

Comparison tables: BBOB 2010 noisy testbed in 40-D

The BBOBies

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Abstract

This document provides tabular results of the workshop for Black-Box Optimization Benchmarking at GECCO 2010, see <http://coco.gforge.inria.fr/doku.php?id=bbob-2010>. More than 30 algorithms have been tested on 24 benchmark functions in dimensions between 2 and 40. A description of the used objective functions can be found in [7, 3]. The experimental set-up is described in [6].

The performance measure provided in the following tables is the expected number of objective function evaluations to reach a given target function value (ERT, expected running time), divided by the respective value for the best algorithm. Consequently, the best (smallest) value is 1 and the value 1 appears in each column at least once. See [6] for details on how ERT is obtained. Bold entries in the table correspond to values below 3 or the top-three best values.

Table 3: 40-D, running time excess ERT/ERT_{best} on f_{103} , in italics is given the median final function value and the median number of function evaluations to reach this value divided by dimension

103 Sphere moderate Cauchy											
$\Delta\text{ftarget}$ ERT_{best}/D	1e+03	1e+02	1e+01	1e+00	1e-01	1e-02	1e-03	1e-04	1e-05	1e-07	$\Delta\text{ftarget}$ ERT_{best}/D
	0.03	9.0	19	26	34	41	49	56	64	80	
(1,4ms)-CMA-ES	1	1.4	1	1	1	1	1	1	1	1	(1,4ms)-CMA-ES [1, 2]
CMA-EGS (IPOP,r1)	739	10	9.4	9.0	7.7	6.7	6.1	5.8	5.8	5.9	CMA-EGS (IPOP,r1) [4]
IPOP-aCMA-ES	1	1.0	1.1	1.4	1.4	1.5	1.6	1.7	1.7	1.8	IPOP-aCMA-ES [8]
IPOP-CMA-ES	1	1	1.2	1.4	1.4	1.5	1.6	1.7	1.7	1.7	IPOP-CMA-ES [11]
CMA+DE-MOS	1	4.2	5.4	4.6	4.1	4.4	5.2	4.9	5.2	5.3	CMA+DE-MOS [9]
Basic RCGA	1	2.8	7.5	97	534	500	466	432	398	343	Basic RCGA [12]
SPSA	864	24	23	28	31	82	322	<i>52e-5/1e5</i>	.	.	SPSA [5]

Table 9: 40-D, running time excess ERT/ERT_{best} on f_{109} , in italics is given the median final function value and the median number of function evaluations to reach this value divided by dimension

109 Sphere Cauchy											
Δf_{target} ERT_{best}/D	1e+03	1e+02	1e+01	1e+00	1e-01	1e-02	1e-03	1e-04	1e-05	1e-07	Δf_{target} ERT_{best}/D
	0.03	8.3	20	31	42	56	69	82	94	121	
(1,4ms)-CMA-ES	1	1.4	1	1	1	1	1	1	1	1	(1,4ms)-CMA-ES [1, 2]
CMA-EGS (IPOP,r1)	689	11	9.0	7.4	6.4	<i>38e-3/1e5</i>	.	.	.	.	CMA-EGS (IPOP,r1) [4]
IPOP-aCMA-ES	1	1.1	1.2	1.3	1.6	1.8	1.9	2.0	2.1	2.2	IPOP-aCMA-ES [8]
IPOP-CMA-ES	1	1	1.1	1.3	1.6	1.8	1.9	2.0	2.1	2.1	IPOP-CMA-ES [11]
CMA+DE-MOS	1	4.8	5.3	4.1	5.7	5.2	5.9	6.2	6.1	6.4	CMA+DE-MOS [9]
Basic RCGA	1	3.2	8.7	297	346	319	288	265	242	204	Basic RCGA [12]
SPSA	683	28	396	1849	33291	<i>82e-2/1e5</i>	.	.	.	.	SPSA [5]

Table 26: 40-D, running time excess ERT/ERT_{best} on f_{126} , in italics is given the median final function value and the median number of function evaluations to reach this value divided by dimension

126 Griewank-Rosenbrock unif											
Δf_{target} ERT_{best}/D	1e+03	1e+02	1e+01	1e+00	1e-01	1e-02	1e-03	1e-04	1e-05	1e-07	Δf_{target} ERT_{best}/D
	0.03	0.03	0.03	13	3.41e5	∞	∞	∞	∞	∞	
(1,4ms)-CMA-ES	1	1	1	<i>17e-1/1e4</i>	.	.	.	.	.	.	(1,4ms)-CMA-ES [1, 2]
CMA-EGS (IPOP,r1)	3014	3562	3755	22	<i>52e-2/1e5</i>	.	.	.	.	.	CMA-EGS (IPOP,r1) [4]
IPOP-aCMA-ES	1	1	1	66	<i>51e-2/2e5</i>	.	.	.	.	.	IPOP-aCMA-ES [8]
IPOP-CMA-ES	1	1	1	57	<i>50e-2/2e5</i>	.	.	.	.	.	IPOP-CMA-ES [11]
CMA+DE-MOS	1	1	1.1	6.0	<i>54e-2/1e5</i>	.	.	.	.	.	CMA+DE-MOS [9]
Basic RCGA	1	1	1.1	1	1	<i>55e-2/5e4</i>	.	.	.	.	Basic RCGA [12]
SPSA	2.60e7	2.60e7	2.60e7	51513	<i>93e+3/1e5</i>	.	.	.	.	.	SPSA [5]

Table 27: 40-D, running time excess ERT/ERT_{best} on f_{127} , in italics is given the median final function value and the median number of function evaluations to reach this value divided by dimension

	127 Griewank-Rosenbrock Cauchy										
$\Delta\text{ftarget}$ ERT_{best}/D	1e+03 0.03	1e+02 0.03	1e+01 0.03	1e+00 10	1e-01 47116	1e-02 1.02e5	1e-03 2.77e5	1e-04 3.69e5	1e-05 4.89e5	1e-07 5.41e5	$\Delta\text{ftarget}$ ERT_{best}/D
(1,4ms)-CMA-ES	1	1	1	18	<i>78e-2/1e4</i>	.	.	.	.	.	(1,4ms)-CMA-ES [1, 2]
CMA-EGS (IPOP,r1)	711	818	968	4.1	<i>47e-2/1e5</i>	.	.	.	.	.	CMA-EGS (IPOP,r1) [4]
IPOP-aCMA-ES	1	1	1	1.8	1	1	1.2	1.6	1.3	1.2	IPOP-aCMA-ES [8]
IPOP-CMA-ES	1	1	1	2.0	3.4	2.4	1	1	1	1	IPOP-CMA-ES [11]
CMA+DE-MOS	1	1	1.1	7.6	2.5	<i>10e-2/1e5</i>	.	.	.	.	CMA+DE-MOS [9]
Basic RCGA	1	1	1	1	3.0	<i>16e-2/5e4</i>	Basic RCGA [12]
SPSA	431	527	4104	11818	30	<i>19e-1/1e5</i>	SPSA [5]

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