

# **Differential Evolution for linear equality constraint satisfaction via unconstrained search in the null space**

## **Supplementary Material**

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This document contains the supplementary material of the paper “Differential Evolution for linear equality constraint satisfaction via unconstrained search in the null space”. Tables 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 present the statistical results obtained by the proposed approach (DELEqC-III) and those found by DELEqC-II.

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Table 1: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
1/10/5	DELEqC-II*	32.14	32.15	32.15	8.36e-03	32.19
1/10/5	DELEqC-III-trand*	32.16	32.66	32.78	6.20e-01	35.75
1/10/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	1.97e-03	<b>32.15</b>
1/20/5	DELEqC-II*	32.14	32.14	32.14	2.03e-06	32.14
1/20/5	DELEqC-III-trand*	<b>32.14</b>	32.14	32.15	1.74e-01	33.89
1/20/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	0.00e+00	<b>32.14</b>
1/20/10	DELEqC-II	<b>64.27</b>	<b>64.27</b>	<b>64.27</b>	9.95e-08	<b>64.27</b>
1/20/10	DELEqC-III-trand*	64.27	64.27	64.40	7.82e-01	71.78
1/20/10	DELEqC-III-rand	64.27	<b>64.27</b>	64.27	1.42e-14	<b>64.27</b>
1/30/5	DELEqC-II*	32.15	43.65	51.99	2.35e+01	144.19
1/30/5	DELEqC-III-trand*	<b>32.14</b>	<b>32.14</b>	32.52	3.83e+00	70.61
1/30/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	0.00e+00	<b>32.14</b>
1/30/10	DELEqC-II*	<b>64.27</b>	64.27	64.34	3.50e-01	67.25
1/30/10	DELEqC-III-trand*	<b>64.27</b>	<b>64.27</b>	64.34	5.38e-01	69.66
1/30/10	DELEqC-III-rand	<b>64.27</b>	<b>64.27</b>	<b>64.27</b>	1.42e-14	<b>64.27</b>
1/30/15	DELEqC-II	<b>96.41</b>	<b>96.41</b>	<b>96.41</b>	2.84e-14	<b>96.41</b>
1/30/15	DELEqC-III-trand*	<b>96.41</b>	96.41	96.76	1.39e+00	109.28
1/30/15	DELEqC-III-rand	<b>96.41</b>	<b>96.41</b>	<b>96.41</b>	2.84e-14	<b>96.41</b>
1/40/5	DELEqC-II*	94.54	363.76	419.24	2.05e+02	1182.53
1/40/5	DELEqC-III-trand*	<b>32.14</b>	<b>32.14</b>	32.26	1.08e+00	42.86
1/40/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	0.00e+00	<b>32.14</b>
1/40/10	DELEqC-II*	77.68	181.70	211.94	1.02e+02	554.51
1/40/10	DELEqC-III-trand*	<b>64.27</b>	<b>64.27</b>	64.65	1.97e+00	80.29
1/40/10	DELEqC-III-rand	<b>64.27</b>	<b>64.27</b>	<b>64.27</b>	1.42e-14	<b>64.27</b>
1/40/15	DELEqC-II*	96.43	107.64	117.08	2.23e+01	206.45
1/40/15	DELEqC-III-trand*	<b>96.41</b>	96.42	96.99	1.61e+00	104.59
1/40/15	DELEqC-III-rand	<b>96.41</b>	<b>96.41</b>	<b>96.41</b>	2.84e-14	<b>96.41</b>
1/40/20	DELEqC-II*	<b>128.55</b>	128.55	128.61	3.52e-01	131.46
1/40/20	DELEqC-III-trand*	<b>128.55</b>	128.68	129.89	2.74e+00	143.81
1/40/20	DELEqC-III-rand	<b>128.55</b>	<b>128.55</b>	<b>128.55</b>	5.68e-14	<b>128.55</b>
1/50/5	DELEqC-II*	384.05	1054.30	1066.19	3.62e+02	2271.65
1/50/5	DELEqC-III-trand*	<b>32.14</b>	<b>32.14</b>	32.38	1.68e+00	44.54
1/50/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	0.00e+00	<b>32.14</b>
1/50/10	DELEqC-II*	260.53	690.84	728.50	2.43e+02	1379.39
1/50/10	DELEqC-III-trand*	<b>64.27</b>	64.27	64.51	1.19e+00	75.43
1/50/10	DELEqC-III-rand	<b>64.27</b>	<b>64.27</b>	<b>64.27</b>	1.42e-14	<b>64.27</b>
1/50/15	DELEqC-II*	177.02	446.75	484.13	1.87e+02	988.51
1/50/15	DELEqC-III-trand*	<b>96.41</b>	96.42	98.59	9.06e+00	182.27
1/50/15	DELEqC-III-rand	<b>96.41</b>	<b>96.41</b>	<b>96.41</b>	2.84e-14	<b>96.41</b>
1/50/20	DELEqC-II*	132.54	290.59	292.53	1.10e+02	646.29
1/50/20	DELEqC-III-trand*	<b>128.55</b>	128.63	131.13	8.25e+00	197.57
1/50/20	DELEqC-III-rand	<b>128.55</b>	<b>128.55</b>	<b>128.55</b>	5.68e-14	<b>128.55</b>
1/50/25	DELEqC-II*	160.69	171.59	179.80	2.69e+01	307.70
1/50/25	DELEqC-III-trand*	160.68	162.13	164.67	5.86e+00	188.16
1/50/25	DELEqC-III-rand	<b>160.68</b>	<b>160.68</b>	<b>160.68</b>	5.68e-14	<b>160.68</b>

