3.69e+00)	3.79e+01 (4.85e+00)	3.89e+01 (4.85e+00)	4.09e+01 (4.73e+00)
WCCI20-MaTSO10-T50	3.03e+03 (1.50e+03)	4.68e+03 (1.13e+03)	4.80e+03 (8.52e+02)	4.80e+03 (1.16e+03)	5.26e+03 (8.83e+02)	4.68e+03 (8.20e+02)
+/-/=	Base	0/49/1	0/45/5	0/42/8	0/44/6	0/42/8

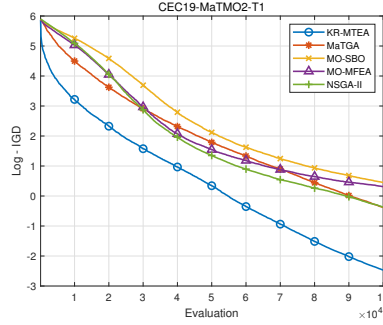
TABLE S40

COMPARISON OF KR-MTGA, MaTGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED FEVS OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN EACH MTO PROBLEM IN CEC17-MTMO. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="), OVER ALL 18 COMPONENT TASKS FROM ALL NINE MTO PROBLEMS IN CEC17-MTMO.

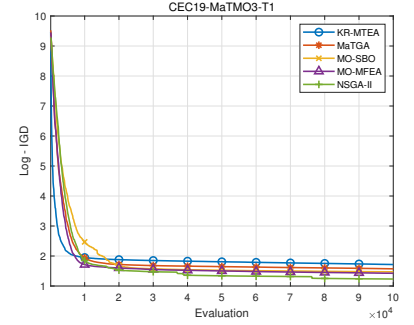
problem	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC17-MTMO1-CI-HS-T1	5.1426e-03 (1.80e-04)	5.3695e-03 (3.52e-04) -	1.1803e+00 (2.41e-01) -	2.6443e-01 (6.29e-02) -	1.0258e+00 (1.78e-01) -
CEC17-MTMO1-CI-HS-T2	7.5766e-03 (6.47e-04)	2.7477e-02 (4.58e-03) -	1.2763e+00 (1.52e-01) -	5.1418e-01 (6.69e-02) -	6.7927e-01 (1.44e-01) -
CEC17-MTMO2-CI-MS-T1	4.6134e-03 (1.58e-04)	4.7108e-03 (3.54e-04) =	1.1801e-02 (7.01e-03) -	8.4098e-03 (3.22e-03) -	1.4783e-02 (8.65e-03) -
CEC17-MTMO2-CI-MS-T2	4.9553e-03 (2.29e-04)	6.3634e-03 (4.12e-03) -	2.6532e-02 (2.73e-02) -	1.3126e-02 (4.85e-03) -	7.9428e-01 (6.78e-01) -
CEC17-MTMO3-CI-LS-T1	5.3634e-03 (2.15e-04)	3.0319e-02 (1.03e-02) -	7.8570e-01 (4.08e-01) -	6.0865e-01 (5.77e-01) -	3.3683e+01 (4.84e+00) -
CEC17-MTMO3-CI-LS-T2	6.2394e-03 (3.56e-04)	5.3662e-03 (3.35e-04) +	1.2674e-02 (2.83e-03) -	1.2043e-02 (5.83e-03) -	6.4500e-02 (1.27e-01) -
CEC17-MTMO4-PI-HS-T1	5.0758e-03 (3.02e-04)	4.0610e-01 (1.33e-01) -	2.7473e+00 (5.42e-01) -	5.8156e-01 (1.74e-01) -	5.4064e-01 (1.31e-01) -
CEC17-MTMO4-PI-HS-T2	1.1817e+01 (1.79e+01)	5.7356e+01 (1.20e+01) -	8.2160e+01 (1.69e+01) -	3.6327e+01 (7.70e+00) -	4.2828e+01 (1.46e+01) -
CEC17-MTMO5-PI-MS-T1	2.0847e-02 (1.32e-02)	9.8299e-02 (5.13e-02) -	1.5192e+00 (2.75e-01) -	1.0967e+00 (2.32e-01) -	9.2740e-01 (1.77e-01) -
CEC17-MTMO5-PI-MS-T2	2.7084e+01 (2.77e+01)	3.3521e+02 (1.28e+02) -	1.2294e+03 (2.24e+02) -	1.1870e+03 (1.88e+02) -	1.5716e+03 (3.26e+02) -
CEC17-MTMO6-PI-LS-T1	5.6586e-03 (2.33e-03)	7.9360e-02 (1.45e-02) -	9.8707e-02 (2.22e-02) -	7.9939e-02 (1.12e-02) -	4.8947e-02 (1.32e-02) -
CEC17-MTMO6-PI-LS-T2	6.0058e+00 (9.40e+00)	6.7245e+00 (5.18e+00) -	4.3857e+00 (5.00e-01) +	3.4299e+00 (2.99e-01) +	2.0766e+01 (1.00e-01) -
CEC17-MTMO7-NI-HS-T1	4.6466e+01 (1.99e-01)	4.8407e+01 (5.01e-01) -	2.1412e+02 (3.31e+01) -	9.0400e+01 (1.01e+01) -	5.1183e+02 (5.57e+02) -
CEC17-MTMO7-NI-HS-T2	5.2740e-03 (2.67e-04)	1.0892e-02 (2.45e-03) -	1.5807e+00 (3.07e-01) -	3.0191e-01 (7.93e-02) -	3.3998e-01 (6.82e-02) -
CEC17-MTMO8-NI-MS-T1	1.6237e+01 (2.39e-01)	2.4752e+01 (2.01e+01) =	1.8004e+01 (1.34e+01) =	2.1148e+01 (1.81e+01) =	1.6847e+01 (1.62e+01) -
CEC17-MTMO8-NI-MS-T2	4.9586e-03 (2.60e-04)	3.9049e-01 (8.51e-01) -	3.2212e-01 (4.22e-01) -	4.5313e-01 (6.27e-01) -	1.8874e+00 (3.02e+00) -
CEC17-MTMO9-NI-LS-T1	7.7169e-01 (5.13e-01)	1.0607e+00 (2.01e-02) =	1.1121e+00 (3.05e-02) =	4.5573e-01 (1.80e-01) =	8.6812e-01 (2.30e-01) =
CEC17-MTMO9-NI-LS-T2	1.7257e+01 (7.44e+00)	2.0333e+01 (5.01e-02) -	2.0347e+01 (2.89e-02) -	2.0340e+01 (8.75e-03) -	2.0361e+01 (5.17e-02) -
+/-/=	Base	1/14/3	1/15/2	1/15/2	0/17/1



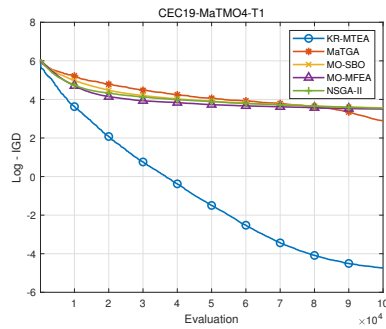
(a)



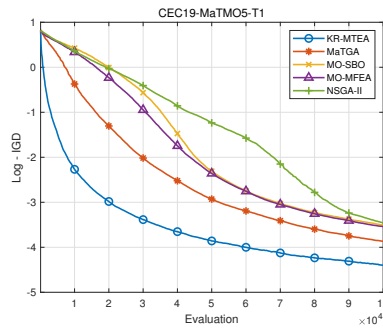
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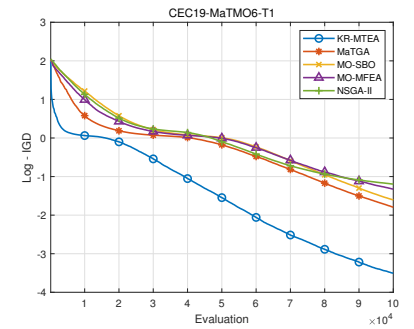
(c)



(d)



(e)



(f)

Fig. S7. The average IGD numerical curves of five compared methods, i.e., KR-MTEA, MaTGA, MO-SBO, MO-MFEA, and single-tasking NSGA-II on CEC19-MaTMO.

TABLE S41

COMPARISON OF KR-MTGA, MATGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO1 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA(CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO1 IN TEST SUITE 3.

