# Comparison of NEWUOA with Different Numbers of Interpolation Points on the BBOB Noiseless Testbed

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#### **ABSTRACT**

In this paper, we study the performances of the NEW Unconstrained Optimization Algorithm (NEWUOA) with different numbers of interpolation points. NEWUOA is a trust region method, the number of points used to build the surrogate model is an input parameter of the algorithm. We compare the performances of NEWUOA using three different number of points in search spaces of dimension from two to forty on problems from the BBOB 2009 noiseless function testbed.

In particular we study the performances of an 'average' number of interpolation points that scales like the dimension of the search space to the power 3/2. Using this number of interpolation points is expectedly faster than using the maximum number of interpolation points (scaling like the square of the dimension), though it does not grant better performances than using a number of interpolation points scaling like the dimension.

# **Categories and Subject Descriptors**

G.1.6 [Numerical Analysis]: Optimization—global optimization, unconstrained optimization; F.2.1 [Analysis of Algorithms and Problem Complexity]: Numerical Algorithms and Problems

#### **General Terms**

Algorithms

#### **Keywords**

Benchmarking, Black-box optimization

#### 1. INTRODUCTION

The NEWUOA, for NEW Unconstrained Optimization Algorithm was introduced in [5] as a method for unconstrained derivative-free optimization. NEWUOA is a trust-region method which uses m points to build a quadratic approximation of the objective function. The approximation

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GECCO'10, July 7–11, 2010, Portland, Oregon, USA. Copyright 2010 ACM 978-1-4503-0073-5/10/07 ...\$10.00. is considered reliable within the radius of the current trust region. In this paper, we study the effect of the number of interpolation points m on the performances of NEWUOA on a testbed of noiseless functions.

We use three different values for m which will be denoted **NEWUOA**, **avg-NEWUOA** and **full-NEWUOA**. These variants are sorted by ascending numbers of interpolation points. The number of interpolation points of these variants depends on the dimension of the search space n. The variant denoted NEWUOA uses 2n+1 interpolation points as recommended in [5]. The avg-NEWUOA uses the rounded value of  $\sqrt{(n+1/2)(n+1)(n+2)}$  interpolation points which is intermediate. The full-NEWUOA uses the maximum number  $\frac{(n+1)(n+2)}{2}$ . These three settings were already compared on a few test problems in [5].

The performances of the avg-NEWUOA are obtained on the BBOB 2009 testbed of noiseless functions. The avg-NEWUOA is successively compared to NEWUOA and full-NEWUOA. The performances of both NEWUOA and full-NEWUOA on the BBOB 2009 noiseless functions were presented in [7].

#### 2. EXPERIMENTAL PROCEDURE

To benchmark the avg-NEWUOA, we use the exact same experimental procedure that was presented in [7]. In particular the algorithm uses an independent multi-start procedure, as do NEWUOA and full-NEWUOA. The crafting effort [3] is equal to  ${\rm CrE}=0$  for all three variants of the NEWUOA.

## 3. CPU TIMING EXPERIMENT

According to [5], the complexity of the NEWUOA variants we consider is at worst  $\Theta(mn)$ , where n is the dimension of the search space. The algorithms were run on  $f_8$  for at least 30 seconds, according to [3].

Results for the the different variants of NEWUOA are given in Table 1. These figures were obtained on a Intel Core 2 6700 processor (2.66 GHz) with Linux 2.6.24.7.

## 4. RESULTS

Results from experiments according to [3] on the benchmark functions given in [1, 4] are presented in this section. The Figures 1 and 2 and the Table 2 compare the avg-NEWUOA to NEWUOA. The Figures 3 and 4 and the Table 3 compare the avg-NEWUOA to full-NEWUOA. The **expected running time (ERT)**, used in the figures and tables, depends on a given target function value,  $f_t = f_{\text{opt}} + f_{\text{opt}}$ 

Table 1: CPU-Time per function evaluations of  $f_8$  in microseconds for variants of NEWUOA with different number of interpolation points

	2-D	3-D	5-D	10-D	20-D	40-D
NEWUOA	8.1	11	21	58	170	620
avg	8.0	13	27	100	580	3900
full	9.0	15	38	240	2400	32000

 $\Delta f$ , and is computed over all relevant trials as the number of function evaluations executed during each trial while the best function value did not reach  $f_{\rm t}$ , summed over all trials and divided by the number of trials that actually reached  $f_{\rm t}$  [3, 6]. **Statistical significance** is tested with the rank-sum test for a given target  $\Delta f_{\rm t}$  (10<sup>-8</sup> in Figure 1) using, for each trial, either the number of needed function evaluations to reach  $\Delta f_{\rm t}$  (inverted and multiplied by -1), or, if the target was not reached, the best  $\Delta f$ -value achieved, measured only up to the smallest number of overall function evaluations for any unsuccessful trial under consideration.

The performances of all variants of NEWUOA are rather similar over all test functions of the BBOB 2009 noiseless testbed as shown in the top sub-figures of Figures 2 and 4. Some differences can be spotted. Figure 1 shows NEWUOA is faster than avg-NEWUOA on functions  $f_1$  and  $f_5$  by a factor growing as the dimension of the search space increases. There is a factor of two in 20-D, a factor of three in 40-D. Also, on the Bent Cigar function  $f_{12}$ , NEWUOA is faster than avg-NEWUOA by a factor of up to a hundred.

In a rather similar way, avg-NEWUOA is faster than full-NEWUOA on functions  $f_1$  and  $f_5$  by a factor growing as the dimension of the search space increases. The avg-NEWUOA is faster than full-NEWUOA in 20-D on functions  $f_2$ ,  $f_6$ ,  $f_8$ ,  $f_9$ ,  $f_{10}$ ,  $f_{11}$ ,  $f_{12}$ .

The performances of all three NEWUOA variants on  $f_{14}$  show strange behaviour since the precision of  $10^{-7}$  is reached consistently but  $10^{-8}$  is not. None of the three variants reached the target precision  $10^{-8}$  on functions  $f_{15}$  to  $f_{19}$  except in 2-D and 3-D.

# Acknowledgment

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## 5. REFERENCES

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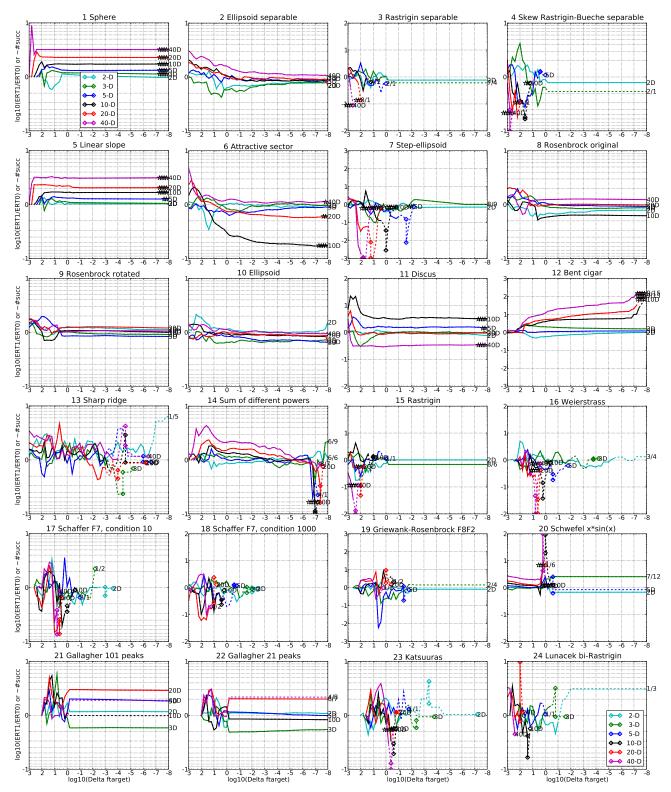


Figure 1: ERT ratio of avg-NEWUOA divided by NEWUOA versus  $\log_{10}(\Delta f)$  for  $f_1$ - $f_{24}$  in 2, 3, 5, 10, 20, 40-D. Ratios  $<10^0$  indicate an advantage of avg-NEWUOA, smaller values are always better. The line gets dashed when for any algorithm the ERT exceeds thrice the median of the trial-wise overall number of f-evaluations for the same algorithm on this function. Symbols indicate the best achieved  $\Delta f$ -value of one algorithm (ERT gets undefined to the right). The dashed line continues as the fraction of successful trials of the other algorithm, where 0 means 0% and the y-axis limits mean 100%, values below zero for avg-NEWUOA. The line ends when no algorithm reaches  $\Delta f$  anymore. The number of successful trials is given, only if it was in  $\{1\dots 9\}$  for avg-NEWUOA (1st number) and non-zero for NEWUOA (2nd number). Results are significant with p=0.05 for one star and  $p=10^{-\#*}$  otherwise, with Bonferroni correction within each figure.

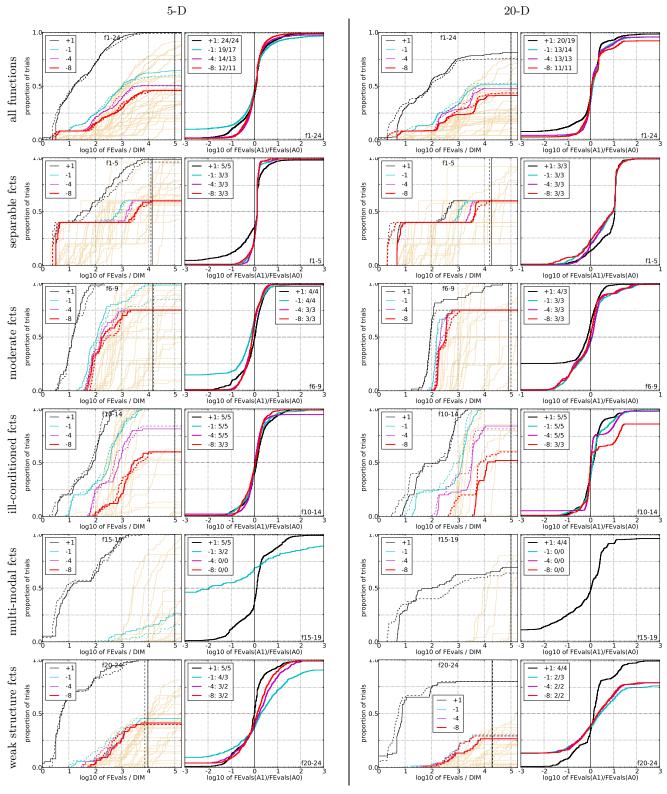


Figure 2: Empirical cumulative distributions (ECDF) of run lengths and speed-up ratios in 5-D (left) and 20-D (right). Left sub-columns: ECDF of the number of function evaluations divided by dimension D (FEvals/D) to reach a target value  $f_{\rm opt} + \Delta f$  with  $\Delta f = 10^k$ , where  $k \in \{1, -1, -4, -8\}$  is given by the first value in the legend, for avg-NEWUOA (solid) and NEWUOA (dashed). Light beige lines show the ECDF of FEvals for target value  $\Delta f = 10^{-8}$  of algorithms benchmarked during BBOB-2009. Right sub-columns: ECDF of FEval ratios of avg-NEWUOA divided by NEWUOA, all trial pairs for each function. Pairs where both trials failed are disregarded, pairs where one trial failed are visible in the limits being > 0 or < 1. The legends indicate the number of functions that were solved in at least one trial (avg-NEWUOA first).

				5-I	)						20-D	)			
$\Delta f$	1e+1	1e+0	1e-1	1e-3	1e-5	1e-7	#succ	$\Delta f$	1e+1	1e+0	1e-1	1e-3	1e-5	1e-7	#succ
$\mathbf{f_1}$	11	12	12	12	12	12	15/15	f <sub>1</sub> 0: NEW	43 1.0*3	43 1.0*3	43 1.0*3	43 1.0*3	43 1.0*3	43 1.0 <sup>*3</sup>	15/15 $15/15$
0: NEW 1: AVG	1.1*3 1.5	1 * 3 1.3	1*3 1.3	1*3 1.3	1*3 1.3	1*3 1.3	$\frac{15}{15}$	1: AVG	2.3	2.3	2.3	2.3	2.3	2.3	15/15
$f_2$	83	87	88	90	92	94	15/15	62 0: NEW	385 18	386 42	387 71	390 125	391 174	393 219	15/15
0: NEW 1: AVG	5.7 6.4	22 21	$\frac{45}{41}$	85 75	129 108	166 145	$\frac{15}{15}$	1: AVG	21	43			161	199	$\frac{15}{15}$
f <sub>3</sub>	716	1622	1637	1646	1650	1654	15/15	<b>f</b> <sub>3</sub> 0: NEW	5066	7626	7635	7643	7646	7651 $\infty 1.3e5$	15/15
0: NEW	6.1 3.0	229 130	~	∞	∞	$\infty 2.5e4$ $\infty 3.0e4$	0/15	1: AVG	∞ ∞	∞	∞	∞	∞ ∞	$\infty$ 1.3e5 $\infty$ 2.1e5	$0/15 \\ 0/15$
1: AVG <b>f</b> <sub>4</sub> 0: NEW	809	1633	$\frac{\infty}{1688}$	1817	1886	1903	0/15 $15/15$	f <sub>4</sub>	4722	7628	7666	7700	7758	1.41e5	9/15
0: NEW 1: AVG	27 14	$305$ $\infty$	∞ ∞	∞ ∞	∞ ∞	$\infty$ 3.4e4 $\infty$ 4.1e4	$0/15 \\ 0/15$	0: NEW 1: AVG	∞ ∞	∞	∞	∞ ∞	∞ ∞	$\infty$ 2.2e5 $\infty$ 3.2e5	$0/15 \\ 0/15$
f <sub>5</sub>	10	10	10	10	10	10	15/15	$f_5$	41	41 1 5 * 3	41	41	41	41	15/15
0: NEW	1.3*3	1.5*2	1.5*	1.5*	1.5*	1.5*	15/15	0: NEW 1: AVG	1.2*3 2.7	1.5*3 3.2	1.6*3 3.3	1.6*3 3.3	1.6*3 3.3	1.6*3 3.3	$\frac{15}{15}$
1: AVG <b>f</b> <sub>6</sub>	1.8	1.9 214	1.9 281	1.9 580	1.9	1.9 1332	$\frac{15/15}{15/15}$	f <sub>6</sub>	1296	2343	3413	5220	6728	8409	15/15
0: NEW	1.7	2.4	3.6	3.3	2.7	2.9	15/15	0: NEW	1 1.00	$\frac{1}{0.74}$	$\frac{1}{0.72}$	$0.70^{\downarrow 4}$	$0.74^{\downarrow 4}$	1.3 <b>0.73</b> * <sup>2</sup> ↓ <sup>4</sup>	15/15
1: AVG f <sub>7</sub>	1.3	1.6 324	2.6 1171	2.6 1572	2.4 1572	2.5 1597	$\frac{15/15}{15/15}$	1: AVG f <sub>7</sub>	1351	4274	9503	16524	16524	16969	$\frac{15/15}{15/15}$
0: NEW	10	13	60	∞	∞	$\infty 2.9e4$	0/15	0: NEW	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty 4.8e5$	0/15
1: AVG	4.4 73	5.9 273	13* 336	$\infty$ 391	$\infty$ 410	$\infty 3.8e4$ $422$	0/15 $15/15$	1: AVG f <sub>8</sub>	101*3 2039	∞ 3871	$\infty$ 4040	$\frac{\infty}{4219}$	$\frac{\infty}{4371}$	$\infty 4.5e5$ $4484$	0/15 $15/15$
f <sub>8</sub> 0: NEW	1	1.1	1.2	1.2	1.2	1.2	15/15 $15/15$	0: NEW	1	1	1	1	1	1	15/15
1: AVG	1.2	1.2 127	1.1	1.1	1.1	1.1 369	15/15	1: AVG	0.96 1716	0.97 3102	1.0 3277	1.0 3455	1.0 3594	0.99 3727	$\frac{15/15}{15/15}$
<b>f9</b> 0: NEW	35 1.8	3.6	$\frac{214}{2.5}$	$\frac{300}{1.9}$	335 1.9	1.7	$\frac{15}{15}$	<b>f9</b> 0: NEW	1.0	1	1	1	1	1	15/15
1: AVG	2.4	3.1	2.1	1.7	1.6	1.5	15/15	1: AVG	1.0	1.2	1.2	1.3	1.2	1.2	15/15
f10 0: NEW	349 3.1	500 5.5	574 8.1	626 14	829 16	880 21	$\frac{15}{15}$	f <sub>10</sub> 0: NEW	7413 1.7	8661 2.6	10735 3.3	14920 4.0	17073 4.7	17476 5.8	15/15 $15/15$
1: AVG	3.1	4.6	6.6	10	11	14	15/15	1: AVG	1.5	2.6	3.1	3.6	4.2	5.0	15/15
f <sub>11</sub> 0: NEW	143 3.5	202 4.7	763 1.8	1177 1.8*	1467 2.0*	1673 2 <b>2.2</b> *2	$\frac{15/15}{15/15}$	f <sub>11</sub> 0: NEW	1002 15	2228 13	6278 5.8	9762 6.1	12285 6.6	14831 6.5	15/15 $15/15$
1: AVG	5.4	7.2	2.7	2.8	3.1	3.4	15/15	1: AVG	15	11	5.7	5.6	5.8	6.1	15/15
f <sub>12</sub>	108 3.5	268 2.6	371	461 2.6	1303	1494 1.1	15/15	f <b>12</b> 0: NEW	1042 3.0	1938 3.0	2740 3.0	4140 2.5 <sup>*2</sup>	12407 1*3	13827 1*3	15/15 $15/15$
0: NEW 1: AVG	3.5	2.6	2.5 2.8	3.0	1.1	$1.1 \\ 1.4$	$\frac{15}{15}$	1: AVG	11	15	18	24	12	21	9/15
f <sub>13</sub>	132	195	250	1310	1752	2255	15/15	f <sub>13</sub>	652 1*	2021 3.0	2751	18749 19	24455	30201	15/15
0: NEW 1: AVG	3.1 4.5	9.3 8.1	$\frac{35}{42}$	54 68	335 391	$\infty$ 4.0e4 $\infty$ 4.7e4	$0/15 \\ 0/15$	0: NEW 1: AVG	1.5	5.3	9.3 14		$_{172}^{\infty}$	$\infty 1.8e5$ $\infty 3.0e5$	$0/15 \\ 0/15$
f <sub>14</sub>	10	41	58	139	251	476	15/15	f <sub>14</sub>	75	239	304	932	1648	15661	15/15
0: NEW 1: AVG	1.7 2.1	$^{1}_{1.0}$	1 1.0	$\frac{1.2}{1.2}$	5.5 $5.0$	2525 1029	$0/15 \\ 0/15$	0: NEW 1: AVG	1.5 <sup>*2</sup>	1* 1.5	1*3 1.6	1*2 1.3	9.1 9.3	43 <b>26</b> *3	0/15 0/15
f <sub>15</sub>	511	9310	19369	20073		21359	14/15	f <sub>15</sub>	30378	1.47e5	3.12e5	3.20e5	4.49e5	4.59e5	15/15
0: NEW 1: AVG	5.8 5.8	41 46	∞ ∞	$\infty$	∞	$\infty 2.5e4$ $\infty 2.9e4$	$0/15 \\ 0/15$	0: NEW 1: AVG	∞ ∞	∞	∞ ∞	∞ ∞	∞ ∞	$\infty 1.3e5$ $\infty 2.0e5$	$0/15 \\ 0/15$
f <sub>16</sub>	120	612	2662	10449	11644	12095	15/15	f <sub>16</sub>	1384	27265	77015	1.88e5	1.98e5	2.20e5	15/15
0: NEW 1: AVG	2.1	29 12	$\frac{\infty}{47}$	$\infty$	∞	$\infty$ 3.6e4 $\infty$ 4.0e4	$0/15 \\ 0/15$	0: NEW	16	$\infty$	$\infty$	$\infty$	$\infty$	$\infty 2.3e5$	0/15
f <sub>17</sub>	5.2	215	899	3669	6351	7934	15/15	1: AVG <b>f</b> 17	3.6 63	$\frac{\infty}{1030}$	$\infty$ $4005$	$\frac{\infty}{30677}$	$-\infty$ 56288	$\infty 3.2e5$ 80472	0/15 $15/15$
0: NEW 1: AVG	2.3	40 42	617 405	∞	∞	$\infty$ 3.4e4 $\infty$ 5.5e4	$0/15 \\ 0/15$	0: NEW	16	$\infty$	$\infty$	$\infty$	$\infty$	$\infty 1.5e6$	0/15
f <sub>18</sub>	103	378	3968	9280	10905	12469	15/15	1: AVG f <sub>18</sub>	2.4 621	$\infty$ $3972$	$\frac{\infty}{19561}$	$\frac{\infty}{67569}$	$\infty$ 1.31e5	$\infty 8.7e5$ 1.47e5	0/15 $15/15$
0: NEW 1: AVG		1351 272	∞ ∞	∞ ∞	∞	$\infty$ 9.2e4 $\infty$ 1.5e5	$0/15 \\ 0/15$	0: NEW		$\infty$	$\infty$	$\infty$	$\infty$	$\infty 1.6e6$	0/15
f <sub>19</sub>	1	1	242	1.20e5			15/15	1: AVG <b>f</b> 19	3217	$\infty$	$\infty$ 3.43e5	$\infty$ 6.22e6	∞ 6.69e6	$\infty 1.2e6$ 6.74e6	0/15 $15/15$
0: NEW 1: AVG	14* 24	26728 15619	1415 995	∞	∞	$\infty 5.0e5$ $\infty 5.0e5$	$0/15 \\ 0/15$	0: NEW	76*	4.29e6	$\infty$	∞	$\infty$	$\infty 2.0e6$	0/15
f20	16	851	38111	$\frac{\infty}{54470}$		55313	14/15	1: AVG f <sub>20</sub>	210 82	8.03e6 46150	$\infty$ 3.10e6	$\infty$ $5.54e6$	∞ 5.59e6	$\infty 2.0e6$ 5.64e6	0/15 $14/15$
0: NEW	1	3.3	∞	$\infty$	∞	$\infty$ 3.2e4	0/15	0: NEW	1	15 <sup>*2</sup>	∞	∞	∞	∞3.8e5	0/15
1: AVG f21	41	8.4 1157	12 1674	8.2 1705	8.1 1729	8.0 1757	$\frac{1/15}{14/15}$	1: AVG		107	∞	∞	~	$\infty 3.4e5$	0/15
0: NEW	1.1	2.2	1.8	1.8	1.8	1.9	15/15	f <b>21</b> 0: NEW	561 1.7	6541 $2.2$	14103 1.2	14643 1.2	15567 $1.1$	17589 1	15/15 $15/15$
1: AVG f22	1.7 71	2.5 386	3.6 938	3.5 1008	3.5 1040	3.5 1068	$\frac{15/15}{14/15}$	1: AVG	3.2	5.7	3.5	3.4	3.3	2.9	14/15
0: NEW	2.1	2.1	2.0	2.1	2.3	2.4	15/15	622 0: NEW	467 1	5580 4.9	23491 6.8	24948 6.4	26847 6.0	1.35e5 1.2	$\frac{12/15}{7/15}$
1: AVG f <sub>23</sub>	3.4	2.6 518	2.3 14249	2.3 31654	2.4 33030	2.4 34256	$\frac{15/15}{15/15}$	1: AVG	2.0	5.6	14	13	12	2.4	6/15
0: NEW	6.2	2.4	7.1	∞	∞	$\infty$ 3.3e4	0/15	<b>f23</b> 0: NEW	3.2 12	1614 3.5	67457 32	4.89e5 ∞	8.11e5 ~	8.38e5 ∞1.5e5	15/15 0/15
1: AVG	6.0 1622	2.5 2.16e5	14 6.36e6	$\infty$ $9.62e6$	$\infty$ 1.28e7	$\infty 4.5e4$ 1.28e7	0/15 3/15	1: AVG	15	4.7	$\infty$	∞	$\infty$	$\infty$ 3.7e5	0/15
f <b>24</b> 0: NEW	2.9	2.1	$\infty$	$\infty$	$\infty$	$\infty$ 3.0e4	0/15	f <sub>24</sub> 0: NEW	1.34e6 ∞	7.48e6 ∞	5.19e7 ∞	5.20e7 ∞	5.20e7 ∞	5.20e7 $\infty 1.7e5$	3/15 0/15
1: AVG	2.0	2.2	$\infty$	$\infty$	$\infty$	$\infty$ 3.3e4	0/15	1: AVG	∞	∞	∞	∞	∞	$\infty$ 1.7e5 $\infty$ 2.1e5	0/15

Table 2: Expected running time (ERT in number of function evaluations) divided by the best ERT measured during BBOB-2009 (given in the respective first row) for different  $\Delta f$  values for functions  $f_1-f_{24}$ . The median number of conducted function evaluations is additionally given in *italics*, if ERT( $10^{-7}$ ) =  $\infty$ . #succ is the number of trials that reached the final target  $f_{\rm opt}+10^{-8}$ . 0: NEW is NEWUOA and 1: AVG is avg-NEWUOA. Bold entries are statistically significantly better compared to the other algorithm, with p=0.05 or  $p=10^{-k}$  where k>1 is the number following the  $\star$  symbol, with Bonferroni correction of 48.