Problem	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO1-T1	2.8384e-02 (8.21e-03)	3.6993e+00 (1.07e+00) -	3.8847e+00 (8.27e-01) -	2.4777e+00 (3.45e-01) -	1.5024e+03 (4.90e+03) -
CEC19-MaTMO1-T2	2.8595e-02 (9.77e-03)	4.1414e+00 (9.49e-01) -	9.3700e+00 (1.94e+00) -	2.3579e+00 (5.80e-01) -	5.0168e+02 (2.24e+03) -
CEC19-MaTMO1-T3	2.5011e-02 (7.01e-03)	4.0956e+00 (1.12e+00) -	1.0262e+01 (4.42e+00) -	2.2680e+00 (5.55e-01) -	1.1012e+00 (2.36e-01) -
CEC19-MaTMO1-T4	2.4154e-02 (7.80e-03)	3.9339e+00 (7.17e-01) -	8.3315e+00 (1.46e+00) -	2.5120e+00 (5.43e-01) -	1.0882e+00 (2.34e-01) -
CEC19-MaTMO1-T5	5.0086e+02 (2.24e+03)	3.9728e+00 (1.37e+00) +	9.4089e+00 (2.16e+00) +	2.1858e+00 (5.73e-01) +	1.0023e+03 (3.08e+03) -
CEC19-MaTMO1-T6	2.6766e-02 (5.41e-03)	3.9392e+00 (9.71e-01) -	8.5518e+00 (2.30e+00) -	2.2046e+00 (4.23e-01) -	1.0643e+00 (2.31e-01) -
CEC19-MaTMO1-T7	2.3461e-02 (6.39e-03)	3.8905e+00 (1.11e+00) -	1.0321e+01 (2.82e+00) -	2.3552e+00 (7.26e-01) -	1.0023e+03 (3.08e+03) -
CEC19-MaTMO1-T8	2.6192e-02 (6.22e-03)	4.2322e+00 (9.08e-01) -	9.4860e+00 (2.10e+00) -	2.3553e+00 (8.40e-01) -	1.5036e+03 (4.90e+03) -
CEC19-MaTMO1-T9	2.2821e-02 (5.79e-03)	3.8496e+00 (1.08e+00) -	9.0430e+00 (1.72e+00) -	2.3385e+00 (5.45e-01) -	1.2030e+00 (4.75e-01) -
CEC19-MaTMO1-T10	2.5847e-02 (8.24e-03)	3.7699e+00 (1.21e+00) -	9.3911e+00 (1.93e+00) -	2.4726e+00 (6.92e-01) -	2.0035e+03 (4.11e+03) -
CEC19-MaTMO1-T11	2.3636e-02 (7.33e-03)	3.9634e+00 (1.13e+00) -	9.3254e+00 (1.39e+00) -	2.2940e+00 (5.17e-01) -	5.0167e+02 (2.24e+03) -
CEC19-MaTMO1-T12	2.6387e-02 (7.62e-03)	4.1056e+00 (1.17e+00) -	9.9442e+00 (1.49e+00) -	2.3171e+00 (6.26e-01) -	5.0177e+02 (2.24e+03) -
CEC19-MaTMO1-T13	2.7637e-02 (1.02e-02)	4.0387e+00 (1.07e+00) -	9.0318e+00 (1.74e+00) -	2.4059e+00 (4.39e-01) -	5.0196e+02 (2.24e+03) -
CEC19-MaTMO1-T14	2.4281e-02 (6.95e-03)	3.6924e+00 (9.13e-01) -	9.6687e+00 (2.00e+00) -	2.3231e+00 (5.99e-01) -	5.0155e+02 (2.24e+03) -
CEC19-MaTMO1-T15	2.3675e-02 (4.59e-03)	3.8934e+00 (1.16e+00) -	1.0301e+01 (2.44e+00) -	2.2910e+00 (6.18e-01) -	5.0182e+02 (2.24e+03) -
CEC19-MaTMO1-T16	2.3309e-02 (8.26e-03)	4.0928e+00 (1.07e+00) -	9.9167e+00 (1.84e+00) -	2.2463e+00 (4.46e-01) -	1.0032e+03 (3.08e+03) -
CEC19-MaTMO1-T17	2.7257e-02 (7.44e-03)	3.8467e+00 (1.10e+00) -	1.0066e+01 (1.99e+00) -	2.5811e+00 (5.09e-01) -	1.7730e+00 (2.59e+00) -
CEC19-MaTMO1-T18	2.8805e-02 (7.02e-03)	4.0553e+00 (1.41e+00) -	1.0616e+01 (1.77e+00) -	2.3520e+00 (3.74e-01) -	2.0154e+00 (3.30e+00) -
CEC19-MaTMO1-T19	2.7499e-02 (7.28e-03)	4.2429e+00 (1.15e+00) -	1.0450e+01 (2.87e+00) -	2.3877e+00 (5.70e-01) -	5.0181e+02 (2.24e+03) -
CEC19-MaTMO1-T20	2.7028e-02 (6.76e-03)	3.8293e+00 (1.05e+00) -	9.3419e+00 (1.48e+00) -	2.3092e+00 (5.50e-01) -	2.0032e+03 (4.11e+03) -
CEC19-MaTMO1-T21	2.3246e-02 (6.16e-03)	3.8139e+00 (1.13e+00) -	9.3225e+00 (1.42e+00) -	2.1800e+00 (5.00e-01) -	1.0019e+03 (3.08e+03) -
CEC19-MaTMO1-T22	2.4581e-02 (6.15e-03)	4.1068e+00 (9.59e-01) -	9.9492e+00 (2.11e+00) -	2.0745e+00 (4.42e-01) -	1.0021e+03 (3.08e+03) -
CEC19-MaTMO1-T23	2.9477e-02 (9.31e-03)	4.3167e+00 (1.60e+00) -	9.3349e+00 (2.59e+00) -	2.4983e+00 (7.26e-01) -	1.5025e+03 (3.67e+03) -
CEC19-MaTMO1-T24	2.6979e-02 (8.85e-03)	4.4233e+00 (1.27e+00) -	8.8597e+00 (1.61e+00) -	2.3704e+00 (7.24e-01) -	1.5024e+03 (3.67e+03) -
CEC19-MaTMO1-T25	5.0032e+02 (2.24e+03)	4.0588e+00 (1.31e+00) +	9.1025e+00 (1.56e+00) +	2.3444e+00 (5.37e-01) +	2.0034e+03 (4.11e+03) -
CEC19-MaTMO1-T26	2.3124e-02 (4.40e-03)	4.1302e+00 (1.24e+00) -	9.1962e+00 (2.05e+00) -	2.4579e+00 (5.94e-01) -	1.0021e+03 (3.08e+03) -
CEC19-MaTMO1-T27	2.4971e-02 (7.69e-03)	4.2417e+00 (1.66e+00) -	9.8689e+00 (1.74e+00) -	2.5293e+00 (6.70e-01) -	1.5027e+03 (3.67e+03) -
CEC19-MaTMO1-T28	2.6022e-02 (7.58e-03)	3.7364e+00 (8.22e-01) -	9.6056e+00 (2.35e+00) -	2.5206e+00 (5.89e-01) -	5.0166e+02 (2.24e+03) -
CEC19-MaTMO1-T29	2.8403e-02 (1.29e-02)	3.7732e+00 (1.02e+00) -	8.5553e+00 (1.81e+00) -	2.4570e+00 (5.35e-01) -	1.5026e+03 (3.67e+03) -
CEC19-MaTMO1-T30	3.1840e-02 (8.02e-03)	3.3729e+00 (1.02e+00) -	1.0116e+01 (2.59e+00) -	2.3268e+00 (5.58e-01) -	5.0243e+02 (2.24e+03) -
CEC19-MaTMO1-T31	2.3160e-02 (6.14e-03)	3.7262e+00 (1.05e+00) -	9.7563e+00 (2.10e+00) -	2.3535e+00 (4.29e-01) -	5.0164e+02 (2.24e+03) -
CEC19-MaTMO1-T32	2.9423e-02 (6.88e-03)	3.9586e+00 (1.69e+00) -	9.6575e+00 (2.34e+00) -	2.3074e+00 (5.30e-01) -	1.0022e+03 (3.08e+03) -
CEC19-MaTMO1-T33	2.8766e-02 (7.51e-03)	3.9205e+00 (1.40e+00) -	1.0544e+01 (2.04e+00) -	2.2496e+00 (4.34e-01) -	5.0271e+02 (2.24e+03) -
CEC19-MaTMO1-T34	2.5444e-02 (6.67e-03)	3.9266e+00 (9.96e-01) -	1.0035e+01 (1.70e+00) -	2.4734e+00 (5.66e-01) -	1.5025e+03 (3.67e+03) -
CEC19-MaTMO1-T35	3.0876e-02 (1.06e-02)	3.9210e+00 (1.39e+00) -	9.8259e+00 (2.31e+00) -	2.4395e+00 (5.00e-01) -	1.0024e+03 (3.08e+03) -
CEC19-MaTMO1-T36	2.5092e-02 (6.34e-03)	3.8369e+00 (9.94e-01) -	9.9391e+00 (1.34e+00) -	2.5659e+00 (4.09e-01) -	1.0039e+03 (3.08e+03) -
CEC19-MaTMO1-T37	2.7211e-02 (7.29e-03)	3.7271e+00 (1.15e+00) -	9.0784e+00 (1.87e+00) -	2.4875e+00 (5.47e-01) -	1.0021e+03 (3.08e+03) -
CEC19-MaTMO1-T38	2.6794e-02 (9.35e-03)	3.9071e+00 (1.21e+00) -	9.0372e+00 (2.31e+00) -	2.2184e+00 (4.19e-01) -	5.0143e+02 (2.24e+03) -
CEC19-MaTMO1-T39	2.6421e-02 (6.02e-03)	3.9244e+00 (1.33e+00) -	9.5736e+00 (1.87e+00) -	2.3334e+00 (4.92e-01) -	1.0026e+03 (3.08e+03) -
CEC19-MaTMO1-T40	2.6790e-02 (8.65e-03)	4.0120e+00 (1.01e+00) -	9.3021e+00 (1.36e+00) -	2.4499e+00 (4.01e-01) -	2.0033e+03 (4.11e+03) -
CEC19-MaTMO1-T41	2.5137e-02 (8.18e-03)	3.8673e+00 (7.29e-01) -	9.8512e+00 (2.33e+00) -	2.3328e+00 (5.19e-01) -	5.0180e+02 (2.24e+03) -
CEC19-MaTMO1-T42	2.9990e-02 (7.58e-03)	4.0350e+00 (1.44e+00) -	9.9565e+00 (2.68e+00) -	2.2000e+00 (5.28e-01) -	1.0020e+03 (3.08e+03) -
CEC19-MaTMO1-T43	2.7105e-02 (6.83e-03)	3.7087e+00 (7.91e-01) -	9.4341e+00 (1.60e+00) -	2.4691e+00 (4.98e-01) -	5.0325e+02 (2.24e+03) -
CEC19-MaTMO1-T44	2.7073e-02 (7.92e-03)	3.7215e+00 (8.95e-01) -	9.8694e+00 (2.27e+00) -	2.3177e+00 (6.45e-01) -	1.5032e+03 (3.67e+03) -
CEC19-MaTMO1-T45	2.5424e-02 (5.16e-03)	3.9663e+00 (7.54e-01) -	1.0198e+01 (1.29e+00) -	2.5176e+00 (5.89e-01) -	1.0023e+03 (3.08e+03) -
CEC19-MaTMO1-T46	2.8368e-02 (6.46e-03)	4.0343e+00 (1.15e+00) -	1.0374e+01 (1.97e+00) -	2.2547e+00 (3.93e-01) -	1.2031e+00 (2.81e-01) -
CEC19-MaTMO1-T47	2.5280e-02 (5.34e-03)	4.1711e+00 (1.06e+00) -	9.5208e+00 (2.33e+00) -	2.3783e+00 (5.64e-01) -	2.8352e+00 (7.58e+00) -
CEC19-MaTMO1-T48	2.7180e-02 (9.04e-03)	3.8343e+00 (8.89e-01) -	8.9385e+00 (1.69e+00) -	2.2782e+00 (4.63e-01) -	5.0175e+02 (2.24e+03) -
CEC19-MaTMO1-T49	2.7130e-02 (8.38e-03)	4.3986e+00 (1.05e+00) -	9.1124e+00 (1.68e+00) -	2.5456e+00 (4.99e-01) -	1.0027e+03 (3.08e+03) -
CEC19-MaTMO1-T50	2.6580e-02 (6.64e-03)	4.1544e+00 (1.02e+00) -	1.0602e+01 (1.91e+00) -	2.3537e+00 (4.67e-01) -	1.5095e+03 (3.66e+03) -
+/="/	Base	2/48/0	2/48/0	2/48/0	0/50/0

TABLE S42

COMPARISON OF KR-MTGA, MATGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO2 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/="/), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO2 IN TEST SUITE 3.