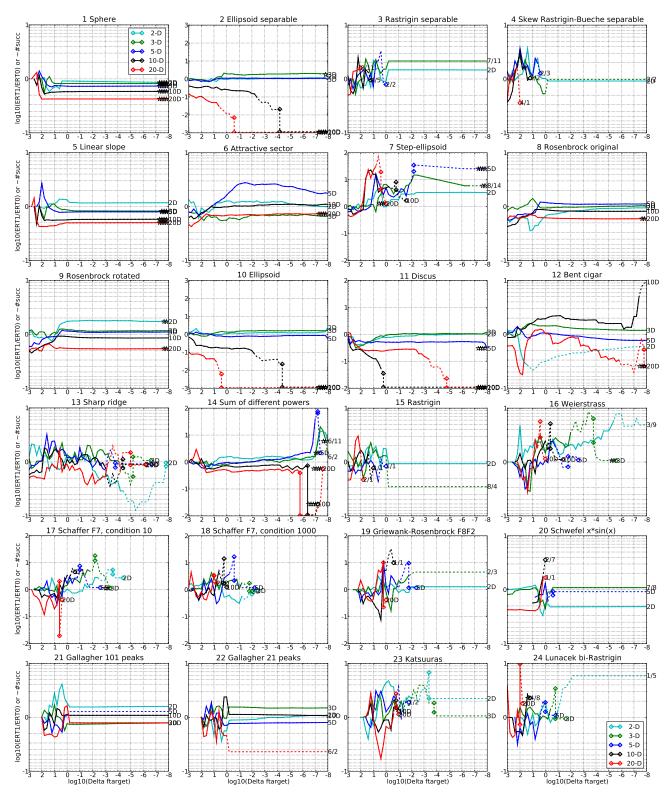


Figure 3: ERT ratio of avg-NEWUOA divided by full-NEWUOA versus  $\log_{10}(\Delta f)$  for  $f_1-f_{24}$  in 2, 3, 5, 10, 20, 40-D. Ratios  $< 10^0$  indicate an advantage of avg-NEWUOA, smaller values are always better. The line gets dashed when for any algorithm the ERT exceeds thrice the median of the trial-wise overall number of f-evaluations for the same algorithm on this function. Symbols indicate the best achieved  $\Delta f$ -value of one algorithm (ERT gets undefined to the right). The dashed line continues as the fraction of successful trials of the other algorithm, where 0 means 0% and the y-axis limits mean 100%, values below zero for avg-NEWUOA. The line ends when no algorithm reaches  $\Delta f$  anymore. The number of successful trials is given, only if it was in  $\{1\dots 9\}$  for avg-NEWUOA (1st number) and non-zero for full-NEWUOA (2nd number). Results are significant with p=0.05 for one star and  $p=10^{-\#*}$  otherwise, with Bonferroni correction within each figure.

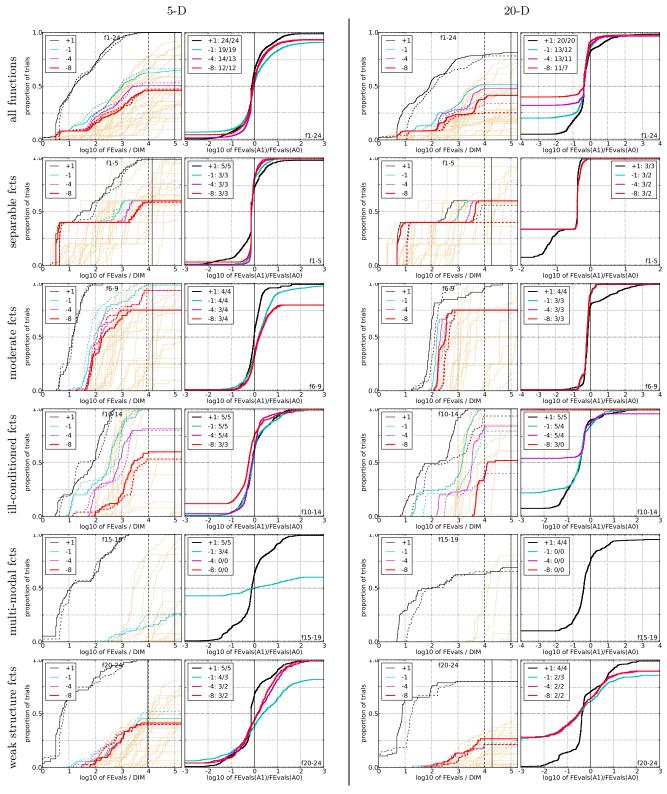


Figure 4: Empirical cumulative distributions (ECDF) of run lengths and speed-up ratios in 5-D (left) and 20-D (right). Left sub-columns: ECDF of the number of function evaluations divided by dimension D (FEvals/D) to reach a target value  $f_{\rm opt} + \Delta f$  with  $\Delta f = 10^k$ , where  $k \in \{1, -1, -4, -8\}$  is given by the first value in the legend, for avg-NEWUOA (solid) and full-NEWUOA (dashed). Light beige lines show the ECDF of FEvals for target value  $\Delta f = 10^{-8}$  of algorithms benchmarked during BBOB-2009. Right sub-columns: ECDF of FEval ratios of avg-NEWUOA divided by full-NEWUOA, all trial pairs for each function. Pairs where both trials failed are disregarded, pairs where one trial failed are visible in the limits being > 0 or < 1. The legends indicate the number of functions that were solved in at least one trial (avg-NEWUOA first).

5-D 20-D

										20-				
A C 1 1 1 1	1 10	1 1	1e-3	1e-5	1e-7		$\Delta f$	1e+1	1e+0	1e-1	1e-3	1e-5	1e-7	#succ
$\Delta f$ 1e+1		1e-1				#succ	f <sub>1</sub>	43	43	43	43	43	43	15/15
61 11 0: FUL 1.9	12 1.8	12 1.8	12 1.8	12 1.8	12 1.8	15/15	0: FUL	5.4	5.4	5.5	5.5	5.5	5.5	15/15
		1.8	1.8			15/15	1: AVG	2.3 <sup>*3</sup>	2.3*3	2.3 <sup>*3</sup>	2.3 <sup>*3</sup>	2.3 <sup>*3</sup>	2.3 <sup>*3</sup>	15/15
1: AVG 1.5*							$f_2$	385	386	387	390	391	393	15/15
f <sub>2</sub> 83	87	88	90	92	94	15/15	0: FUL	448	3769	$\infty$	$\infty$	$\infty$	$\infty 2.0e5$	0/15
0: FUL 6.9 1: AVG 6.4	19 21	36 41	69 75	103 108	134 145	14/15	1: AVG	21 * 3	43* <sup>3</sup>	63* <sup>3</sup>	116* <sup>3</sup>	161* <sup>3</sup>	199* <sup>3</sup>	15/15
						15/15	f <sub>3</sub>	5066	7626	7635	7643	7646	7651	15/15
fg 716 0: FUL 4.2	1622 164	1637	1646	1650	1654 $\infty 3.7e4$	15/15	0: FUL	~	∞	∞	∞	∞	$\infty 2.0e5$	0/15
1: AVG 3.0	130	∞ ∞	∞ ∞	∞	$\infty$ 3.7e4 $\infty$ 3.0e4	0/15 0/15	1: AVG	~	$\infty$	$\infty$	∞	$\infty$	$\infty 2.1e5$	0/15
	1633	1688	1817	1886	1903	15/15	$f_4$	4722	7628	7666	7700	7758	1.41e5	9/15
64 809 0: FUL 12	∞	∞	∞	∞	$\infty 5.0e4$	0/15	0: FUL	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty 2.0e5$	0/15
1: AVG14	∞	∞	∞	∞	$\infty$ 4.1e4	0/15	1: AVG	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$ 3.2e5	0/15
f <sub>5</sub> 10	10	10	10	10	10	15/15	$f_5$	41	41	41	41	41	41	15/15
0: FUL 2.2	2.4	2.4	2.4	2.4	2.4	15/15	0: FUL	6.2	6.5	6.6	6.6	6.6	6.6	15/15
1: AVG 1.8*	2 1.9 <sup>*3</sup>	1.9*	1.9*2	1.9*2	1.9*2	15/15	1: AVG	2.7*3	3.2 <sup>*3</sup>	3.3 <sup>*3</sup>	3.3 <sup>*3</sup>	3.3 <sup>*3</sup>	3.3 <sup>*3</sup>	15/15
f <sub>6</sub> 114	214	281	580	1038	1332	15/15	$f_6$	1296	2343	3413	5220	6728	8409	15/15
0: FUL 1.2	1	1	1	1	1.4	15/15	0: FUL	1.4	1.1	1.0	1	1	1	15/15
1: AVG 1.3	1.6	2.6	2.6	2.4	2.5	15/15	1: AVG	1.00*	0.74*3	0.72*3	0. <b>7</b> 0* <sup>3</sup> ↓ <sup>4</sup>	0. <b>74</b> * <sup>3</sup> ↓ <sup>4</sup>	0. <b>73</b> * <sup>3</sup> ↓ <sup>4</sup>	15/15
f <sub>7</sub> 24	324	1171	1572	1572	1597	15/15	f <sub>7</sub>	1351	4274	9503	16524	16524	16969	15/15
0: FUL 1	1.2	4.0	24*	24*	23*	11/15	0: FUL	4.6	<b>7</b> 00* <sup>2</sup>	$\infty$	$\infty$	$\infty$	$\infty 2.0e5$	0/15
1: AVG 4.4	5.9	13	$\infty$	$\infty$	$\infty 3.8e4$	0/15	1: AVG	101	~	$\infty$	∞	$\infty$	$\infty$ 4.5e5	0/15
f <sub>8</sub> 73	273	336	391	410	422	15/15	$f_8$	2039	3871	4040	4219	4371	4484	15/15
0: FUL 1.6	1	1	1	1	1	15/15	0: FUL	1.4	1.6	1.6	1.7	1.7	1.7	15/15
1: AVG 1.2	1.2	1.1	1.1	1.1	1.1	15/15	1: AVG	0.96*	0.97	1.0	1.0*	1.0*	0.99*	15/15
f <sub>9</sub> 35	127	214	300	335	369	15/15	$f_9$	1716	3102	3277	3455	3594	3727	15/15
0: FUL 2.6	2.7	1.9	1.5	1.4	1.3	15/15	0: FUL	1.8	2.2	2.3	2.3	2.3	2.2	15/15
1: AVG 2.4	3.1	2.1	1.7	1.6	1.5	15/15	1: AVG	1.0*3	1.2	1.2	1.3	1.2	1.2	15/15
f <sub>10</sub> 349	500	574	626	829	880	15/15	f <sub>10</sub>	7413	8661	10735	14920	17073	17476	15/15
0: FUL 3.6	6.2	8.7	13	13	17	12/15	0: FUL	34	$\infty$	$\infty$	$\infty$	$\infty$	$\infty 2.0e5$	0/15
1: AVG 3.1	4.6 202	6.6	10	11	14	15/15	1: AVG	1.5*3	2.6*3	3.1 <sup>*3</sup>	3.6* <sup>3</sup>	4.2 <sup>*3</sup>	5.0* <sup>3</sup>	15/15
f <sub>11</sub> 143 0: FUL 11	202 14	763	$\frac{1177}{5.3}$	1467 5.9	1673 6.5	15/15	f <sub>11</sub>	1002	2228	6278	9762	12285	14831	15/15
		5.4 2.7*3	3.3 2.8*3	3.1*3	3.4*3	13/15	0: FUL	57	45	21	36	$\infty$	$\infty 2.0e5$	0/15
	7.2	2.7	2.8	3.1	3.4	15/15	1: AVG	15 <sup>*3</sup>	11*3	5.7 <sup>*3</sup>	5.6 <sup>*3</sup>	5.8 <sup>*3</sup>	6.1 <sup>*3</sup>	15/15
f <sub>12</sub> 108	268	371	461	1303	1494	15/15	f <sub>12</sub>	1042	1938	2740	4140	12407	13827	15/15
0: FUL 3.7 1: AVG 3.5	2.6 2.8	2.7 2.8	$\frac{3.3}{3.0}$	1.6 1.3	$\frac{1.7}{1.4}$	$\frac{15}{15}$ $\frac{15}{15}$	0: FUL	11	15	26	38		105	0/15
	195	250	1310	1752	2255	15/15	1: AVG	11	15	18	24	12	21	9/15
f <sub>13</sub> 132 0: FUL 1.8	6.7	23	97	∞	$\infty 5.0e4$	0/15	f <sub>13</sub>	652	2021	2751	18749	24455	30201	15/15
1: AVG 4.5	8.1	42	68	391	$\infty 4.7e4$	0/15	0: FUL	1.8	6.0	18	26	116	$\infty 2.0e5$ $\infty 3.0e5$	0/15
f <sub>14</sub> 10	41				476	15/15	1: AVG	1.5*	5.3	14	14	172		0/15
		58	139	251					0.00			1040		1 5 /15
							f <sub>14</sub>	75 5.0	239	304	932	1648	15661	15/15
0: FUL 2.7	1.1 1.0	58 1.1 1.0	1	3.2*	26*3	0/15	0: FUL	5.9	3.0	3.6	2.6	20	15661 $\infty 2.0e5$	0/15
0: FUL 2.7 1: AVG <b>2.1</b> *	1.1 1.0	1.1 1.0	1 1.2	3.2* 5.0	26*3 1029	$0/15 \ 0/15$	0: FUL 1: AVG	5.9 <b>2.7</b> *3	3.0 1. <b>5</b> *3	3.6 1.6*3	2.6 1.3 <sup>*3</sup>	20 9.3* <sup>3</sup>	15661 ∞2.0e5 <b>26</b> *3	$0/15 \\ 0/15$
0: FUL 2.7 1: AVG 2.1* <b>f<sub>15</sub></b> 511 0: FUL 6.3	1.1	1.1	1	3.2*	26*3	0/15	0: FUL 1: AVG <b>f</b> 15	5.9 <b>2.7</b> *3 30378	3.0 1.5*3 1.47e5	3.6 1.6 <sup>*3</sup> 3.12e5	2.6 1.3 <sup>*3</sup> 3.20e5	20 9.3 <sup>*3</sup> 4.49e5	15661 ∞2.0e5 <b>26</b> *3 4.59e5	0/15 0/15 15/15
0: FUL 2.7 1: AVG 2.1* <b>f</b> <sub>15</sub> 511	1.1 1.0 9310	1.1 1.0 19369	1 1.2 20073	3.2* 5.0 20769	26*3 1029 21359	$0/15 \ 0/15 \ 14/15$	0: FUL 1: AVG <b>f</b> <sub>15</sub> 0: FUL	5.9 2.7 <sup>★3</sup> 30378 ∞	3.0 1.5 <sup>★3</sup> 1.47e5 ∞	3.6 1.6 <sup>★3</sup> 3.12e5 ∞	2.6 1.3 <sup>★3</sup> 3.20e5 ∞	20 9.3 <sup>★3</sup> 4.49e5 ∞	$15661$ $\infty 2.0e5$ $26*3$ $4.59e5$ $\infty 2.0e5$	0/15 0/15 15/15 0/15
0: FUL 2.7 1: AVG 2.1* <b>f15</b> 511 0: FUL 6.3 1: AVG 5.8 <b>f16</b> 120	1.1 1.0 9310 55 46 612	1.1 1.0 19369 $\infty$ $\infty$ 2662	$1 \\ 1.2 \\ 20073 \\ \infty$	3.2* 5.0 20769 ∞	$26^{*3}$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$	0/15 0/15 14/15 0/15 0/15 15/15	0: FUL 1: AVG <b>f<sub>15</sub></b> 0: FUL 1: AVG	5.9 2.7 <sup>*3</sup> 30378 ∞ ∞	3.0 1.5 <sup>*3</sup> 1.47e5 $\infty$ $\infty$	3.6 1.6 <sup>*3</sup> 3.12e5 $\infty$ $\infty$	2.6 1.3*3 3.20e5 ∞ ∞	20 9.3*3 4.49e5 ∞ ∞	$15661$ $\infty 2.0e5$ $26*3$ $4.59e5$ $\infty 2.0e5$ $\infty 2.0e5$	0/15 $0/15$ $15/15$ $0/15$ $0/15$ $0/15$
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7	1.1 1.0 9310 55 46 612 12	1.1 1.0 19369 $\infty$ $\infty$ 2662 29	1 1.2 20073 $\infty$ $\infty$	3.2* 5.0 20769 ∞ ∞	$26*3$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$ $\infty 4.8e4$	0/15 0/15 14/15 0/15 0/15 15/15 0/15	0: FUL 1: AVG <b>f<sub>15</sub></b> 0: FUL 1: AVG <b>f<sub>16</sub></b>	5.9 2.7*3 30378 $\infty$ $\infty$ 1384	3.0 1.5*3 1.47e5 ∞ ∞ 27265	$3.6 \\ 1.6^{*3} \\ 3.12e5 \\ \infty \\ \infty \\ 77015$	2.6 1.3*3 3.20e5 \$\infty\$ \$\infty\$	20 9.3 <sup>*3</sup> 4.49e5 $\infty$ 1.98e5	$15661$ $\infty 2.0e5$ $26*3$ $4.59e5$ $\infty 2.0e5$ $\infty 2.0e5$ $2.20e5$	0/15 0/15 15/15 0/15 0/15 15/15
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 2.6	1.1 1.0 9310 55 46 612 12 12	$ \begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ 2662 \\ 29 \\ 47 \end{array} $	1 1.2 20073 $\infty$ $\infty$ 10449 $\infty$	3.2* 5.0 20769  ∞  ∞  11644  ∞  ∞	26*3 $1029$ $21359$ $0.3.4e4$ $0.2.9e4$ $0.2.9e4$ $0.4.8e4$ $0.4.0e4$	0/15 0/15 14/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG <b>f<sub>15</sub></b> 0: FUL 1: AVG	5.9 2.7 <sup>*3</sup> 30378 ∞ ∞	3.0 1.5 <sup>*3</sup> 1.47e5 $\infty$ $\infty$	3.6 1.6 <sup>*3</sup> 3.12e5 $\infty$ $\infty$	2.6 1.3*3 3.20e5 ∞ ∞	20 9.3*3 4.49e5 ∞ ∞	$15661$ $\infty 2.0e5$ $26*3$ $4.59e5$ $\infty 2.0e5$ $\infty 2.0e5$	0/15 0/15 15/15 0/15 0/15 15/15 0/15
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 5.8	1.1 1.0 9310 55 46 612 12 12 215	$ \begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ 2662 \\ 29 \\ 47 \\ 899 \end{array} $	1 1.2 20073 \$\infty\$	3.2* 5.0 20769  ∞  0 11644  ∞  0 6351	26*3 $1029$ $21359$ $3.4e4$ $2.9e4$ $12095$ $4.8e4$ $4.0e4$ $7934$	0/15 0/15 14/15 0/15 0/15 15/15 0/15 0/15 15/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG	5.9 2.7*3 30378 $\infty$ $\infty$ 1384 4.6 3.6	$3.0$ $1.5^{*3}$ $1.47e5$ $\infty$ $\infty$ $27265$ $108$ $\infty$	$3.6$ $1.6^{*3}$ $3.12e5$ $\infty$ $\infty$ $77015$ $\infty$ $\infty$	$2.6$ $1.3^{*3}$ $3.20e5$ $\infty$ $\infty$ $1.88e5$ $\infty$ $\infty$	20 9.3*3 4.49e5 $\infty$ $\infty$ 1.98e5 $\infty$	$15661 \\ \infty 2.0e5 \\ 26*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ 2.20e5 \\ \infty 2.0e5 \\ \infty 3.2e5$	0/15 0/15 15/15 0/15 0/15 0/15 15/15 0/15 0
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 5.8 617 2.7 1: AVG 5.8 110 2.7 1: AVG 5.8	1.1 1.0 9310 55 46 612 12 12 215 25	1.1 1.0 19369 $\infty$ $\infty$ 2662 29 47 899 76	1 1.2 20073 \$\infty\$	3.2* 5.0 20769  ∞  0 11644  ∞  0 6351  ∞	26 * 3 $1029$ $21359$ $0.3.4e4$ $0.2.9e4$ $0.3.8e4$ $0.4.8e4$ $0.4.0e4$ $0.3.4e4$ $0.3.4e4$ $0.3.4e4$ $0.3.4e4$ $0.3.4e4$	0/15 0/15 14/15 0/15 0/15 0/15 15/15 0/15 15/15 0/15	0: FUL 1: AVG <b>f<sub>15</sub></b> 0: FUL 1: AVG <b>f<sub>16</sub></b> 0: FUL	5.9 2.7*3 30378 ∞ 0 1384 4.6 3.6 63 13	$3.0$ $1.5^{*3}$ $1.47e5$ $\infty$ $27265$ $108$	$3.6$ $1.6^{*3}$ $3.12e5$ $\infty$ $\infty$ $77015$ $\infty$	2.6 1.3*3 3.20e5 $\infty$ 0 1.88e5 $\infty$	20 9.3 <sup>★3</sup> 4.49e5 ∞ ∞ 1.98e5 ∞	$15661$ $\infty 2.0e5$ $26*3$ $4.59e5$ $\infty 2.0e5$ $\infty 2.0e5$ $2.20e5$ $\infty 2.0e5$	0/15 0/15 15/15 0/15 0/15 15/15 0/15
0: FUL 2.7 * 1: AVG 2.1*  f15 511 0: FUL 6.3 1: AVG 5.8  f16 120 0: FUL 2.7 1: AVG 2.6 f17 5.2 0: FUL 4.9 1: AVG 3.1	1.1 1.0 9310 55 46 612 12 12 215 25 42	$1.1$ $1.0$ $19369$ $\infty$ $\infty$ $2662$ $29$ $47$ $899$ $76$ $405$	1 1.2 20073	3.2* 5.0 20769	$\begin{array}{c} \mathbf{26*3} \\ 1029 \\ \hline 21359 \\ \infty 3.4e4 \\ \infty 2.9e4 \\ \hline 12095 \\ \infty 4.8e4 \\ \infty 4.0e4 \\ \hline 7934 \\ \infty 5.0e4 \\ \infty 5.5e4 \\ \end{array}$	0/15 0/15 14/15 0/15 0/15 0/15 15/15 0/15 15/15 0/15 0	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17	5.9 2.7*3 30378 ∞ 0 1384 4.6 3.6 63 13	$3.0$ $1.5*3$ $1.47e5$ $\infty$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$	$3.6$ $1.6^{*3}$ $3.12e5$ $\infty$ $\infty$ $77015$ $\infty$ $\infty$ $4005$	2.6 1.3*3 3.20e5 ∞ 0 1.88e5 ∞ 0 30677	20 9.3*3 4.49e5 ∞ ∞ 1.98e5 ∞ ∞ 56288	$15661 \\ \infty 2.0e5 \\ 26*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ 2.20e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472$	0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 2.6 f17 5.2 0: FUL 4.9 1: AVG 3.1 f18 103	1.1 1.0 9310 55 46 612 12 12 215 25 42 378	$1.1$ $1.0$ $19369$ $\infty$ $\infty$ $2662$ $29$ $47$ $899$ $76$ $405$ $3968$	1 1.2 20073	3.2* 5.0  20769  ∞  ∞  11644  ∞  6351  ∞  10905	26*3 $1029$ $21359$ $0.3.4e4$ $0.2.9e4$ $0.2.9e4$ $0.4.8e4$ $0.4.0e4$ $0.4.9e4$ $0.$	0/15 0/15 14/15 0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG	5.9 2.7*3 30378 $\infty$ $\infty$ 1384 4.6 3.6 63	$3.0$ $1.5 \times 3$ $1.47e5$ $\infty$ $\infty$ $27265$ $108$ $\infty$ $1030$ $\infty$	$3.6$ $1.6*3$ $3.12e5$ $\infty$ $\infty$ $77015$ $\infty$ $\infty$ $4005$ $\infty$	$2.6$ $1.3 \times 3$ $3.20 \times 5$ $\infty$ $\infty$ $1.88 \times 5$ $\infty$ $\infty$ $30677$ $\infty$	20 9.3*3 4.49e5 ∞ 0 1.98e5 ∞ ∞ 56288 ∞	$ \begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26 * 3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \end{array} $	0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/1