Problem	KR-MTEA	MATGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO2-T1	8.4680e-02 (1.86e-02)	6.8392e-01 (9.91e-02) -	1.5726e+00 (2.15e-01) -	1.3662e+00 (2.85e-01) -	6.9213e-01 (1.31e-01) -
CEC19-MaTMO2-T2	7.0140e-02 (1.69e-02)	6.5983e-01 (1.00e-01) -	2.3949e+00 (2.77e-01) -	1.3337e+00 (2.56e-01) -	7.1773e-01 (1.55e-01) -
CEC19-MaTMO2-T3	8.0716e-02 (1.34e-02)	6.4168e-01 (1.05e-01) -	2.4136e+00 (2.71e-01) -	1.2724e+00 (2.44e-01) -	6.9457e-01 (1.93e-01) -
CEC19-MaTMO2-T4	7.5495e-02 (1.40e-02)	7.0361e-01 (1.10e-01) -	2.4604e+00 (2.04e-01) -	1.3612e+00 (3.05e-01) -	7.2390e-01 (1.46e-01) -
CEC19-MaTMO2-T5	6.9667e-02 (1.53e-02)	6.6207e-01 (1.07e-01) -	2.3759e+00 (2.97e-01) -	1.3412e+00 (2.86e-01) -	7.1708e-01 (1.35e-01) -
CEC19-MaTMO2-T6	9.2071e-02 (1.44e-02)	7.1722e-01 (1.25e-01) -	2.3568e+00 (2.89e-01) -	1.3170e+00 (2.88e-01) -	6.8306e-01 (1.35e-01) -
CEC19-MaTMO2-T7	8.6763e-02 (1.90e-02)	6.7980e-01 (1.06e-01) -	2.3578e+00 (2.61e-01) -	1.3214e+00 (2.79e-01) -	7.0957e-01 (1.51e-01) -
CEC19-MaTMO2-T8	9.5320e-02 (1.96e-02)	7.0366e-01 (8.11e-02) -	2.3470e+00 (2.48e-01) -	1.3187e+00 (2.77e-01) -	6.7249e-01 (1.19e-01) -
CEC19-MaTMO2-T9	7.8626e-02 (1.91e-02)	6.2289e-01 (1.09e-01) -	2.3106e+00 (2.93e-01) -	1.2978e+00 (2.67e-01) -	7.0322e-01 (1.20e-01) -
CEC19-MaTMO2-T10	9.3036e-02 (2.02e-02)	7.0898e-01 (1.15e-01) -	2.3904e+00 (2.45e-01) -	1.2969e+00 (2.36e-01) -	7.2645e-01 (1.21e-01) -
CEC19-MaTMO2-T11	8.4702e-02 (1.52e-02)	7.3216e-01 (1.32e-01) -	2.3711e+00 (2.92e-01) -	1.3274e+00 (2.62e-01) -	6.5784e-01 (1.31e-01) -
CEC19-MaTMO2-T12	7.2717e-02 (1.70e-02)	6.6788e-01 (1.12e-01) -	2.4838e+00 (2.47e-01) -	1.4089e+00 (3.03e-01) -	6.4216e-01 (8.14e-02) -
CEC19-MaTMO2-T13	7.4471e-02 (1.55e-02)	7.1367e-01 (1.08e-01) -	2.3768e+00 (4.20e-01) -	1.3264e+00 (2.40e-01) -	7.5311e-01 (1.37e-01) -
CEC19-MaTMO2-T14	7.8549e-02 (1.52e-02)	7.4348e-01 (1.27e-01) -	2.3977e+00 (2.51e-01) -	1.3244e+00 (2.21e-01) -	6.8055e-01 (1.34e-01) -
CEC19-MaTMO2-T15	8.0323e-02 (1.13e-02)	6.5220e-01 (8.65e-02) -	2.3863e+00 (2.70e-01) -	1.3554e+00 (2.14e-01) -	7.0747e-01 (1.35e-01) -
CEC19-MaTMO2-T16	9.4552e-02 (1.57e-02)	6.8394e-01 (7.50e-02) -	2.4067e+00 (2.58e-01) -	1.3318e+00 (2.51e-01) -	6.8106e-01 (1.32e-01) -
CEC19-MaTMO2-T17	7.4952e-02 (1.60e-02)	7.0108e-01 (1.13e-01) -	2.4512e+00 (3.20e-01) -	1.2932e+00 (2.62e-01) -	6.9362e-01 (1.02e-01) -
CEC19-MaTMO2-T18	7.5232e-02 (1.34e-02)	6.6043e-01 (1.16e-01) -	2.4730e+00 (2.32e-01) -	1.3350e+00 (2.14e-01) -	6.9105e-01 (1.49e-01) -
CEC19-MaTMO2-T19	8.4952e-02 (1.46e-02)	6.9960e-01 (1.05e-01) -	2.3227e+00 (2.31e-01) -	1.3031e+00 (2.13e-01) -	6.8533e-01 (1.42e-01) -
CEC19-MaTMO2-T20	8.0195e-02 (1.20e-02)	6.6414e-01 (1.52e-01) -	2.5345e+00 (2.43e-01) -	1.2774e+00 (2.19e-01) -	7.1482e-01 (1.75e-01) -
CEC19-MaTMO2-T21	8.8335e-02 (1.89e-02)	7.2988e-01 (1.24e-01) -	2.2640e+00 (3.00e-01) -	1.3325e+00 (2.44e-01) -	7.2373e-01 (1.62e-01) -
CEC19-MaTMO2-T22	9.2344e-02 (1.55e-02)	6.8471e-01 (1.16e-01) -	2.2955e+00 (2.05e-01) -	1.3089e+00 (2.55e-01) -	6.4897e-01 (1.40e-01) -
CEC19-MaTMO2-T23	8.1955e-02 (1.27e-02)	6.7110e-01 (1.15e-01) -	2.3062e+00 (2.83e-01) -	1.3799e+00 (2.38e-01) -	7.8378e-01 (1.52e-01) -
CEC19-MaTMO2-T24	8.5864e-02 (1.54e-02)	7.1302e-01 (1.13e-01) -	2.4488e+00 (2.50e-01) -	1.4033e+00 (3.00e-01) -	6.6980e-01 (1.21e-01) -
CEC19-MaTMO2-T25	8.7906e-02 (1.57e-02)	6.7664e-01 (1.42e-01) -	2.4325e+00 (1.86e-01) -	1.3002e+00 (2.16e-01) -	6.7480e-01 (1.06e-01) -
CEC19-MaTMO2-T26	8.8049e-02 (1.60e-02)	7.0457e-01 (1.02e-01) -	2.4581e+00 (2.42e-01) -	1.2848e+00 (2.42e-01) -	6.9336e-01 (1.47e-01) -
CEC19-MaTMO2-T27	8.5900e-02 (1.45e-02)	6.5300e-01 (1.03e-01) -	2.3939e+00 (2.38e-01) -	1.2612e+00 (2.57e-01) -	7.4086e-01 (1.82e-01) -
CEC19-MaTMO2-T28	7.6194e-02 (1.10e-02)	6.2594e-01 (1.00e-01) -	2.3514e+00 (2.68e-01) -	1.3427e+00 (2.79e-01) -	6.9723e-01 (1.16e-01) -
CEC19-MaTMO2-T29	7.0963e-02 (1.50e-02)	6.7102e-01 (8.88e-02) -	2.3781e+00 (2.32e-01) -	1.3037e+00 (3.13e-01) -	6.7010e-01 (1.24e-01) -
CEC19-MaTMO2-T30	7.9108e-02 (1.26e-02)	7.1126e-01 (1.21e-01) -	2.3104e+00 (2.54e-01) -	1.3108e+00 (2.41e-01) -	7.2555e-01 (1.38e-01) -
CEC19-MaTMO2-T31	8.2314e-02 (1.62e-02)	6.4830e-01 (1.08e-01) -	2.4136e+00 (2.27e-01) -	1.2921e+00 (2.04e-01) -	6.7025e-01 (1.65e-01) -
CEC19-MaTMO2-T32	7.6704e-02 (1.72e-02)	7.3579e-01 (1.38e-01) -	2.3828e+00 (2.72e-01) -	1.3262e+00 (1.92e-01) -	7.1452e-01 (1.26e-01) -
CEC19-MaTMO2-T33	8.8396e-02 (1.86e-02)	6.4983e-01 (9.91e-02) -	2.3388e+00 (2.49e-01) -	1.2878e+00 (1.97e-01) -	7.2361e-01 (1.24e-01) -
CEC19-MaTMO2-T34	8.7410e-02 (2.32e-02)	6.4357e-01 (8.93e-02) -	2.3135e+00 (2.39e-01) -	1.2572e+00 (2.33e-01) -	7.1098e-01 (1.40e-01) -
CEC19-MaTMO2-T35	7.6299e-02 (1.17e-02)	6.6020e-01 (9.47e-02) -	2.4683e+00 (2.59e-01) -	1.4308e+00 (2.25e-01) -	6.1845e-01 (8.88e-02) -
CEC19-MaTMO2-T36	7.8414e-02 (1.17e-02)	6.6198e-01 (1.36e-01) -	2.4676e+00 (2.53e-01) -	1.3401e+00 (2.12e-01) -	7.1650e-01 (1.81e-01) -
CEC19-MaTMO2-T37	7.8458e-02 (1.58e-02)	6.2305e-01 (1.07e-01) -	2.4937e+00 (3.20e-01) -	1.3956e+00 (2.76e-01) -	6.6723e-01 (1.31e-01) -
CEC19-MaTMO2-T38	9.2444e-02 (1.81e-02)	7.0518e-01 (1.39e-01) -	2.4939e+00 (3.82e-01) -	1.2755e+00 (2.21e-01) -	7.4891e-01 (1.26e-01) -
CEC19-MaTMO2-T39	7.2165e-02 (1.68e-02)	6.2751e-01 (7.38e-02) -	2.3651e+00 (2.33e-01) -	1.2811e+00 (2.15e-01) -	6.7542e-01 (1.35e-01) -
CEC19-MaTMO2-T40	7.6639e-02 (1.24e-02)	6.6253e-01 (1.16e-01) -	2.4580e+00 (1.91e-01) -	1.3457e+00 (2.73e-01) -	6.9407e-01 (1.26e-01) -
CEC19-MaTMO2-T41	7.1802e-02 (1.07e-02)	6.3678e-01 (1.01e-01) -	2.4631e+00 (2.26e-01) -	1.3478e+00 (2.20e-01) -	6.3960e-01 (8.92e-02) -
CEC19-MaTMO2-T42	8.3939e-02 (1.87e-02)	6.3524e-01 (9.89e-02) -	2.3883e+00 (2.92e-01) -	1.3271e+00 (2.77e-01) -	7.5801e-01 (1.76e-01) -
CEC19-MaTMO2-T43	7.8847e-02 (1.52e-02)	6.6058e-01 (9.55e-02) -	2.4819e+00 (3.58e-01) -	1.3128e+00 (2.49e-01) -	7.1665e-01 (1.49e-01) -
CEC19-MaTMO2-T44	7.4419e-02 (1.11e-02)	6.9665e-01 (1.16e-01) -	2.2963e+00 (2.12e-01) -	1.3784e+00 (1.95e-01) -	7.5617e-01 (1.83e-01) -
CEC19-MaTMO2-T45	7.4677e-02 (1.56e-02)	6.7010e-01 (1.11e-01) -	2.3728e+00 (2.21e-01) -	1.5188e+00 (2.76e-01) -	6.8263e-01 (1.20e-01) -
CEC19-MaTMO2-T46	6.9585e-02 (1.38e-02)	6.4028e-01 (8.38e-02) -	2.2861e+00 (2.40e-01) -	1.2685e+00 (1.83e-01) -	7.0807e-01 (1.25e-01) -
CEC19-MaTMO2-T47	7.8031e-02 (1.31e-02)	6.4265e-01 (7.37e-02) -	2.3494e+00 (2.63e-01) -	1.3360e+00 (3.50e-01) -	6.5871e-01 (1.16e-01) -
CEC19-MaTMO2-T48	8.4039e-02 (1.73e-02)	6.7933e-01 (1.28e-01) -	2.3733e+00 (2.93e-01) -	1.3903e+00 (2.47e-01) -	6.8519e-01 (1.24e-01) -
CEC19-MaTMO2-T49	9.0825e-02 (2.39e-02)	6.8236e-01 (1.19e-01) -	2.3613e+00 (2.90e-01) -	1.3621e+00 (2.28e-01) -	7.1504e-01 (1.85e-01) -
CEC19-MaTMO2-T50	8.6437e-02 (1.73e-02)	6.8510e-01 (1.30e-01) -	2.4549e+00 (2.82e-01) -	1.3518e+00 (2.89e-01) -	6.8989e-01 (1.29e-01) -
+/=-	Base	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S43