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 2.6 f17 5.2 0: FUL 4.9 1: AVG 3.1 f18 103 0: FUL10	1.1 1.0 9310 55 46 612 12 215 25 42 378 84	$ \begin{array}{c} 1.1 \\ 1.0 \\ \hline 19369 \\ \infty \\ \infty \end{array} $ $ \begin{array}{c} 2662 \\ 29 \\ 47 \\ 899 \\ 76 \\ 405 \\ \hline 3968 \\ 90 \end{array} $	1 1.2 20073 \$\infty\$	3.2* 5.0  20769  ∞  ∞  11644  ∞  6351  ∞  10905  ∞	$26 * 3$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$ $\infty 4.8e4$ $\infty 4.0e4$ $7934$ $\infty 5.0e4$ $\infty 5.5e4$ $12469$ $\infty 5.0e4$	0/15 0/15 14/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15	0: FUL  1: AVG  f15 0: FUL 1: AVG  f16 0: FUL 1: AVG  f17 0: FUL 1: AVG  f17 0: FUL	5.9 2.7*3 30378 ∞ 1384 4.6 3.6 63 13 2.4*2 621 948	$\begin{array}{c} 3.0 \\ 1.5 * 3 \\ \hline 1.47e5 \\ \infty \\ \hline \infty \\ \hline 27265 \\ 108 \\ \infty \\ \hline 1030 \\ \infty \\ \infty \\ \end{array}$	$3.6$ $1.6*3$ $3.12e5$ $\infty$ $\infty$ $77015$ $\infty$ $\infty$ $4005$ $\infty$	2.6 1.3*3 3.20e5 ∞ 0 1.88e5 ∞ 0 30677 ∞ ∞	20 9.3*3 4.49e5 ∞ 1.98e5 ∞ 56288 ∞ ∞	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ 2.20e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ 0.20e5 \\ $	0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/1
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10	1.1 1.0 9310 55 46 612 12 12 215 25 42 378 84 272	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 2662 \\ 29 \\ 47 \\ \end{array}$ $\begin{array}{c} 899 \\ 76 \\ 405 \\ \end{array}$ $\begin{array}{c} 3968 \\ 90 \\ \infty \\ \end{array}$	1 1.2 20073	3.2* 5.0 20769	$26*3$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$ $\infty 4.8e4$ $\infty 4.0e4$ $7934$ $\infty 5.0e4$ $\infty 5.5e4$ $12469$ $\infty 5.0e4$ $\infty 1.5e5$	0/15 0/15 14/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG	5.9 2.7*3 30378 $\infty$ 1384 4.6 3.6 63 13 2.4*2 621	$3.0$ $1.5*3$ $1.47e5$ $\infty$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$	$3.6$ $1.6*3$ $3.12e5$ $\infty$ $\infty$ $\infty$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$	$ \begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 * 5 \\ \infty \\ \infty \\ \end{array} $ $ \begin{array}{c} \infty \\ \times \\$	$\begin{array}{c} 20 \\ 9.3*3 \\ 4.49e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \times \\ \times $	$\begin{array}{c} 15661 \\ 22.0e5 \\ 26*3 \\ \hline \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ 0.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 0.1.2e6 \\ \hline \end{array}$	0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 2.6 f17 5.2 0: FUL 4.9 1: AVG 3.1 f18 103 0: FUL 10 1: AVG 10 f19 1	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 2662 \\ 29 \\ 47 \\ 899 \\ 76 \\ 405 \\ \end{array}$ $\begin{array}{c} 3968 \\ 90 \\ \infty \\ \end{array}$ $\begin{array}{c} 242 \\ \end{array}$	1 1.2 20073	3.2* 5.0  20769  ∞  0  11644  ∞  6351  ∞  0  10905  ∞  1.21e5	26 * 3 $1029$ $21359$ $3.4e4$ $0.2.9e4$ $12095$ $4.8e4$ $0.4.0e4$ $0.5.0e4$ $0.5.5e4$ $0.669$ $0.66$	0/15 0/15 14/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f18 0: FUL 1: AVG f19	5.9 2.7*3 30378 ∞ 1384 4.6 3.6 63 13 2.4*2 621 948 3217 1	$\begin{array}{c} 3.0 \\ 1.5 * 3 \\ \hline 1.47e5 \\ \infty \\ \infty \\ \hline 27265 \\ 108 \\ \infty \\ \hline 1030 \\ \infty \\ \infty \\ \hline 3972 \\ \infty \\ \end{array}$	$\begin{array}{c} 3.6 \\ \textbf{1.6*}^3 \\ 3.12e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 77015 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 4005 \\ \infty \\ \end{array}$ $\begin{array}{c} 19561 \\ \infty \\ \end{array}$	$\begin{array}{c} 2.6 \\ \textbf{1.3*3} \\ 3.20e5 \\ \infty \\ \infty \\ \infty \\ 1.88e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 30677 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 67569 \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ \mathbf{9.3*3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $1.98e5 \\ \infty \\ \infty \\ \infty$ $56288 \\ \infty \\ \infty \\ 0$ $1.31e5 \\ \infty$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ 6.74e6 \\ \end{array}$	0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 15/15 0/15
0: FUL 2.7 1: AVG 2.1* f15 511 0: FUL 6.3 1: AVG 5.8 f16 120 0: FUL 2.7 1: AVG 2.6 f17 5.2 0: FUL 4.9 1: AVG 3.1 f18 103 0: FUL 10 1: AVG 10 f19 1 0: FUL 31	1.1 1.0 9310 55 46 612 12 12 215 25 42 378 84 272	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 2662 \\ 29 \\ 47 \\ \end{array}$ $\begin{array}{c} 899 \\ 76 \\ 405 \\ \end{array}$ $\begin{array}{c} 3968 \\ 90 \\ \infty \\ \end{array}$	1 1.2 20073	3.2* 5.0 20769	$26 * 3$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$ $\infty 4.8e4$ $\infty 5.0e4$ $\infty 5.5e4$ $12469$ $\infty 5.0e4$ $\infty 1.5e5$ $1.22e5$ $\infty 5.0e4$	0/15 0/15 14/15 0/15 0/15 0/15 15/15 0/15 0/15 0/15	0: FUL  1: AVG  f15 0: FUL  1: AVG  f16 f17 0: FUL  1: AVG  f17 0: FUL  1: AVG  f18 0: FUL  1: AVG  f19 0: FUL	5.9 2.7*3 30378 ∞ 1384 4.6 3.6 63 13 2.4*2 621 948 3217 1475	3.0 1.5*3 1.47e5 ∞ 27265 108 ∞ 1030 ∞ ∞ 3972 ∞ ∞	$\begin{array}{c} 3.6 \\ 1.6*^{3} \\ 3.12e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 77015 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 4005 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 3.43e5 \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.5 \\ 0.5 $	$\begin{array}{c} 20 \\ 9.3^{*3} \\ 4.49e5 \\ \infty \\ \infty \\ \infty \\ 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \end{array}$	$\begin{array}{c} 15661\\ \infty 2.0e5\\ \mathbf{26^{*3}}\\ \end{array}$ $\begin{array}{c} 4.59e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 3.2e5\\ \end{array}$ $\begin{array}{c} 8.0472\\ \infty 2.0e5\\ \infty 3.2e5\\ \end{array}$ $\begin{array}{c} 8.0472\\ \infty 2.0e5\\ \end{array}$	0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24	1.1 1.0 9310 55 46 612 12 12 215 25 42 378 84 272 1 10526 15619	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ 2662 \\ 29 \\ 47 \\ 899 \\ 76 \\ 405 \\ 3968 \\ 90 \\ \infty \\ 242 \\ 865 \\ 995 \\ \end{array}$	1 1.2 20073	3.2* 5.0 20769	$\begin{array}{c} \textbf{26*3} \\ \textbf{1029} \\ \textbf{21359} \\ \infty 3.4e4 \\ \infty 2.9e4 \\ \textbf{12095} \\ \infty 4.8e4 \\ \infty 4.0e4 \\ \infty 5.5e4 \\ \textbf{12469} \\ \infty 5.0e4 \\ \infty 1.5e5 \\ \textbf{1.22e5} \\ \textbf{1.25e5} \\ \textbf{1.25e5} \\ \textbf{2.25e5} \\ 2.25e5$	0/15 0/15 0/15 14/15 0/15 0/15 15/15 0/15 15/15 0/15 0/15	0: FUL  1: AVG  f16  0: FUL  1: AVG  f17  0: FUL  1: AVG  f18  0: FUL  1: AVG  f19  0: FUL  1: AVG	5.9 2.7*3 30378	3.0 1.5*3 1.47e5 ∞ ∞ 0 27265 108 ∞ 0 0 0 0 0 0 0 0 0 0 0 0 0	$\begin{array}{c} 3.6 \\ \textbf{1.6*3} \\ 3.12e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 77015 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 4005 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 3.43e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 * 5 \\ \infty \\ \infty \\ \hline \\ 1.88 * 5 \\ \infty \\ \infty \\ \hline \\ 30677 \\ \infty \\ \infty \\ \hline \\ 67569 \\ \infty \\ \infty \\ \hline \\ 6.22 * 6 \\ \infty \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ 6.69e6 \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26^{*3} \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 6.74e6 \\ \infty 2.0e5 \\ \infty 6.74e6 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 6.74e6 \\ \infty 2.0e5 \\ \infty 2.0e6 \\ 0.0e6 \\ 0$	0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 0/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24  f20 16  0: FUL 1.4	1.1 1.0 9310 55 46 612 12 12 215 25 42 378 84 272	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ \infty \\ 2662 \\ 29 \\ 47 \\ 899 \\ 76 \\ 405 \\ \hline 3968 \\ 90 \\ \infty \\ 242 \\ 865 \\ \end{array}$	1 1.2 20073	$\begin{array}{c} 3.2^{\star} \\ 5.0 \\ 20769 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 11644 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6351 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 10905 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 1.21e5 \\ \infty \\ \end{array}$	$26 * 3$ $1029$ $21359$ $\infty 3.4e4$ $\infty 2.9e4$ $12095$ $\infty 4.8e4$ $\infty 5.0e4$ $\infty 5.5e4$ $12469$ $\infty 5.0e4$ $\infty 1.5e5$ $1.22e5$ $\infty 5.0e4$	0/15 0/15 14/15 0/15 0/15 0/15 15/15 0/15 0/15 0/15	0: FUL  1: AVG  f15  0: FUL  1: AVG  f16  0: FUL  1: AVG  f17  0: FUL  1: AVG  f18  0: FUL  1: AVG  f19  0: FUL  1: AVG	$\begin{array}{c} 5.9 \\ \textbf{2.7} \star 3 \\ 30378 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ \times \\$	3.0 1.5*3 1.47e5 ∞ 27265 108 ∞ 1030 ∞ ∞ 3972 ∞ ∞ 0 0 0 0 0 0 0 0 0 0 0 0 0	$\begin{array}{c} 3.6 \\ 1.6*^3 \\ \hline 3.12e5 \\ \infty \\ \infty \\ \infty \\ \hline \\ 77015 \\ \infty \\ \infty \\ \infty \\ \hline \\ 4005 \\ \infty \\ \infty \\ \hline \\ 3.43e5 \\ \infty \\ \infty \\ \hline \\ 3.10e6 \\ \end{array}$	$\begin{array}{c} 2.6 \\ \textbf{1.3*3} \\ 3.20e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ 6.22e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ 0.06769 \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ \textbf{9.3*}^3 \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ 6.69e6 \\ \infty \\ \infty \\ \end{array}$ $5.59e6$	15661 \$\infty 2.0e5\$ \$\infty	0/15 0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15
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0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 31  1: AVG 10  f19 0: FUL 31  1: AVG 24  f20 0: FUL 1.4  1: AVG 1*  1: AVG 1*  1: AVG 1*  1: AVG 1.4	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 1 10526 15619 851 6.4 8.4 1157 2.3	$\begin{array}{c} 1.1 \\ 1.0 \\ 19369 \\ \infty \\ \infty \\ 2662 \\ 29 \\ 47 \\ 899 \\ 76 \\ 405 \\ 3968 \\ 90 \\ \infty \\ 242 \\ 865 \\ 995 \\ 38111 \\ \infty \\ 12 \\ 1674 \\ 2.8 \\ \end{array}$	1 1.2 20073	3.2* 5.0 20769	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ 21359 \\ \infty 3.4e4 \\ \approx 2.9e4 \\ 12095 \\ \infty 4.8e4 \\ \times 5.0e4 \\ \infty 5.5e4 \\ 12469 \\ \times 5.5e5 \\ 1.22e5 \\ \times 5.0e4 \\ \infty 5.0e4 \\ \infty 5.5e5 \\ 1.72e5 \\ \times 5.8e5 \\ \times 5.8$	0/15 0/15 0/15 14/15 0/15 0/15 0/15 15/15 0/15 0/15 0/15	0: FUL  1: AVG  f15  0: FUL  1: AVG  f16  0: FUL  1: AVG  f17  0: FUL  1: AVG  f18  0: FUL  1: AVG  f19  0: FUL  1: AVG  f20  0: FUL  1: AVG  f20  6: FUL  1: AVG  6: FUL  7: FUL  7: FUL  8:	$5.9$ $2.7*3$ $30378$ $\infty$ $\infty$ $1384$ $4.6$ $3.6$ $63$ $13$ $2.4*^2$ $621$ $948$ $3217$ $1$ $475$ $210$ $82$ $3.1$ $1.3*^3$ $561$	$\begin{array}{c} 3.0 \\ \textbf{1.5*3} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 27265 \\ 108 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$	$\begin{array}{c} 3.6 * 3 \\ 1.6 * 3 \\ 3.12e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 77015 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 4005 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 3.43e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 3.10e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 14103 \\ \end{array}$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 67569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ 0.06769 \\ \infty \\ \end{array}$ $\begin{array}{c} 0.06769 \\ \infty \\ \infty \\ 0.06769 \\ \infty \\ \infty \\ 0.06769 \\ 0.06$	20 9.3*3 4.49e5	$\begin{array}{c} 15661\\ \infty2.0e5\\ 26^{*3}\\ 3\\ 4.59e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty3.2e5\\ 80472\\ \infty2.0e5\\ \infty8.7e5\\ 1.47e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty2.0e5\\ \infty3.3e5\\ \infty2.0e5\\ \infty3.3e5\\ \infty3.3e5\\$	0/15 0/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24  f20 16  0: FUL 1.4  1: AVG 1.4  1: AVG 1.4	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ \end{array}$	1 1.2 20073	3.2* 5.0 20769	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ \text{21359} \\ \text{$\otimes$} 3.4e4 \\ \text{$\otimes$} 2.9e4 \\ \textbf{12095} \\ \text{$\otimes$} 4.8e4 \\ \text{$\otimes$} 4.0e4 \\ \text{$\otimes$} 5.5e4 \\ \textbf{$\otimes$} 5.5e4 \\ \text{$\otimes$} 5.5e4 \\ \text{$\otimes$} 1.2e5 \\ \textbf{$\otimes$} 1.2e5 \\ \text{$\otimes$} 5.0e4 \\ \text{$\otimes$} 5.6e4 \\ \text{$\otimes$} 5.5e4 \\ \text{$\otimes$} 1.7e5 \\ \text{$\otimes$} 5.5e4 \\ \text{$\otimes$} 1.7e5 \\ \text{$\otimes$} 5.1e5 \\ \text$	0/15 0/15 1/4/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0	0: FUL  1: AVG  f15  0: FUL  1: AVG  f16  0: FUL  1: AVG  f17  0: FUL  1: AVG  f19  0: FUL  1: AVG  f20  0: FUL  1: AVG  f21  0: FUL  1: AVG	$\begin{array}{c} 5.9 \\ \mathbf{2.7^{*3}} \\ 3.0378 \\ \infty \\ \infty \\ 0 \\ \end{array}$ $\begin{array}{c} \infty \\ 1384 \\ 4.6 \\ 3.6 \\ 63 \\ 13 \\ \mathbf{2.4^{*2}} \\ 621 \\ 948 \\ 3217 \\ 1 \\ 475 \\ 210 \\ 82 \\ 3.1 \\ \mathbf{1.3^{*3}} \\ 561 \\ 7.4 \\ \end{array}$	$\begin{array}{c} 3.0 \\ \textbf{1.5.5} \\ \textbf{1.47e5} \\ \infty \\ \hline \\ 27265 \\ \textbf{108} \\ \hline \\ 0 \\ \textbf{3972} \\ \infty \\ \hline \\ \infty \\ \hline \\ 0 \\ \textbf{8.03e6} \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \end{array}$	$\begin{array}{c} 3.6 \\ 1.6 * 3 \\ 3.12 * 5 \\ \infty \\ \infty \\ \hline 77015 \\ \infty \\ \infty \\ \hline 4005 \\ \infty \\ \hline 0 \\ 3.43 * 65 \\ \infty \\ \infty \\ \hline 0 \\ 3.10 * 66 \\ \infty \\ \hline 0 \\ 4.5 \\ \end{array}$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 * 5 \\ \infty \\ \infty \\ \hline 1.88 * 5 \\ \infty \\ \infty \\ \hline 30677 \\ \infty \\ \infty \\ \hline \\ 67569 \\ \infty \\ \infty \\ \hline \\ 6.22 * 6 \\ \infty \\ \infty \\ \hline \\ 5.54 * 6 \\ \infty \\ \infty \\ \hline \\ 14643 \\ 4.4 \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \hline 1.98e5 \\ \infty \\ \infty \\ \infty \\ \hline \\ 56288 \\ \infty \\ \infty \\ \infty \\ \hline \\ 6.69e6 \\ \infty \\ \infty \\ \hline \\ 5.59e6 \\ \infty \\ \infty \\ \hline \\ 15567 \\ 4.1 \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ \mathbf{26^{*3}} \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 6.74e6 \\ \infty 2.0e5 \\ \infty 6.74e6 \\ \infty 2.0e5 \\ \infty 3.4e5 \\ 17589 \\ 3.7 \end{array}$	0/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/1
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  1: AVG 24  f20 16  0: FUL 31  1: AVG 14.9  10: FUL 31  1: AVG 14.9  10: FUL 31  1: AVG 1.4  1: AVG 1.4  1: AVG 1.4  1: AVG 1.7  f21 410	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 1 10526 15619 8.4 215 6.4 8.4 215 6.4 8.4	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ \end{array}$ $\begin{array}{c} 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ \end{array}$ $\begin{array}{c} 242\\ 865\\ 995\\ \end{array}$ $\begin{array}{c} 38111\\ \infty\\ 12\\ 2.8\\ 3.6\\ \end{array}$ $\begin{array}{c} 1674\\ 2.8\\ 3.6\\ \end{array}$ $\begin{array}{c} 398\\ \end{array}$	1 1.2 20073	$\begin{array}{c} 3.2^{\star} \\ 5.0 \\ 20769 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 11644 \\ \infty \\ \infty \\ 6351 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.00000000000000000000000000000000000$	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ \textbf{21359} \\ \textbf{\infty3.4e4} \\ \textbf{2.2955} \\ \textbf{4.8e4} \\ \textbf{7934} \\ \textbf{5.5e4} \\ \textbf{12469} \\ \textbf{5.5.6e4} \\ \textbf{12469} \\ \textbf{5.5.6e4} \\ \textbf{1.25e5} \\ \textbf{1.25e5} \\ \textbf{1.25e5} \\ \textbf{1.22e5} \\ \textbf{5.20e5} \\ \textbf{55313} \\ \textbf{3.3.2e4} \\ \textbf{8.0} \\ \textbf{1757} \\ \textbf{2.7} \\ \textbf{3.5} \\ \textbf{1068} \end{array}$	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f18 0: FUL 1: AVG f20 0: FUL 1: AVG f21 0: FUL 1: AVG	$\begin{array}{c} 5.9 \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.3^{*3}} \\ \mathbf{2.3^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*3}} \\$	$\begin{array}{c} 3.0 \\ \textbf{1.5*3} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \infty \\ \textbf{27265} \\ \textbf{108} \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.7} \\ \end{array}$	$\begin{array}{c} 3.6 \\ 1.6 \\ \times 3.12 \\ \times \\ $	$\begin{array}{c} 2.6 \\ \textbf{1.3} \star 3 \\ 3.20 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ 0.0677 \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 13567 \\ 4.1 \\ 3.3 \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26^*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e6 \\ 0.74e6 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e5 \\ 1.7589 \\ 3.7 \\ 2.9 \end{array}$	0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/
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0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f20 16  0: FUL 1.4  1: AVG 1.7  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 4.3  1: AVG 3.4	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5 386 3.7 2.6	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ \infty\\ 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 938\\ 3.0\\ 2.3\\ \end{array}$	1 1.2 20073	$\begin{array}{c} 3.2 \\ 5.0 \\ 20769 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 11644 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6351 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 1.2165 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ \textbf{21359} \\ \infty .4.44 \\ \times 2.9e4 \\ \textbf{12095} \\ \infty 4.8e4 \\ \times 5.0e4 \\ \times 5.5e4 \\ \textbf{12469} \\ \times 5.0e4 \\ \times 5.0e4 \\ \times 5.0e4 \\ \times 5.0e5 \\ \textbf{55313} \\ \times 3.2e4 \\ \textbf{8.0} \\ \textbf{1757} \\ \textbf{2.7} \\ \textbf{3.5} \\ \textbf{1068} \\ \textbf{3.1} \\ \textbf{2.4} \end{array}$	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f16 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f19 0: FUL 1: AVG f20 0: FUL 1: AVG f21 1: AVG f21 0: FUL 1: AVG f21 0: FUL	$\begin{array}{c} 5.9 \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.3^{*3}} \\ \mathbf{2.3^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*2}} \\ \mathbf{2.10^{*3}} \\$	$\begin{array}{c} 3.0 \\ \textbf{1.5*3} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \infty \\ \textbf{27265} \\ \textbf{108} \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.7} \\ \end{array}$	$\begin{array}{c} 3.6 \\ 1.6 \\ \times 3.12 \\ \times \\ $	$\begin{array}{c} 2.6 \\ \textbf{1.3} \star 3 \\ 3.20 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ 0.0677 \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 13567 \\ 4.1 \\ 3.3 \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26^*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e6 \\ 0.74e6 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e5 \\ 1.7589 \\ 3.7 \\ 2.9 \end{array}$	0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 15/15 0/15 0/15 15/15 0/15 15/15 0/15 14/15 0/15 14/15 12/15 12/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 3.1  f17 5.2  0: FUL 4.3  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 1.4  1: AVG 1.4  1: AVG 1.4  1: AVG 1.7  6: FUL 4.3  1: AVG 1.7  0: FUL 2.4  1: AVG 1.7  0: FUL 4.3  1: AVG 3.4  f23 3.0	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5 386 3.7 2.6	