COMPARISON OF KR-MTGA, MATGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO3 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/=-"), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO3 IN TEST SUITE 3.

Problem	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO3-T1	5.5653e+00 (3.27e-01)	4.8205e+00 (1.54e+00) =	4.3632e+00 (1.88e+00) =	4.1577e+00 (1.97e+00) +	3.4313e+00 (2.44e+00) +
CEC19-MaTMO3-T2	5.3529e+00 (9.33e-01)	5.0962e+00 (1.21e+00) =	3.9973e+00 (2.12e+00) =	3.2795e+00 (1.81e+00) +	4.1431e+00 (2.26e+00) =
CEC19-MaTMO3-T3	5.6066e+00 (2.51e-01)	5.3036e+00 (1.10e+00) =	4.6915e+00 (1.73e+00) =	4.0963e+00 (1.93e+00) +	4.5099e+00 (1.83e+00) =
CEC19-MaTMO3-T4	5.5403e+00 (2.09e-01)	5.0658e+00 (1.35e+00) =	4.2084e+00 (2.02e+00) =	3.6367e+00 (1.84e+00) +	4.3849e+00 (1.87e+00) =
CEC19-MaTMO3-T5	4.9298e+00 (2.36e-01)	5.5768e+00 (6.42e-01) -	4.0802e+00 (2.23e+00) =	4.8608e+00 (1.73e+00) +	4.3024e+00 (2.27e+00) =
CEC19-MaTMO3-T6	5.6121e+00 (2.78e-01)	4.3751e+00 (1.66e+00) +	3.7803e+00 (2.56e+00) =	4.2326e+00 (2.03e+00) +	4.2244e+00 (2.24e+00) =
CEC19-MaTMO3-T7	5.2726e+00 (3.35e-01)	5.0175e+00 (1.12e+00) =	4.0255e+00 (1.99e+00) =	3.9065e+00 (1.87e+00) +	2.9877e+00 (2.45e+00) +
CEC19-MaTMO3-T8	5.4445e+00 (3.65e-01)	5.2611e+00 (1.12e+00) =	3.9089e+00 (2.39e+00) =	4.2722e+00 (1.80e+00) =	4.1764e+00 (2.16e+00) =
CEC19-MaTMO3-T9	5.6278e+00 (3.08e-01)	5.2349e+00 (9.68e-01) =	4.6842e+00 (2.04e+00) =	4.1770e+00 (2.00e+00) +	3.8694e+00 (2.01e+00) +
CEC19-MaTMO3-T10	5.5101e+00 (4.90e-01)	5.0670e+00 (1.29e+00) =	4.3058e+00 (2.06e+00) =	4.4741e+00 (1.57e+00) +	4.5023e+00 (1.52e+00) =
CEC19-MaTMO3-T11	5.4991e+00 (3.28e-01)	4.9360e+00 (1.34e+00) =	4.3928e+00 (2.45e+00) =	4.3405e+00 (1.91e+00) =	4.4249e+00 (1.90e+00) =
CEC19-MaTMO3-T12	5.5729e+00 (2.42e-01)	5.4565e+00 (6.20e-01) =	4.8406e+00 (1.89e+00) =	4.5728e+00 (1.34e+00) +	5.0205e+00 (1.43e+00) =
CEC19-MaTMO3-T13	5.4222e+00 (1.87e-01)	5.2358e+00 (9.44e-01) =	3.9656e+00 (2.26e+00) =	5.2078e+00 (6.42e-01) =	2.6378e+00 (2.43e+00) +
CEC19-MaTMO3-T14	5.6174e+00 (2.25e-01)	5.4898e+00 (8.27e-01) =	4.0111e+00 (2.02e+00) +	4.0787e+00 (1.83e+00) +	3.6610e+00 (2.47e+00) =
CEC19-MaTMO3-T15	5.2499e+00 (7.63e-01)	5.0910e+00 (1.34e+00) =	4.1661e+00 (2.29e+00) =	4.1795e+00 (1.95e+00) =	4.4989e+00 (1.84e+00) =
CEC19-MaTMO3-T16	5.5473e+00 (1.76e-01)	5.1527e+00 (1.34e+00) =	3.6521e+00 (2.53e+00) =	2.6276e+00 (2.14e+00) +	4.6309e+00 (1.89e+00) =
CEC19-MaTMO3-T17	5.5877e+00 (2.31e-01)	5.3513e+00 (7.02e-01) =	4.5268e+00 (2.27e+00) =	4.3764e+00 (1.88e+00) +	3.9011e+00 (2.06e+00) +
CEC19-MaTMO3-T18	5.3711e+00 (2.57e-01)	5.4104e+00 (7.59e-01) =	3.8513e+00 (1.98e+00) +	2.9218e+00 (2.21e+00) +	2.4669e+00 (1.97e+00) +
CEC19-MaTMO3-T19	4.9801e+00 (1.07e+00)	5.1101e+00 (1.23e+00) =	4.0949e+00 (1.87e+00) =	3.5350e+00 (1.98e+00) +	3.8024e+00 (1.98e+00) =
CEC19-MaTMO3-T20	5.6553e+00 (1.64e-01)	4.8593e+00 (1.36e+00) =	4.6563e+00 (1.80e+00) =	3.8045e+00 (1.79e+00) +	4.0714e+00 (2.14e+00) =
CEC19-MaTMO3-T21	5.5369e+00 (4.19e-01)	5.4628e+00 (7.90e-01) =	4.7985e+00 (2.05e+00) =	3.6919e+00 (1.83e+00) +	3.7943e+00 (2.13e+00) +
CEC19-MaTMO3-T22	5.6875e+00 (2.54e-01)	4.8156e+00 (1.64e+00) =	3.6834e+00 (2.10e+00) +	3.1051e+00 (2.16e+00) +	3.8674e+00 (2.42e+00) =
CEC19-MaTMO3-T23	5.0837e+00 (1.83e-01)	4.8564e+00 (1.30e+00) =	4.6815e+00 (2.15e+00) =	4.0357e+00 (2.13e+00) =	3.8197e+00 (2.14e+00) =
CEC19-MaTMO3-T24	5.2069e+00 (3.63e-01)	5.1427e+00 (1.40e+00) =	3.7983e+00 (2.05e+00) +	4.0502e+00 (2.16e+00) =	3.9043e+00 (2.25e+00) =
CEC19-MaTMO3-T25	5.3811e+00 (1.12e+00)	5.1084e+00 (9.43e-01) =	3.6120e+00 (2.55e+00) =	4.3115e+00 (1.68e+00) +	3.1699e+00 (2.33e+00) +
CEC19-MaTMO3-T26	5.4657e+00 (2.27e-01)	4.6612e+00 (1.75e+00) =	3.9313e+00 (2.03e+00) =	4.7850e+00 (1.42e+00) =	4.3070e+00 (2.29e+00) =
CEC19-MaTMO3-T27	5.6370e+00 (1.86e-01)	4.9888e+00 (1.47e+00) =	4.3658e+00 (2.39e+00) =	4.6772e+00 (1.70e+00) =	3.8963e+00 (2.16e+00) +
CEC19-MaTMO3-T28	5.5822e+00 (2.01e-01)	5.5203e+00 (5.25e-01) =	5.3817e+00 (1.35e+00) =	4.6776e+00 (1.49e+00) +	4.2714e+00 (2.34e+00) =
CEC19-MaTMO3-T29	5.4991e+00 (5.63e-01)	5.5693e+00 (6.15e-01) =	4.9882e+00 (1.64e+00) =	3.6971e+00 (2.02e+00) +	4.3358e+00 (1.99e+00) =
CEC19-MaTMO3-T30	5.7371e+00 (1.62e-01)	5.2700e+00 (9.63e-01) =	4.5211e+00 (1.94e+00) =	3.4426e+00 (2.34e+00) +	3.5502e+00 (1.49e+00) +
CEC19-MaTMO3-T31	5.3420e+00 (6.47e-01)	4.9799e+00 (1.28e+00) =	5.1863e+00 (1.61e+00) =	4.3454e+00 (1.33e+00) +	4.6545e+00 (1.87e+00) =
CEC19-MaTMO3-T32	5.7857e+00 (2.03e-01)	5.3798e+00 (5.61e-01) +	4.2663e+00 (1.65e+00) +	3.4586e+00 (2.21e+00) +	3.6587e+00 (2.25e+00) +
CEC19-MaTMO3-T33	5.2822e+00 (3.58e-01)	5.1228e+00 (1.28e+00) =	4.5940e+00 (2.10e+00) =	4.9825e+00 (1.28e+00) =	3.9588e+00 (2.03e+00) =
CEC19-MaTMO3-T34	4.2342e+00 (1.00e+00)	4.7675e+00 (1.47e+00) -	4.2258e+00 (1.79e+00) =	3.0694e+00 (1.76e+00) =	3.3872e+00 (2.33e+00) =
CEC19-MaTMO3-T35	5.3610e+00 (2.13e-01)	5.0799e+00 (9.82e-01) =	4.2077e+00 (1.83e+00) =	2.5860e+00 (2.46e+00) +	4.1583e+00 (2.31e+00) =
CEC19-MaTMO3-T36	5.5157e+00 (4.77e-01)	4.8823e+00 (1.62e+00) =	4.6980e+00 (2.02e+00) =	4.6396e+00 (1.67e+00) +	3.7972e+00 (2.44e+00) =
CEC19-MaTMO3-T37	5.5932e+00 (4.75e-01)	4.3827e+00 (1.52e+00) +	3.0025e+00 (2.30e+00) +	3.3945e+00 (2.07e+00) +	4.3335e+00 (2.11e+00) =
CEC19-MaTMO3-T38	5.5940e+00 (2.61e-01)	5.4135e+00 (9.07e-01) =	3.9320e+00 (2.30e+00) +	3.7790e+00 (2.13e+00) +	3.3003e+00 (2.32e+00) +
CEC19-MaTMO3-T39	5.4753e+00 (3.13e-01)	4.5353e+00 (1.88e+00) =	3.1603e+00 (2.40e+00) +	2.2356e+00 (2.35e+00) +	4.1767e+00 (1.97e+00) =
CEC19-MaTMO3-T40	4.9989e+00 (4.83e-01)	5.4720e+00 (5.50e-01) -	4.7190e+00 (2.10e+00) =	4.9353e+00 (1.33e+00) +	2.8899e+00 (2.27e+00) +
CEC19-MaTMO3-T41	5.6377e+00 (2.72e-01)	5.2085e+00 (9.04e-01) =	4.5779e+00 (2.08e+00) =	3.3523e+00 (2.67e+00) +	3.3599e+00 (2.36e+00) +
CEC19-MaTMO3-T42	5.5670e+00 (1.97e-01)	4.8210e+00 (1.58e+00) =	4.0963e+00 (2.34e+00) =	4.3453e+00 (2.08e+00) =	2.7339e+00 (2.41e+00) +
CEC19-MaTMO3-T43	5.0073e+00 (1.06e+00)	5.4678e+00 (8.11e-01) =	4.5116e+00 (1.67e+00) =	3.2119e+00 (1.66e+00) +	3.4110e+00 (2.36e+00) +
CEC19-MaTMO3-T44	5.5401e+00 (4.83e-01)	5.2793e+00 (7.12e-01) =	4.1611e+00 (2.20e+00) =	4.3186e+00 (1.72e+00) +	3.3512e+00 (2.65e+00) +
CEC19-MaTMO3-T45	5.2779e+00 (1.80e-01)	5.0603e+00 (1.27e+00) =	4.4837e+00 (2.00e+00) =	4.0237e+00 (2.07e+00) =	3.5308e+00 (2.53e+00) =
CEC19-MaTMO3-T46	5.0527e+00 (5.75e-01)	5.1132e+00 (1.37e+00) =	4.1735e+00 (2.43e+00) =	3.8036e+00 (1.80e+00) +	3.6597e+00 (2.29e+00) =
CEC19-MaTMO3-T47	5.6594e+00 (2.89e-01)	5.3082e+00 (1.18e+00) =	4.0367e+00 (2.24e+00) =	4.8136e+00 (1.01e+00) +	3.8346e+00 (2.26e+00) +
CEC19-MaTMO3-T48	5.2814e+00 (3.10e-01)	5.4081e+00 (6.62e-01) =	4.1263e+00 (1.92e+00) =	2.6831e+00 (2.18e+00) +	3.7675e+00 (2.13e+00) =
CEC19-MaTMO3-T49	4.4425e+00 (1.05e+00)	5.1360e+00 (1.62e+00) -	4.4683e+00 (2.30e+00) =	4.0775e+00 (1.97e+00) =	4.2970e+00 (2.33e+00) =
CEC19-MaTMO3-T50	5.5518e+00 (4.26e-01)	4.9621e+00 (1.23e+00) =	3.9420e+00 (2.31e+00) =	4.6182e+00 (1.87e+00) =	4.7929e+00 (1.84e+00) =
+/=-	Base	3/4/43	8/0/42	36/0/14	17/0/33