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ 2662\\ 29\\ 47\\ 899\\ 76\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 938\\ 3.0\\ 2.3\\ 14249\\ \end{array}$	$\begin{array}{c} 1\\ 1.2\\ 20073\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 0\\ 0\\ 0\\ \end{array}$ $\begin{array}{c} 3669\\ \infty\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 0\\ 0\\ 0\\ \end{array}$	$\begin{array}{c} 3.2 \\ 5.0 \\ 20769 \\ \infty \\ $	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ 21359 \\ \otimes 3.494 \\ \otimes 2.995 \\ \otimes 4.8e4 \\ \hline \textbf{7934} \\ \otimes 5.5e4 \\ \hline \textbf{12095} \\ 5.5.64 \\ \otimes 5.5e5 \\ \hline \textbf{1.22e5} \\ 5.5313 \\ \otimes 5.9e5 \\ \hline \textbf{8.0} \\ \textbf{1757} \\ \textbf{2.7} \\ \textbf{3.5} \\ \textbf{1068} \\ \textbf{3.1} \\ \textbf{4.4} \\ \textbf{34256} \end{array}$	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL  1: AVG	$\begin{array}{c} 5.9 \\ \textbf{2.7} \star 3 \\ \textbf{30378} \\ \infty \\ \infty \\ \infty \\ \textbf{30378} \\ 3037$	$\begin{array}{c} 3.0 \\ \textbf{1.5.5} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \textbf{272e5} \\ \textbf{108} \\ \infty \\ \infty \\ \textbf{200} \\ \textbf{200} \\ \textbf{3972} \\ \infty \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \infty \\ \textbf{3972} \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.7} \\ \textbf{5580} \\ \textbf{12} \\ \end{array}$	$\begin{array}{c} 3.6 \\ 1.6 \\ \times 3.12 \\ \times \\ \infty \\ \times \\ \times$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 * 5 \\ \infty \\ \infty \\ \hline \\ 1.88 * 5 \\ \infty \\ \infty \\ \hline \\ 30677 \\ \infty \\ \infty \\ \hline \\ 67569 \\ \infty \\ \infty \\ \hline \\ \\ 6.22 * 6 \\ \infty \\ \infty \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 15567 \\ 4.1 \\ 3.3 \\ 26847 \\ 53 \\ 12 \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ 26*3 \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ \infty 3.2e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e5 \\ 1.589 \\ 3.7 \\ 2.9 \\ 1.35e5 \\ 11 \end{array}$	0/15 0/15 1/5/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 15/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f20 16  0: FUL 1.4  1: AVG 24  f20 16  0: FUL 1.4  1: AVG 1.7  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 4.3  1: AVG 3.7  623 3.0  0: FUL 5.4	1.1 1.0 9310 55 46 612 12 12 215 225 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 386 3.7 2.6	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ 388111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 938\\ 3.0\\ 2.3\\ 14249\\ 3.8\\ \end{array}$	$\begin{array}{c} 1 \\ 1.2 \\ 20073 \\ \infty \\ $	3.2* 5.0 20769 ∞ ∞ ∞ 11644 ∞ ∞ ∞ 6351 ∞ 10905 ∞ 54861 ∞ 8.1 1729 2.7 3.5 1040 3.00 2.4 33030 ∞	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ \textbf{21359} \\ \textbf{\infty}.4.44 \\ \textbf{20.954} \\ \textbf{4.2995} \\ \textbf{4.404} \\ \textbf{7934} \\ \textbf{5.5.564} \\ \textbf{12469} \\ \textbf{5.5.664} \\ \textbf{1.2469} \\ \textbf{5.5.064} \\ \textbf{5.1.2265} \\ \textbf{5.5313} \\ \textbf{3.2.64} \\ \textbf{8.0} \\ \textbf{1757} \\ \textbf{2.7} \\ \textbf{3.7} \\ \textbf{3.1} \\ \textbf{3.4256} \\ \textbf{3.4256} \\ \textbf{5.5.064} \\ \textbf{6.683} \\ \textbf{3.9} \\ \textbf{6.983} $	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f16 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f19 0: FUL 1: AVG f20 0: FUL 1: AVG f21 1: AVG f21 0: FUL 1: AVG f21 0: FUL	$\begin{array}{c} 5.9 \\ 2.7^*3 \\ 30378 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1384 \\ 4.6 \\ 3.6 \\ 63 \\ 13 \\ 2.4^*2 \\ 621 \\ 948 \\ 3217 \\ 1 \\ 475 \\ 210 \\ 82 \\ 3.1 \\ 1.3^*3 \\ 561 \\ 7.4 \\ 3.2 \\ 467 \\ 2.2 \\ 2.0 \\ \end{array}$	$\begin{array}{c} 3.0 \\ \textbf{1.5*3} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \hline \\ 27265 \\ \textbf{108} \\ \infty \\ \infty \\ \hline \\ 1030 \\ \infty \\ \infty \\ \infty \\ \hline \\ 3972 \\ \infty \\ \infty \\ \hline \\ 1 \\ \infty \\ 8.03e6 \\ 46150 \\ 64 \\ \textbf{107} \\ \hline \\ 6541 \\ 3.4 \\ \textbf{5.7} \\ \hline \\ 5580 \\ \textbf{12} \\ 5.6 \\ \end{array}$	$\begin{array}{c} 3.6 \\ \mathbf{1.6 \times 3} \\ 3.12 e 5 \\ \infty \\$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067769 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.22e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.064643 \\ 4.4 \\ 3.4 \\ 24948 \\ 57 \\ 13 \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \hline \\ 1.98e5 \\ \infty \\ \infty \\ \infty \\ \hline \\ 56288 \\ \infty \\ \infty \\ \infty \\ \hline \\ 0.56288 \\ \infty \\ \infty \\ \infty \\ \hline \\ 0.559e6 \\ \infty \\ \infty \\ \hline \\ 15567 \\ 4.1 \\ 3.3 \\ 26847 \\ 53 \\ \end{array}$	$\begin{array}{c} 15661\\ \infty 2.0e5\\ 26^{*3}\\ \end{array}$ $\begin{array}{c} 4.59e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 2.20e5\\ \infty 3.2e5\\ \end{array}$ $\begin{array}{c} 8.0472\\ \infty 2.0e5\\ \infty 3.2e5\\ \end{array}$ $\begin{array}{c} 8.0472\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 0.1.2e6\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 0.1.2e6\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 0.74e6\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 0.74e6\\ \infty 2.0e5\\ \infty 2.0e5\\ \end{array}$ $\begin{array}{c} 0.74e6\\ \infty 2.0e5\\ 0.3.4e5\\ \end{array}$ $\begin{array}{c} 0.75e9\\ 0.75e$	0/15 15/15 0/15 15/15 14/15 0/15 14/1
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24  f20 16  0: FUL 1.4  1: AVG 1.7  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 4.3  1: AVG 3.4  f23 3.0  0: FUL 5.4  1: AVG 6.0	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5 386 3.7 2.6	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ 2662\\ 29\\ 47\\ 899\\ 76\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ 38111\\ \infty\\ 1674\\ 2.8\\ 3.6\\ 3.9\\ 12429\\ 3.8\\ 3.0\\ 3.3\\ 3.3\\ 14249\\ 3.8\\ 14\\ \end{array}$	1 1.2 20073	$\begin{array}{c} 3.2 \\ 5.0 \\ 20769 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 11644 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6351 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ 10905 \\ \infty \\ \end{array}$ $\begin{array}{c} 0.2165 \\ \infty \\ \times \\ 0.217 \\ \times \\$	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ & 21359 \\ & \otimes 3.4e4 \\ & & 2.9e4 \\ & 12095 \\ & & 4.8e4 \\ & & 5.5e4 \\ \hline & \textbf{7934} \\ & & & 5.5e4 \\ \hline & 12469 \\ & & & 5.5e4 \\ \hline & 12469 \\ & & & 5.0e4 \\ & & & 1.5e5 \\ \hline & 1.22e5 \\ & & & & 5.0e5 \\ \hline & 5313 \\ & & & & 3.2e4 \\ & & & & 8.0 \\ \hline & 1757 \\ & 2.7 \\ & & & 3.5 \\ \hline & 1068 \\ & & & & 3.1 \\ & & & 2.4 \\ \hline & & & & & 34256 \\ & & & & & & & \\ \hline & & & & & & \\ & & & &$	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL  1: AVG	$\begin{array}{c} 5.9 \\ \textbf{2.7}^{\star 3} \\ \textbf{30378} \\ & \infty \\ & \infty \\ & \infty \\ & \infty \\ & 1384 \\ 4.6 \\ 3.6 \\ 63 \\ 13 \\ \textbf{2.4}^{\star 2} \\ 621 \\ 948 \\ \textbf{3217} \\ & 1 \\ 475 \\ 210 \\ & 82 \\ 3.1 \\ \textbf{1.3}^{\star 3} \\ 561 \\ \textbf{7.4} \\ 3.2 \\ 467 \\ \textbf{2.2} \\ 2.0 \\ 3.2 \end{array}$	$\begin{array}{c} 3.0 \\ \textbf{1.5} \star 3 \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \textbf{272e5} \\ \textbf{108} \\ \infty \\ \infty \\ \textbf{2} \\ \textbf{3972} \\ \infty \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \infty \\ \textbf{8.03e6} \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.70} \\ \textbf{5580} \\ \textbf{12} \\ \textbf{5.6} \\ \textbf{1614} \\ \end{array}$	$\begin{array}{c} 3.6 + 3 \\ 1.6 + 3 \\ 3.12 e 5 \\ \infty \\$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0675e9 \\ \times 0.067e9 \\ \times $	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 26847 \\ 53 \\ 12 \\ 8.11e5 \\ \end{array}$	$\begin{array}{c} 15661 \\ \infty 2.0e5 \\ \mathbf{26^{*3}} \\ 4.59e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.2e5 \\ 80472 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 8.7e5 \\ 1.47e5 \\ \infty 2.0e5 \\ \infty 1.2e6 \\ 6.74e6 \\ \infty 2.0e5 \\ \infty 2.0e5 \\ \infty 3.4e5 \\ 17589 \\ 3.7 \\ 2.9 \\ 1.35e5 \\ 11 \\ 4.8 \\ 8.38e5 \\ \end{array}$	0/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 15/15 0/15 0/15 14/15 0/15 14/15 14/15 14/15 12/15 6/15 14/15 12/15 14/15 12/15 15/15 0/15 14/15 15/15 14/15 15/15 16/
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24  f20 16  1: AVG 1*3  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 4.3  1: AVG 3.4  f23 3.0  0: FUL 4.3  1: AVG 3.4  f20 5.4  1: AVG 3.4  f21 5.4  1: AVG 3.4  f22 7.1  0: FUL 4.3  1: AVG 3.4  f23 3.0  0: FUL 5.4  1: AVG 6.0	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 1 10526 15619 851 6.4 8.4 11157 2.3 2.5 386 3.7 2.6 518 2.0 2.5	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ \end{array}$ $\begin{array}{c} 3968\\ 90\\ \infty\\ 242\\ 865\\ \end{array}$ $\begin{array}{c} 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 938\\ 3.0\\ 2.3\\ 14249\\ \end{array}$ $\begin{array}{c} 1674\\ 2.8\\ 3.6\\ 6.366\\ 6.3666\\ \end{array}$	$\begin{array}{c} 1 \\ 1.2 \\ 20073 \\ \infty \\ $	3.2* 5.0 20769 ∞ ∞ ∞ 6351 ∞ ∞ ∞ ∞ 10905 ∞ ∞ 8.1 172e5 ∞ 8.1 1729 2.7 3.5 1040 3.0 2.4 33030 ∞ ∞ 1.28e7	26*3 1029 21359 2.1359 2.4.e4 2.9.e4 12095 2.4.0e4 2.9.e4 2.5.e4 12469 2.5.e4 2.5.e4 2.5.e5 55313 2.2.e4 8.0 1757 2.7 3.5 1068 3.1 2.4 34256 6 5.0e4 2.4 34256 6 5.0e4 2.4 34256 1.24e5	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f19 0: FUL 1: AVG f20 0: FUL 1: AVG f21 1: AVG f21 1: AVG f22 0: FUL 1: AVG f23	$\begin{array}{c} 5.9 \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.7^{*3}} \\ \mathbf{2.1^{*3}} \\ \mathbf{2.3^{*3}} \\ \mathbf{2.1^{*2}} \\ \mathbf{2.1^{*3}} \\ \mathbf{2.1^{*3}} \\ \mathbf{2.1^{*3}} \\ \mathbf{2.1^{*3}} \\ \mathbf{3.2^{*3}} \\ 3$	$\begin{array}{c} 3.0 \\ \textbf{1.5.