TABLE S44

COMPARISON OF KR-MTGA, MATGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO4 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO4 IN TEST SUITE 3.

Problem	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO4-T1	8.7041e-03 (9.63e-04)	1.7851e+01 (4.93e+00) -	3.5337e+01 (4.43e+00) -	3.3184e+01 (4.19e+00) -	3.4667e+01 (4.47e+00) -
CEC19-MaTMO4-T2	1.3111e-02 (1.88e-02)	1.6078e+01 (5.33e+00) -	4.1598e+01 (4.78e+00) -	3.2964e+01 (4.06e+00) -	3.4040e+01 (3.55e+00) -
CEC19-MaTMO4-T3	1.2231e-02 (1.53e-02)	1.6189e+01 (5.18e+00) -	4.3796e+01 (6.51e+00) -	3.3658e+01 (3.92e+00) -	3.4114e+01 (5.12e+00) -
CEC19-MaTMO4-T4	8.1640e-02 (3.24e-01)	1.6873e+01 (6.51e+00) -	4.0903e+01 (5.57e+00) -	3.3659e+01 (3.35e+00) -	3.2716e+01 (4.08e+00) -
CEC19-MaTMO4-T5	1.0173e-02 (5.41e-03)	1.6209e+01 (5.92e+00) -	4.0238e+01 (5.25e+00) -	3.3257e+01 (5.42e+00) -	3.3520e+01 (5.80e+00) -
CEC19-MaTMO4-T6	1.0271e-02 (4.97e-03)	1.9305e+01 (7.69e+00) -	4.1009e+01 (4.97e+00) -	3.3819e+01 (3.33e+00) -	3.6098e+01 (4.97e+00) -
CEC19-MaTMO4-T7	1.2596e-02 (1.60e-02)	2.0653e+01 (7.64e+00) -	4.2264e+01 (4.66e+00) -	3.4547e+01 (3.75e+00) -	3.4848e+01 (6.02e+00) -
CEC19-MaTMO4-T8	1.0371e-02 (5.70e-03)	1.7224e+01 (7.12e+00) -	4.1707e+01 (4.20e+00) -	3.3891e+01 (2.90e+00) -	3.4041e+01 (4.57e+00) -
CEC19-MaTMO4-T9	1.0665e-02 (9.92e-03)	1.6225e+01 (7.91e+00) -	3.9686e+01 (5.34e+00) -	3.3185e+01 (4.23e+00) -	3.3962e+01 (5.94e+00) -
CEC19-MaTMO4-T10	9.3570e-03 (2.87e-03)	1.7308e+01 (6.30e+00) -	4.1646e+01 (5.52e+00) -	3.3059e+01 (3.34e+00) -	3.4778e+01 (4.69e+00) -
CEC19-MaTMO4-T11	9.6912e-03 (1.63e-03)	1.8636e+01 (5.20e+00) -	4.1805e+01 (7.27e+00) -	3.2615e+01 (4.13e+00) -	3.3874e+01 (3.56e+00) -
CEC19-MaTMO4-T12	2.5183e-02 (6.30e-02)	1.7534e+01 (6.25e+00) -	4.0142e+01 (3.45e+00) -	3.3884e+01 (3.95e+00) -	3.3925e+01 (4.46e+00) -
CEC19-MaTMO4-T13	1.2190e-02 (1.59e-02)	1.5682e+01 (5.37e+00) -	4.0181e+01 (6.66e+00) -	3.4020e+01 (4.57e+00) -	3.3096e+01 (4.86e+00) -
CEC19-MaTMO4-T14	8.8518e-03 (7.40e-04)	1.6635e+01 (5.56e+00) -	4.1018e+01 (4.87e+00) -	3.3108e+01 (3.03e+00) -	3.4011e+01 (4.42e+00) -
CEC19-MaTMO4-T15	8.4864e-03 (1.33e-03)	1.8359e+01 (7.11e+00) -	4.1790e+01 (7.79e+00) -	3.3474e+01 (3.97e+00) -	3.4454e+01 (3.37e+00) -
CEC19-MaTMO4-T16	9.2300e-03 (1.28e-03)	1.7679e+01 (6.37e+00) -	3.9948e+01 (3.87e+00) -	3.4404e+01 (4.22e+00) -	3.5284e+01 (4.55e+00) -
CEC19-MaTMO4-T17	9.1530e-03 (1.56e-03)	1.3236e+01 (4.52e+00) -	4.1286e+01 (5.51e+00) -	3.3748e+01 (4.15e+00) -	3.3668e+01 (3.88e+00) -
CEC19-MaTMO4-T18	9.3290e-03 (1.26e-03)	1.8252e+01 (8.02e+00) -	4.2268e+01 (7.20e+00) -	3.3601e+01 (3.65e+00) -	3.4346e+01 (4.19e+00) -
CEC19-MaTMO4-T19	9.1280e-03 (2.18e-03)	1.7078e+01 (6.38e+00) -	4.0370e+01 (6.32e+00) -	3.3647e+01 (4.60e+00) -	3.4215e+01 (3.81e+00) -
CEC19-MaTMO4-T20	9.2817e-03 (1.38e-03)	1.5427e+01 (5.78e+00) -	3.8908e+01 (4.64e+00) -	3.2916e+01 (4.82e+00) -	3.5099e+01 (4.69e+00) -
CEC19-MaTMO4-T21	8.9876e-03 (9.76e-04)	1.9886e+01 (9.27e+00) -	4.1057e+01 (5.31e+00) -	3.3971e+01 (5.06e+00) -	3.4878e+01 (4.02e+00) -
CEC19-MaTMO4-T22	9.0220e-03 (1.25e-03)	1.9045e+01 (5.86e+00) -	4.1888e+01 (4.96e+00) -	3.4386e+01 (3.75e+00) -	3.4744e+01 (2.83e+00) -
CEC19-MaTMO4-T23	1.7947e-01 (7.61e-01)	1.7846e+01 (5.23e+00) -	4.3092e+01 (4.74e+00) -	3.3829e+01 (4.10e+00) -	3.4126e+01 (4.69e+00) -
CEC19-MaTMO4-T24	8.9064e-03 (1.32e-03)	1.6145e+01 (5.75e+00) -	4.1527e+01 (5.66e+00) -	3.3194e+01 (4.04e+00) -	3.4729e+01 (4.73e+00) -
CEC19-MaTMO4-T25	1.1899e-01 (4.92e-01)	1.6866e+01 (5.60e+00) -	4.0748e+01 (4.83e+00) -	3.3348e+01 (3.34e+00) -	3.6107e+01 (4.40e+00) -
CEC19-MaTMO4-T26	8.8653e-03 (1.01e-03)	1.4931e+01 (6.63e+00) -	4.1563e+01 (4.24e+00) -	3.4965e+01 (4.02e+00) -	3.4235e+01 (4.77e+00) -
CEC19-MaTMO4-T27	9.3716e-03 (1.37e-03)	1.7202e+01 (5.67e+00) -	4.1624e+01 (4.81e+00) -	3.4684e+01 (3.16e+00) -	3.4304e+01 (4.62e+00) -
CEC19-MaTMO4-T28	9.3265e-03 (1.66e-03)	1.7600e+01 (6.37e+00) -	4.2581e+01 (6.78e+00) -	3.4829e+01 (4.17e+00) -	3.4820e+01 (4.69e+00) -
CEC19-MaTMO4-T29	9.2209e-03 (4.19e-03)	1.8689e+01 (7.80e+00) -	4.1809e+01 (7.01e+00) -	3.2492e+01 (3.83e+00) -	3.5302e+01 (3.83e+00) -
CEC19-MaTMO4-T30	9.0423e-03 (1.15e-03)	1.6640e+01 (5.82e+00) -	4.1916e+01 (6.48e+00) -	3.2057e+01 (4.50e+00) -	3.2267e+01 (4.29e+00) -
CEC19-MaTMO4-T31	8.9324e-03 (1.09e-03)	1.5448e+01 (5.31e+00) -	4.0234e+01 (5.55e+00) -	3.2953e+01 (3.53e+00) -	3.5643e+01 (6.11e+00) -
CEC19-MaTMO4-T32	8.8202e-03 (7.73e-04)	1.8848e+01 (7.49e+00) -	4.2487e+01 (6.23e+00) -	3.5070e+01 (3.50e+00) -	3.4818e+01 (4.65e+00) -
CEC19-MaTMO4-T33	2.6096e-01 (1.13e+00)	1.6539e+01 (6.75e+00) -	3.9603e+01 (5.31e+00) -	3.3359e+01 (3.67e+00) -	3.3533e+01 (3.40e+00) -
CEC19-MaTMO4-T34	8.7903e-03 (9.58e-04)	1.8026e+01 (6.12e+00) -	4.0368e+01 (6.19e+00) -	3.3856e+01 (4.13e+00) -	3.4131e+01 (3.93e+00) -
CEC19-MaTMO4-T35	9.5932e-03 (1.48e-03)	1.8308e+01 (6.47e+00) -	4.0706e+01 (6.06e+00) -	3.3735e+01 (4.23e+00) -	3.4051e+01 (5.28e+00) -
CEC19-MaTMO4-T36	1.0051e-02 (3.84e-03)	1.7766e+01 (5.54e+00) -	4.1471e+01 (4.53e+00) -	3.2874e+01 (3.57e+00) -	3.3426e+01 (2.94e+00) -
CEC19-MaTMO4-T37	8.8556e-03 (1.25e-03)	1.4411e+01 (6.14e+00) -	4.1122e+01 (6.82e+00) -	3.2533e+01 (3.78e+00) -	3.4830e+01 (4.17e+00) -
CEC19-MaTMO4-T38	8.8156e-03 (1.32e-03)	1.6222e+01 (6.64e+00) -	4.0490e+01 (6.11e+00) -	3.4698e+01 (2.86e+00) -	3.4535e+01 (3.33e+00) -
CEC19-MaTMO4-T39	9.6424e-03 (2.65e-03)	1.8504e+01 (6.30e+00) -	4.1908e+01 (5.68e+00) -	3.3629e+01 (2.95e+00) -	3.4438e+01 (5.38e+00) -
CEC19-MaTMO4-T40	9.8482e-03 (3.58e-03)	1.7632e+01 (4.88e+00) -	4.1643e+01 (5.09e+00) -	3.2851e+01 (3.78e+00) -	3.3848e+01 (4.23e+00) -
CEC19-MaTMO4-T41	9.7627e-03 (1.54e-03)	2.0802e+01 (6.64e+00) -	4.1198e+01 (5.05e+00) -	3.2340e+01 (3.52e+00) -	3.3066e+01 (4.42e+00) -
CEC19-MaTMO4-T42	8.9653e-03 (9.52e-04)	1.9241e+01 (6.25e+00) -	4.2748e+01 (6.46e+00) -	3.1879e+01 (3.49e+00) -	3.4661e+01 (5.04e+00) -
CEC19-MaTMO4-T43	8.5223e-03 (1.22e-03)	1.9452e+01 (7.51e+00) -	3.9774e+01 (5.10e+00) -	3.4621e+01 (4.45e+00) -	3.4859e+01 (4.34e+00) -
CEC19-MaTMO4-T44	9.3779e-03 (1.28e-03)	1.6317e+01 (6.43e+00) -	4.2010e+01 (5.93e+00) -	3.2569e+01 (3.72e+00) -	3.3467e+01 (2.52e+00) -
CEC19-MaTMO4-T45	9.0406e-03 (1.56e-03)	1.4875e+01 (4.29e+00) -	4.1570e+01 (6.77e+00) -	3.3504e+01 (3.89e+00) -	3.4342e+01 (4.08e+00) -
CEC19-MaTMO4-T46	9.0308e-03 (1.44e-03)	1.7370e+01 (6.07e+00) -	4.0555e+01 (5.47e+00) -	3.3171e+01 (5.46e+00) -	3.4948e+01 (4.24e+00) -
CEC19-MaTMO4-T47	1.8106e-02 (4.10e-02)	1.9448e+01 (7.89e+00) -	4.1369e+01 (6.30e+00) -	3.3307e+01 (2.91e+00) -	3.3575e+01 (3.80e+00) -
CEC19-MaTMO4-T48	8.9886e-03 (1.40e-03)	1.5411e+01 (6.44e+00) -	4.2765e+01 (4.90e+00) -	3.3809e+01 (2.22e+00) -	3.4877e+01 (4.81e+00) -
CEC19-MaTMO4-T49	9.0114e-03 (1.24e-03)	1.6078e+01 (5.90e+00) -	3.9724e+01 (4.06e+00) -	3.3349e+01 (4.46e+00) -	3.3323e+01 (2.99e+00) -
CEC19-MaTMO4-T50	8.8830e-03 (9.74e-04)	1.7107e+01 (6.09e+00) -	3.8943e+01 (6.01e+00) -	3.3205e+01 (3.27e+00) -	3.1532e+01 (5.23e+00) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S45

COMPARISON OF KR-MTGA, MaTGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO5 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/-/="), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO5 IN TEST SUITE 3.

Problem	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO5-T1	1.2341e-02 (1.02e-03)	2.0979e-02 (2.42e-03) -	2.9921e-02 (2.23e-03) -	2.9016e-02 (1.83e-03) -	3.1534e-02 (9.72e-03) -
CEC19-MaTMO5-T2	1.2332e-02 (8.87e-04)	2.0921e-02 (2.06e-03) -	4.1271e-02 (5.11e-03) -	2.9581e-02 (1.91e-03) -	2.9664e-02 (8.92e-03) -
CEC19-MaTMO5-T3	1.2717e-02 (1.04e-03)	2.0632e-02 (2.43e-03) -	4.1076e-02 (4.48e-03) -	2.8248e-02 (1.62e-03) -	2.8001e-02 (6.94e-03) -
CEC19-MaTMO5-T4	1.2071e-02 (8.88e-04)	2.0974e-02 (2.17e-03) -	4.0285e-02 (5.02e-03) -	2.8775e-02 (1.67e-03) -	2.9163e-02 (1.20e-02) -
CEC19-MaTMO5-T5	1.2240e-02 (8.69e-04)	2.0146e-02 (1.58e-03) -	4.0683e-02 (4.28e-03) -	2.8465e-02 (1.18e-03) -	6.7765e-02 (1.48e-01) -
CEC19-MaTMO5-T6	1.1922e-02 (9.92e-04)	2.0692e-02 (2.23e-03) -	4.0311e-02 (5.79e-03) -	2.8984e-02 (1.47e-03) -	3.0154e-02 (1.56e-02) -
CEC19-MaTMO5-T7	1.1775e-02 (8.74e-04)	2.1277e-02 (1.97e-03) -	3.9967e-02 (3.39e-03) -	2.9371e-02 (1.53e-03) -	7.1360e-02 (1.91e-01) -
CEC19-MaTMO5-T8	1.2617e-02 (1.09e-03)	2.0807e-02 (1.98e-03) -	4.1375e-02 (6.22e-03) -	2.8062e-02 (1.75e-03) -	3.7941e-02 (4.61e-02) -
CEC19-MaTMO5-T9	1.2416e-02 (9.55e-04)	2.1667e-02 (2.43e-03) -	4.0100e-02 (5.52e-03) -	2.8905e-02 (1.04e-03) -	2.9416e-02 (1.10e-02) -
CEC19-MaTMO5-T10	1.2239e-02 (8.84e-04)	2.0863e-02 (2.27e-03) -	4.0236e-02 (5.45e-03) -	2.9754e-02 (1.31e-03) -	1.1349e-01 (2.14e-01) -
CEC19-MaTMO5-T11	1.1878e-02 (9.72e-04)	2.0965e-02 (2.36e-03) -	4.0380e-02 (3.63e-03) -	2.8479e-02 (1.44e-03) -	4.9022e-02 (6.54e-02) -
CEC19-MaTMO5-T12	1.2037e-02 (9.69e-04)	2.1732e-02 (2.00e-03) -	3.8715e-02 (3.65e-03) -	2.9519e-02 (2.19e-03) -	2.7432e-02 (5.32e-03) -
CEC19-MaTMO5-T13	1.2396e-02 (1.24e-03)	2.1496e-02 (2.43e-03) -	4.0926e-02 (3.42e-03) -	2.9172e-02 (1.58e-03) -	5.4997e-02 (8.76e-02) -
CEC19-MaTMO5-T14	1.2648e-02 (8.91e-04)	2.1583e-02 (2.38e-03) -	4.0164e-02 (4.98e-03) -	2.9530e-02 (1.29e-03) -	6.1112e-02 (1.50e-01) -
CEC19-MaTMO5-T15	1.2439e-02 (6.20e-04)	2.0427e-02 (1.68e-03) -	3.8352e-02 (3.18e-03) -	2.8799e-02 (1.68e-03) -	3.1007e-02 (9.35e-03) -
CEC19-MaTMO5-T16	1.2105e-02 (1.04e-03)	2.1299e-02 (1.74e-03) -	3.8235e-02 (2.46e-03) -	2.8912e-02 (1.63e-03) -	6.2763e-02 (1.55e-01) -
CEC19-MaTMO5-T17	1.2397e-02 (7.74e-04)	2.1221e-02 (1.70e-03) -	4.0316e-02 (3.10e-03) -	2.8923e-02 (1.34e-03) -	2.6824e-02 (9.45e-03) -
CEC19-MaTMO5-T18	1.2345e-02 (1.23e-03)	2.0036e-02 (1.69e-03) -	4.1200e-02 (8.42e-03) -	2.8654e-02 (1.35e-03) -	3.2658e-02 (1.06e-02) -
CEC19-MaTMO5-T19	1.2519e-02 (1.15e-03)	2.1081e-02 (1.84e-03) -	3.9795e-02 (5.88e-03) -	2.9189e-02 (1.23e-03) -	6.1443e-02 (1.44e-01) -
CEC19-MaTMO5-T20	1.2366e-02 (8.76e-04)	2.1513e-02 (2.03e-03) -	3.9438e-02 (3.57e-03) -	2.8854e-02 (2.21e-03) -	2.9543e-02 (6.80e-03) -
CEC19-MaTMO5-T21	1.2208e-02 (9.76e-04)	2.0481e-02 (1.89e-03) -	3.9832e-02 (4.54e-03) -	2.9512e-02 (1.43e-03) -	2.7120e-02 (4.90e-03) -
CEC19-MaTMO5-T22	1.2087e-02 (1.06e-03)	2.1020e-02 (1.70e-03) -	4.0241e-02 (5.66e-03) -	2.9262e-02 (2.00e-03) -	5.4995e-02 (1.23e-01) -
CEC19-MaTMO5-T23	1.2336e-02 (9.19e-04)	2.0496e-02 (2.36e-03) -	3.9680e-02 (3.22e-03) -	2.9168e-02 (1.64e-03) -	7.5155e-02 (1.68e-01) -
CEC19-MaTMO5-T24	1.1801e-02 (8.22e-04)	2.1288e-02 (1.61e-03) -	4.0660e-02 (3.01e-03) -	2.8977e-02 (1.94e-03) -	5.1135e-02 (1.04e-01) -
CEC19-MaTMO5-T25	1.2687e-02 (1.11e-03)	2.0773e-02 (1.92e-03) -	4.0007e-02 (2.91e-03) -	2.9346e-02 (2.03e-03) -	2.8200e-02 (8.47e-03) -
CEC19-MaTMO5-T26	1.2252e-02 (8.51e-04)	2.1325e-02 (2.00e-03) -	4.0887e-02 (6.09e-03) -	2.9412e-02 (1.74e-03) -	3.2217e-02 (1.72e-02) -