} \\ \textbf{3.0} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \textbf{27265} \\ \textbf{108} \\ \infty \\ \textbf{30} \\ \textbf{1030} \\ \infty \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \textbf{3.03e6} \\ \textbf{46150} \\ \textbf{64} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.7} \\ \textbf{5580} \\ \textbf{12} \\ \textbf{5.6} \\ \textbf{1614} \\ \textbf{7.0} \\ \end{array}$	$\begin{array}{c} 3.6\\ 1.6 * 3\\ 3.12 e 5\\ \infty\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 77015\\ \infty\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 4005\\ \infty\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 3.43 e 5\\ \infty\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 3.43 e 5\\ \infty\\ \infty\\ 0\\ 14103\\ 4.5\\ 23491\\ 67457\\ 44\\ \end{array}$	$\begin{array}{c} 2.6 \\ \textbf{1.3} \star 3 \\ \textbf{3.20e5} \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 67569 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.22e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.06434 \\ 4.4 \\ 3.4 \\ 24948 \\ 57 \\ 13 \\ \end{array}$ $\begin{array}{c} 4.89e5 \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.98e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} \infty \\ 6.69e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 26847 \\ 53 \\ 12 \\ \end{array}$ $\begin{array}{c} 8.11e5 \\ \infty \\ \infty \\ \end{array}$	15661 ∞2.0e5 26*3 4.59e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞3.2e5 ∞8.7e5 1.47e5 ∞2.0e5 ∞2.0e5 ∞8.7e5 1.47e6 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 0.7e5 1.37e5 1.35e5 11 2.4 8.38e5 ∞2.0e5 ∞3.7e5 5.20e7	0/15 0/15 15/15 15/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15 14/15 14/15 14/15 14/15 14/15 12/15 6/15 0/15
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f20 16  0: FUL 1.4  1: AVG 1.7  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 2.4  1: AVG 3.4  f23 3.0  0: FUL 5.4  1: AVG 6.0  f24 1622  0: FUL 5.4  1: AVG 6.0  f21 1622  0: FUL 5.4  1: AVG 6.0	1.1 1.0 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5 386 3.7 2.6	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ 3968\\ 90\\ \infty\\ 242\\ 865\\ 995\\ 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 6\\ 938\\ 3.0\\ 14249\\ 3.8\\ 14\\ 6.3666\\ \infty \end{array}$	$\begin{array}{c} 1 \\ 1.2 \\ 20073 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0073 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 3669 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0073 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0073 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0073 \\ \infty \\ \infty \\ \infty \\ \end{array}$	$\begin{array}{c} 3.2 \\ 5.0 \\ 20769 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 11644 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6351 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 54861 \\ \infty \\ \times \\ 0 \\ \end{array}$ $\begin{array}{c} 54861 \\ \times \\ 0 \\ \times \\ \end{array}$ $\begin{array}{c} 2.7 \\ 3.5 \\ 1040 \\ 3.0 \\ \times \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 2.4 \\ 33030 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 2.4 \\ 32867 \\ \infty \\ \end{array}$	$\begin{array}{c} \textbf{26*}^3 \\ \textbf{1029} \\ \textbf{21359} \\ \textbf{\infty}.4.44 \\ \textbf{2.954} \\ \textbf{4.2095} \\ \textbf{4.4.64} \\ \textbf{5.064} \\ \textbf{4.5.064} \\ \textbf{4.5.064} \\ \textbf{5.064} \\ \textbf{5.064} \\ \textbf{5.065} \\ \textbf{5.313} \\ \textbf{3.264} \\ \textbf{8.0} \\ \textbf{1088} \\ \textbf{3.1} \\ \textbf{2.4} \\ \textbf{4.5.64} \\ \textbf{4.5.64} \\ \textbf{4.5.65} \\ \textbf{1.2265} \\ \textbf{5.313} \\ \textbf{3.264} \\ \textbf{8.0} \\ \textbf{6.65} \\ $	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f16 0: FUL 1: AVG f16 0: FUL 1: AVG f18 0: FUL 1: AVG f19 0: FUL 1: AVG f20 0: FUL 1: AVG f21 0: FUL 1: AVG f22 0: FUL 1: AVG f23 0: FUL 1: AVG f24 0: FUL 1: AVG f25 0: FUL 1: AVG f27 0: FUL 1: AVG f28 0: FUL 1: AVG f29 0: FUL 1: AVG f21 0: FUL 1: AVG f21 0: FUL 1: AVG f22 0: FUL 1: AVG f23 0: FUL 1: AVG	$\begin{array}{c} 5.9 \\ \mathbf{2.7^{*3}} \\ \mathbf{3037^{*8}} \\ 3037^{*$	$\begin{array}{c} 3.0 \\ \textbf{1.5*3} \\ \textbf{1.47e5} \\ \infty \\ \infty \\ \infty \\ \textbf{27265} \\ \textbf{108} \\ \infty \\ \infty \\ \textbf{1030} \\ \infty \\ \infty \\ \textbf{3972} \\ \infty \\ \textbf{2} \\ \infty \\ \textbf{3972} \\ \infty \\ \textbf{1} \\ \textbf{3} \\ \textbf{4} \\ \textbf{107} \\ \textbf{6541} \\ \textbf{3.4} \\ \textbf{5.7} \\ \textbf{5.580} \\ \textbf{12} \\ \textbf{5.6} \\ \textbf{1614} \\ \textbf{7.0} \\ \textbf{4.7} \\ \textbf{7.48e6} \\ \infty \\ \end{array}$	$\begin{array}{c} 3.6\\ 1.6 \star 3\\ 3.12 \mathrm{e}5\\ \infty\\ \infty\\ \infty\\ \end{array}$ ${c} 77015\\ \infty\\ \infty\\ \infty\\ \infty\\ \end{array}}$ ${c} 4005\\ \infty\\ \infty\\ \infty\\ \infty\\ \end{array}}$ ${c} 3.43 \mathrm{e}5\\ \infty\\ \infty\\ \infty\\ \end{array}}$ ${c} 3.10 \mathrm{e}6\\ \infty\\ \infty\\ 3.10 \mathrm{e}6\\ \infty\\ \end{array}}$ ${c} 3.1006\\ \infty\\ 0.14103\\ 4.5\\ 3.5\\ 23491\\ 60\\ 14\\ \infty\\ \end{array}$ ${c} 5.1967\\ \infty\\ \infty\\ \end{array}}$	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 1.88 e 5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.0677 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 67569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.067569 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0.06769 \\ \infty \\ $	20 9.3*3 4.49e5  \$\infty\$ \$\infty\$ \$\infty\$ 1.98e5  \$\infty\$ \$\inf	$\begin{array}{c} 15661\\ \infty 2.0e5\\ 26*3\\ \end{array}\\ \begin{array}{c} 4.59e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 3.2e5\\ \end{array}\\ \begin{array}{c} 80472\\ \infty 2.0e5\\ \infty 3.2e5\\ \end{array}\\ \begin{array}{c} 80472\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 1.47e5\\ \infty 2.0e5\\ \infty 1.2e6\\ \end{array}\\ \begin{array}{c} 0.74e6\\ \infty 2.0e5\\ \infty 2.0e5\\ \infty 1.3e6\\ \infty 2.0e5\\ \end{array}\\ \begin{array}{c} 1.3e6\\ 0.34e5\\ 17589\\ 3.7\\ 2.9\\ 1.35e5\\ 11\\ 2.4\\ 8.38e5\\ \infty 2.0e5\\ \infty 3.7e5\\ 5.20e7\\ \infty 2.0e5\\ \end{array}$	0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 0/15 0/15 0/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15 0/15 15/15 16/1
0: FUL 2.7  1: AVG 2.1*  f15 511  0: FUL 6.3  1: AVG 5.8  f16 120  0: FUL 2.7  1: AVG 2.6  f17 5.2  0: FUL 4.9  1: AVG 3.1  f18 103  0: FUL 10  1: AVG 10  f19 1  0: FUL 31  1: AVG 24  f20 16  1: AVG 1*3  f21 41  0: FUL 2.4  1: AVG 1.7  f22 71  0: FUL 4.3  1: AVG 3.4  f23 3.0  0: FUL 4.3  1: AVG 3.4  f20 5.4  1: AVG 3.4  f21 5.4  1: AVG 3.4  f22 7.1  0: FUL 4.3  1: AVG 3.4  f23 3.0  0: FUL 5.4  1: AVG 6.0	1.1 1.0 9310 9310 55 46 612 12 215 25 42 378 84 272 10526 15619 851 6.4 8.4 1157 2.3 2.5 386 3.7 2.6 518 2.0 2.5 2.16e5 1.1	$\begin{array}{c} 1.1\\ 1.0\\ 19369\\ \infty\\ \infty\\ \end{array}$ $\begin{array}{c} 2662\\ 29\\ 47\\ 899\\ 76\\ 405\\ \end{array}$ $\begin{array}{c} 3968\\ 90\\ \infty\\ 242\\ 865\\ \end{array}$ $\begin{array}{c} 38111\\ \infty\\ 12\\ 1674\\ 2.8\\ 3.6\\ 938\\ 3.0\\ 2.3\\ 14249\\ \end{array}$ $\begin{array}{c} 1674\\ 2.8\\ 3.6\\ 6.366\\ 6.3666\\ \end{array}$	$\begin{array}{c} 1 \\ 1.2 \\ 20073 \\ \infty \\ $	3.2* 5.0 20769 ∞ ∞ ∞ 6351 ∞ ∞ ∞ ∞ 10905 ∞ ∞ 8.1 172e5 ∞ 8.1 1729 2.7 3.5 1040 3.0 2.4 33030 ∞ ∞ 1.28e7	26*3 1029 21359 2.1359 2.4.e4 2.9.e4 12095 2.4.0e4 2.9.e4 2.5.e4 12469 2.5.e4 2.5.e5 55313 2.2.e5 55313 2.2.e4 8.0 1757 2.7 3.5 1068 3.1 2.4 34256 6 5.0.e4 2.4 34256 6 5.0.e4 2.4 34256 1.2.e5	0/15 0/15 0/15 0/15 0/15 0/15 0/15 0/15	0: FUL 1: AVG f15 0: FUL 1: AVG f16 0: FUL 1: AVG f17 0: FUL 1: AVG f19 0: FUL 1: AVG f20 0: FUL 1: AVG f21 1: AVG f21 1: AVG f22 0: FUL 1: AVG f23	$\begin{array}{c} 5.9 \\ 2.7^{\star 3} \\ 30378 \\ \infty \\ \infty \\ 0 \\ \end{array}$ $\begin{array}{c} \infty \\ 1384 \\ 4.6 \\ 3.6 \\ 63 \\ 13 \\ 2.4^{\star 2} \\ 621 \\ 948 \\ 3217 \\ 1 \\ 475 \\ 210 \\ 82 \\ 3.1 \\ 1.3^{\star 3} \\ 561 \\ 7.4 \\ 3.2 \\ 467 \\ 2.2 \\ 2.0 \\ 3.1 \\ 1.3466 \\ \end{array}$	$\begin{array}{c} 3.0 \\ \textbf{1.5.5} \\ \textbf{1.47e5} \\ \infty \\ 27265 \\ \textbf{108} \\ \infty \\ 0 \\ \textbf{200} \\ \textbf$	$\begin{array}{c} 3.6 + 3 \\ 1.6 + 3 \\ 3.12 e5 \\ \infty \\ $	$\begin{array}{c} 2.6 \\ 1.3 * 3 \\ 3.20 \circ 5 \\ \infty \\ \infty \\ \hline \\ 1.88 \circ 5 \\ \infty \\ \infty \\ \hline \\ 30677 \\ \infty \\ \infty \\ \hline \\ 67569 \\ \infty \\ \infty \\ \hline \\ 6.22 \circ 6 \\ \infty \\ \infty \\ \hline \\ 5.54 \circ 6 \\ \infty \\ \infty \\ \hline \\ 14643 \\ 4.4 \\ 3.4 \\ 24948 \\ 57 \\ 13 \\ 4.89 \circ 5 \\ \infty \\ \hline \\ \\ 5.20 \circ 7 \\ \end{array}$	$\begin{array}{c} 20 \\ 9.3^{\star 3} \\ 4.49e5 \\ \infty \\ \infty \\ \hline 1.98e5 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 56288 \\ \infty \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 6.69e6 \\ \infty \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 5.59e6 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 26847 \\ 53 \\ 12 \\ 8.11e5 \\ \infty \\ \infty \\ \end{array}$ $\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ \end{array}$	15661 ∞2.0e5 26*3 4.59e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞3.2e5 ∞8.7e5 1.47e5 ∞2.0e5 ∞2.0e5 ∞8.7e5 1.47e6 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 1.47e5 ∞2.0e5 0.7e5 1.37e5 1.35e5 11 2.4 8.38e5 ∞2.0e5 ∞3.7e5 5.20e7	0/15 0/15

Table 3: Expected running time (ERT in number of function evaluations) divided by the best ERT measured during BBOB-2009 (given in the respective first row) for different  $\Delta f$  values for functions  $f_1-f_{24}$ . The median number of conducted function evaluations is additionally given in *italics*, if  $\text{ERT}(10^{-7}) = \infty$ . #succ is the number of trials that reached the final target  $f_{\text{opt}} + 10^{-8}$ . 0: FUL is full-NEWUOA and 1: AVG is avg-NEWUOA. Bold entries are statistically significantly better compared to the other algorithm, with p = 0.05 or  $p = 10^{-k}$  where k > 1 is the number following the  $\star$  symbol, with Bonferroni correction of 48.