CEC19-MaTMO5-T27	1.2096e-02 (1.09e-03)	2.1160e-02 (2.07e-03) -	4.0249e-02 (3.31e-03) -	2.8358e-02 (1.51e-03) -	5.4163e-02 (1.40e-02) -
CEC19-MaTMO5-T28	1.2568e-02 (7.47e-04)	2.0508e-02 (1.53e-03) -	3.9247e-02 (4.39e-03) -	2.9096e-02 (1.26e-03) -	2.5891e-02 (4.51e-03) -
CEC19-MaTMO5-T29	1.2387e-02 (1.02e-03)	2.0959e-02 (2.03e-03) -	4.0132e-02 (5.92e-03) -	2.8211e-02 (1.67e-03) -	1.0439e-01 (2.11e-01) -
CEC19-MaTMO5-T30	1.2118e-02 (1.05e-03)	2.0615e-02 (1.66e-03) -	3.9048e-02 (3.32e-03) -	2.8907e-02 (1.76e-03) -	2.8317e-02 (5.93e-03) -
CEC19-MaTMO5-T31	1.2197e-02 (1.02e-03)	2.1237e-02 (2.07e-03) -	3.9348e-02 (4.21e-03) -	2.8625e-02 (1.63e-03) -	1.1244e-01 (2.53e-01) -
CEC19-MaTMO5-T32	1.2154e-02 (9.45e-04)	2.0798e-02 (2.48e-03) -	3.9135e-02 (3.12e-03) -	2.8248e-02 (1.68e-03) -	5.9859e-02 (1.39e-01) -
CEC19-MaTMO5-T33	1.1996e-02 (1.04e-03)	2.1188e-02 (2.22e-03) -	4.0532e-02 (5.27e-03) -	2.8123e-02 (1.37e-03) -	6.0208e-02 (1.22e-01) -
CEC19-MaTMO5-T34	1.2303e-02 (7.80e-04)	2.0485e-02 (1.63e-03) -	3.8828e-02 (3.02e-03) -	2.9736e-02 (1.66e-03) -	1.0272e-01 (2.12e-01) -
CEC19-MaTMO5-T35	1.2321e-02 (1.01e-03)	2.1125e-02 (2.32e-03) -	3.9206e-02 (4.35e-03) -	2.9074e-02 (1.57e-03) -	2.8532e-02 (1.04e-02) -
CEC19-MaTMO5-T36	1.2218e-02 (7.24e-04)	2.1055e-02 (2.15e-03) -	4.1268e-02 (5.62e-03) -	3.0032e-02 (1.74e-03) -	3.6317e-02 (3.23e-02) -
CEC19-MaTMO5-T37	1.1936e-02 (5.03e-04)	2.0658e-02 (1.87e-03) -	4.0194e-02 (3.60e-03) -	2.9508e-02 (1.69e-03) -	3.0375e-02 (1.13e-02) -
CEC19-MaTMO5-T38	1.2039e-02 (9.50e-04)	2.0815e-02 (2.11e-03) -	4.0441e-02 (2.64e-03) -	2.8474e-02 (1.38e-03) -	3.3816e-02 (1.81e-02) -
CEC19-MaTMO5-T39	1.1850e-02 (1.01e-03)	2.0840e-02 (2.06e-03) -	3.8832e-02 (4.23e-03) -	2.9115e-02 (1.54e-03) -	3.3800e-02 (1.61e-02) -
CEC19-MaTMO5-T40	1.2311e-02 (1.10e-03)	2.1800e-02 (1.63e-03) -	3.9149e-02 (4.36e-03) -	2.8531e-02 (1.29e-03) -	2.6896e-02 (3.68e-03) -
CEC19-MaTMO5-T41	1.2265e-02 (9.31e-04)	2.0815e-02 (1.80e-03) -	4.0018e-02 (4.72e-03) -	2.9075e-02 (2.01e-03) -	2.7580e-02 (9.35e-03) -
CEC19-MaTMO5-T42	1.2541e-02 (1.05e-03)	2.1827e-02 (1.74e-03) -	4.0713e-02 (6.41e-03) -	2.8918e-02 (1.75e-03) -	4.9116e-02 (9.95e-02) -
CEC19-MaTMO5-T43	1.2269e-02 (5.78e-04)	2.1549e-02 (2.28e-03) -	4.0518e-02 (9.52e-03) -	2.9172e-02 (1.81e-03) -	6.5327e-02 (1.64e-01) -
CEC19-MaTMO5-T44	1.2391e-02 (1.10e-03)	2.1067e-02 (1.88e-03) -	3.8655e-02 (2.56e-03) -	2.9311e-02 (1.53e-03) -	2.6327e-02 (4.56e-03) -
CEC19-MaTMO5-T45	1.1962e-02 (9.28e-04)	2.0457e-02 (1.87e-03) -	3.9845e-02 (3.26e-03) -	2.8310e-02 (1.82e-03) -	2.8358e-02 (7.01e-03) -
CEC19-MaTMO5-T46	1.2653e-02 (1.18e-03)	2.0961e-02 (2.71e-03) -	3.9960e-02 (6.25e-03) -	2.8391e-02 (1.76e-03) -	2.7792e-02 (7.27e-03) -
CEC19-MaTMO5-T47	1.1944e-02 (8.91e-04)	2.1070e-02 (1.63e-03) -	4.1650e-02 (5.43e-03) -	2.8646e-02 (1.24e-03) -	9.6662e-02 (2.01e-01) -
CEC19-MaTMO5-T48	1.2320e-02 (8.60e-04)	2.1358e-02 (2.28e-03) -	3.9465e-02 (5.11e-03) -	2.9541e-02 (1.98e-03) -	2.8173e-02 (6.66e-03) -
CEC19-MaTMO5-T49	1.2273e-02 (8.64e-04)	2.0982e-02 (1.82e-03) -	4.0362e-02 (6.27e-03) -	2.8828e-02 (1.77e-03) -	3.8055e-02 (3.38e-02) -
CEC19-MaTMO5-T50	1.2419e-02 (8.68e-04)	2.1534e-02 (2.00e-03) -	4.0090e-02 (3.83e-03) -	2.9059e-02 (1.70e-03) -	3.5832e-02 (3.22e-02) -
+/-/=	Base	0/50/0	0/50/0	0/50/0	0/50/0

TABLE S46

COMPARISON OF KR-MTGA, MaTGA, MO-SBO, MO-MFEA, AND NSGA-II IN TERMS OF THE MEAN AND STANDARD DEVIATION (IN BRACKETS) OF THE BEST-ACHIEVED IGD OVER 20 RUNS W.R.T. EACH COMPONENT TASK IN CEC19-MATMO6 IN TEST SUITE 3. THE LAST ROW SHOWS A SUMMARY OF STATISTICALLY COMPARING KR-MTGA (CONTROL METHOD) WITH EACH OF THE OTHERS VIA WILCOXON'S RANK-SUM TEST, WITH THE RESULT REPRESENTED BY ("+/=-"), OVER ALL 50 COMPONENT TASKS IN CEC19-MATMO6 IN TEST SUITE 3.

	KR-MTEA	MaTGA	MO-SBO	MO-MFEA	NSGA-II
CEC19-MaTMO6-T1	3.0035e-02 (1.05e-02)	1.6605e-01 (3.42e-02) -	2.0070e-01 (3.30e-02) -	2.6581e-01 (2.35e-02) -	3.0273e-01 (4.17e-01) -
CEC19-MaTMO6-T2	8.6312e-03 (2.00e-03)	1.6766e-01 (4.08e-02) -	3.6146e-01 (5.88e-02) -	2.8347e-01 (3.44e-02) -	3.0369e-01 (5.99e-01) -
CEC19-MaTMO6-T3	3.4228e-02 (9.95e-03)	1.6868e-01 (4.04e-02) -	3.5501e-01 (6.23e-02) -	2.8314e-01 (3.68e-02) -	2.3043e-01 (3.62e-01) -
CEC19-MaTMO6-T4	8.8443e-03 (7.64e-04)	1.6288e-01 (2.61e-02) -	3.6940e-01 (5.78e-02) -	2.7727e-01 (2.96e-02) -	1.7613e-01 (2.86e-01) -
CEC19-MaTMO6-T5	3.2599e-02 (7.39e-03)	1.7179e-01 (4.32e-02) -	3.6705e-01 (5.51e-02) -	2.9044e-01 (2.88e-02) -	1.8846e-01 (3.39e-01) -
CEC19-MaTMO6-T6	8.5684e-03 (6.85e-04)	1.5488e-01 (3.29e-02) -	3.6938e-01 (2.69e-02) -	2.7921e-01 (3.24e-02) -	1.5114e-01 (1.38e-01) -
CEC19-MaTMO6-T7	3.8615e-02 (1.07e-02)	1.6569e-01 (3.93e-02) -	3.6093e-01 (5.07e-02) -	2.8854e-01 (2.34e-02) -	1.4899e-01 (1.43e-01) -
CEC19-MaTMO6-T8	8.5262e-03 (7.00e-04)	1.7852e-01 (4.16e-02) -	3.6259e-01 (4.53e-02) -	2.8744e-01 (2.63e-02) -	1.1969e-01 (1.78e-02) -
CEC19-MaTMO6-T9	3.2669e-02 (1.28e-02)	1.6455e-01 (4.48e-02) -	3.4934e-01 (3.95e-02) -	2.7506e-01 (3.14e-02) -	1.5817e-01 (1.86e-01) -
CEC19-MaTMO6-T10	8.5566e-03 (7.41e-04)	1.6736e-01 (5.24e-02) -	3.6598e-01 (4.79e-02) -	2.8003e-01 (3.97e-02) -	2.4200e-01 (2.88e-01) -
CEC19-MaTMO6-T11	3.8169e-02 (1.14e-02)	1.7713e-01 (5.03e-02) -	3.4718e-01 (5.29e-02) -	2.7882e-01 (2.78e-02) -	2.1560e-01 (3.17e-01) -
CEC19-MaTMO6-T12	8.8451e-03 (8.59e-04)	1.7171e-01 (4.71e-02) -	3.7415e-01 (3.90e-02) -	2.8364e-01 (3.04e-02) -	1.2394e-01 (2.81e-02) -
CEC19-MaTMO6-T13	3.1863e-02 (1.04e-02)	1.8340e-01 (4.38e-02) -	3.6825e-01 (4.13e-02) -	2.7439e-01 (3.74e-02) -	1.4890e-01 (1.45e-01) -
CEC19-MaTMO6-T14	9.0206e-03 (1.53e-03)	1.6440e-01 (4.24e-02) -	3.6639e-01 (4.16e-02) -	2.7362e-01 (2.28e-02) -	1.8060e-01 (2.81e-01) -
CEC19-MaTMO6-T15	3.3155e-02 (1.08e-02)	1.7856e-01 (3.44e-02) -	3.5750e-01 (3.50e-02) -	2.6896e-01 (3.73e-02) -	1.6089e-01 (1.99e-01) -
CEC19-MaTMO6-T16	8.6423e-03 (7.89e-04)	1.8602e-01 (4.83e-02) -	3.6206e-01 (3.99e-02) -	2.7527e-01 (2.68e-02) -	1.4819e-01 (1.79e-01) -
CEC19-MaTMO6-T17	3.2946e-02 (8.96e-03)	1.6276e-01 (3.46e-02) -	3.8051e-01 (5.00e-02) -	2.8497e-01 (3.78e-02) -	1.2152e-01 (2.35e-02) -
CEC19-MaTMO6-T18	8.6232e-03 (7.96e-04)	1.6106e-01 (3.07e-02) -	3.6995e-01 (4.70e-02) -	2.9395e-01 (3.26e-02) -	1.8737e-01 (2.88e-01) -
CEC19-MaTMO6-T19	3.2459e-02 (9.07e-03)	1.5627e-01 (3.97e-02) -	3.6276e-01 (5.58e-02) -	2.6481e-01 (2.94e-02) -	1.9105e-01 (2.23e-01) -
CEC19-MaTMO6-T20	8.3602e-03 (8.34e-04)	1.6772e-01 (4.05e-02) -	3.7611e-01 (4.30e-02) -	2.8813e-01 (3.33e-02) -	2.2321e-01 (3.29e-01) -
CEC19-MaTMO6-T21	3.3736e-02 (1.01e-02)	1.6893e-01 (4.69e-02) -	3.4285e-01 (3.88e-02) -	2.8695e-01 (3.33e-02) -	1.5685e-01 (1.67e-01) -
CEC19-MaTMO6-T22	8.3686e-03 (8.58e-04)	1.5086e-01 (3.29e-02) -	3.5617e-01 (4.82e-02) -	2.6437e-01 (3.99e-02) -	2.0701e-01 (2.91e-01) -
CEC19-MaTMO6-T23	3.2161e-02 (8.18e-03)	1.6507e-01 (4.89e-02) -	3.4871e-01 (3.99e-02) -	2.6992e-01 (2.66e-02) -	1.6935e-01 (1.83e-01) -
CEC19-MaTMO6-T24	8.4552e-03 (7.02e-04)	1.6312e-01 (3.78e-02) -	3.6654e-01 (4.77e-02) -	2.7855e-01 (2.74e-02) -	1.1284e-01 (2.11e-02) -
CEC19-MaTMO6-T25	3.6292e-02 (9.18e-03)	1.5400e-01 (3.21e-02) -	3.5327e-01 (4.67e-02) -	2.7541e-01 (2.70e-02) -	1.7930e-01 (2.64e-01) -
CEC19-MaTMO6-T26	8.5688e-03 (6.66e-04)	1.7099e-01 (4.13e-02) -	3.5586e-01 (5.93e-02) -	2.7340e-01 (2.50e-02) -	2.6602e-01 (3.79e-01) -
CEC19-MaTMO6-T27	3.5522e-02 (9.57e-03)	1.6682e-01 (3.57e-02) -	3.8746e-01 (5.60e-02) -	2.8143e-01 (3.64e-02) -	2.1044e-01 (3.07e-01) -
CEC19-MaTMO6-T28	8.6180e-03 (6.74e-04)	1.7322e-01 (4.02e-02) -	3.5983e-01 (6.72e-02) -	2.7329e-01 (2.26e-02) -	3.3365e-01 (3.98e-01) -
CEC19-MaTMO6-T29	3.6526e-02 (1.12e-02)	1.7651e-01 (4.84e-02) -	3.6631e-01 (4.94e-02) -	2.7714e-01 (2.28e-02) -	1.9638e-01 (2.56e-01) -
CEC19-MaTMO6-T30	8.4605e-03 (9.61e-04)	1.6326e-01 (4.60e-02) -	3.6823e-01 (4.63e-02) -	2.8518e-01 (2.43e-02) -	2.4374e-01 (3.92e-01) -
CEC19-MaTMO6-T31	3.2629e-02 (1.12e-02)	1.7441e-01 (2.86e-02) -	3.6806e-01 (5.97e-02) -	2.7155e-01 (2.73e-02) -	1.0854e-01 (2.18e-02) -
CEC19-MaTMO6-T32	9.1023e-03 (1.12e-03)	1.7148e-01 (4.05e-02) -	3.4244e-01 (3.90e-02) -	2.7610e-01 (2.73e-02) -	1.9486e-01 (2.48e-01) -
CEC19-MaTMO6-T33	3.4059e-02 (7.23e-03)	1.5460e-01 (3.59e-02) -	3.9034e-01 (4.94e-02) -	2.9555e-01 (3.09e-02) -	1.7640e-01 (2.13e-01) -
CEC19-MaTMO6-T34	8.6242e-03 (7.02e-04)	1.7196e-01 (3.68e-02) -	3.5983e-01 (3.53e-02) -	2.9400e-01 (3.00e-02) -	1.8934e-01 (2.35e-01) -
CEC19-MaTMO6-T35	3.3545e-02 (1.02e-02)	1.6924e-01 (4.01e-02) -	3.6450e-01 (5.84e-02) -	2.7604e-01 (2.55e-02) -	2.0749e-01 (2.66e-01) -
CEC19-MaTMO6-T36	8.6030e-03 (9.54e-04)	1.5340e-01 (3.14e-02) -	3.6137e-01 (5.01e-02) -	2.7464e-01 (1.98e-02) -	1.5388e-01 (1.63e-01) -
CEC19-MaTMO6-T37	3.0438e-02 (5.34e-03)	1.6574e-01 (4.71e-02) -	3.7590e-01 (4.41e-02) -	2.8354e-01 (3.02e-02) -	1.5391e-01 (1.76e-01) -
CEC19-MaTMO6-T38	9.0351e-03 (9.70e-04)	1.8232e-01 (8.88e-02) -	3.6222e-01 (4.46e-02) -	2.8821e-01 (3.85e-02) -	2.6764e-01 (4.29e-01) -
CEC19-MaTMO6-T39	3.5868e-02 (1.11e-02)	1.6598e-01 (3.12e-02) -	3.6404e-01 (4.93e-02) -	2.7978e-01 (3.04e-02) -	3.0896e-01 (4.17e-01) -
CEC19-MaTMO6-T40	8.4459e-03 (4.97e-04)	1.6841e-01 (3.68e-02) -	3.7044e-01 (4.67e-02) -	2.8670e-01 (2.81e-02) -	1.2259e-01 (1.80e-02) -
CEC19-MaTMO6-T41	3.7789e-02 (9.04e-03)	1.7183e-01 (3.48e-02) -	3.7390e-01 (4.43e-02) -	2.8922e-01 (2.69e-02) -	2.7127e-01 (5.07e-01) -
CEC19-MaTMO6-T42	8.4224e-03 (6.38e-04)	1.5459e-01 (2.51e-02) -	3.6975e-01 (5.08e-02) -	2.9680e-01 (2.84e-02) -	3.4472e-01 (4.64e-01) -
CEC19-MaTMO6-T43	3.4511e-02 (9.33e-03)	1.6793e-01 (4.20e-02) -	3.4194e-01 (5.41e-02) -	2.7046e-01 (3.16e-02) -	1.8957e-01 (1.94e-01) -
CEC19-MaTMO6-T44	8.9224e-03 (2.22e-03)	1.6470e-01 (2.95e-02) -	3.4884e-01 (4.63e-02) -	2.7057e-01 (3.85e-02) -	1.1300e-01 (1.83e-02) -
CEC19-MaTMO6-T45	3.2379e-02 (8.83e-03)	1.7574e-01 (3.17e-02) -	3.4529e-01 (5.39e-02) -	2.7953e-01 (2.29e-02) -	1.6783e-01 (2.28e-01) -
CEC19-MaTMO6-T46	8.5990e-03 (1.69e-03)	1.6771e-01 (2.89e-02) -	3.7322e-01 (4.06e-02) -	2.8238e-01 (3.21e-02) -	1.5849e-01 (1.82e-01) -
CEC19-MaTMO6-T47	3.5384e-02 (1.19e-02)	1.5381e-01 (2.87e-02) -	3.6660e-01 (7.25e-02) -	2.8433e-01 (3.09e-02) -	1.4858e-01 (1.40e-01) -
CEC19-MaTMO6-T48	8.4883e-03 (6.30e-04)	1.6291e-01 (2.49e-02) -	3.6198e-01 (5.24e-02) -	2.7556e-01 (2.35e-02) -	1.1747e-01 (1.97e-02) -
CEC19-MaTMO6-T49	3.4825e-02 (6.73e-03)	1.7327e-01 (4.43e-02) -	3.6970e-01 (6.19e-02) -	2.8592e-01 (3.31e-02) -	1.7749e-01 (2.83e-01) -
CEC19-MaTMO6-T50	8.7484e-03 (1.74e-03)	1.7538e-01 (3.49e-02) -	3.5062e-01 (4.96e-02) -	2.9242e-01 (3.29e-02) -	1.6429e-01 (1.74e-01) -
+/=-	Base	0/50/0	0/50/0	0/50/0	0/50/0