Table 2: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
1/100/5	DELEqC-II*	2889.46	4914.76	4938.24	8.13e+02	6945.10
1/100/5	DELEqC-III-trand*	32.14	32.39	34.79	1.09e+01	137.22
1/100/5	DELEqC-III-rand	<b>32.14</b>	<b>32.14</b>	<b>32.14</b>	0.00e+00	<b>32.14</b>
1/100/10	DELEqC-II*	2745.22	4500.80	4496.47	8.90e+02	6881.03
1/100/10	DELEqC-III-trand*	64.27	66.53	73.89	2.07e+01	229.68
1/100/10	DELEqC-III-rand	<b>64.27</b>	<b>64.27</b>	<b>64.27</b>	1.42e-14	<b>64.27</b>
1/100/15	DELEqC-II*	2416.66	4044.79	4128.93	8.05e+02	6229.37
1/100/15	DELEqC-III-trand*	96.42	101.19	110.47	2.63e+01	278.89
1/100/15	DELEqC-III-rand	<b>96.41</b>	<b>96.41</b>	<b>96.41</b>	2.84e-14	<b>96.41</b>
1/100/20	DELEqC-II*	2024.06	3594.11	3579.69	6.71e+02	5184.28
1/100/20	DELEqC-III-trand*	128.69	137.81	151.00	3.28e+01	304.23
1/100/20	DELEqC-III-rand	<b>128.55</b>	<b>128.55</b>	<b>128.55</b>	5.68e-14	<b>128.55</b>
1/100/25	DELEqC-II*	2135.03	3302.55	3409.00	7.02e+02	4989.38
1/100/25	DELEqC-III-trand*	161.02	173.59	185.09	3.05e+01	319.51
1/100/25	DELEqC-III-rand	<b>160.68</b>	<b>160.68</b>	<b>160.68</b>	5.68e-14	<b>160.68</b>
1/100/30	DELEqC-II*	2065.21	3018.93	3105.38	6.24e+02	4823.09
1/100/30	DELEqC-III-trand*	193.18	217.03	226.38	3.59e+01	373.68
1/100/30	DELEqC-III-rand	<b>192.82</b>	<b>192.82</b>	<b>192.82</b>	5.68e-14	<b>192.82</b>
1/100/35	DELEqC-II*	1562.84	2649.04	2662.98	6.05e+02	4135.14
1/100/35	DELEqC-III-trand*	225.89	253.12	280.14	6.31e+01	487.32
1/100/35	DELEqC-III-rand	<b>224.96</b>	<b>224.96</b>	<b>224.96</b>	0.00e+00	<b>224.96</b>
1/100/40	DELEqC-II*	1393.18	2361.56	2360.78	5.26e+02	3887.97
1/100/40	DELEqC-III-trand*	257.86	309.19	330.60	8.83e+01	990.22
1/100/40	DELEqC-III-rand	<b>257.10</b>	<b>257.10</b>	<b>257.10</b>	1.14e-13	<b>257.10</b>
1/100/45	DELEqC-II*	1291.02	1987.70	2081.03	4.69e+02	3669.80
1/100/45	DELEqC-III-trand*	292.72	347.86	369.93	7.64e+01	785.36
1/100/45	DELEqC-III-rand	<b>289.23</b>	<b>289.23</b>	<b>289.23</b>	5.68e-14	<b>289.23</b>
1/100/50	DELEqC-II*	918.76	1613.53	1689.56	4.45e+02	3541.94
1/100/50	DELEqC-III-trand*	332.90	387.88	407.12	8.28e+01	848.34
1/100/50	DELEqC-III-rand	<b>321.37</b>	<b>321.37</b>	<b>321.37</b>	5.68e-14	<b>321.37</b>

Table 3: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
2/10/5	DELEqC-II	<b>35.38</b>	<b>35.38</b>	<b>35.38</b>	7.11e-15	<b>35.38</b>
2/10/5	DELEqC-III-trand*	35.38	35.39	35.41	1.01e-01	36.30
2/10/5	DELEqC-III-rand	<b>35.38</b>	<b>35.38</b>	<b>35.38</b>	7.11e-15	<b>35.38</b>
2/20/5	DELEqC-II	<b>35.23</b>	<b>35.23</b>	<b>35.23</b>	7.11e-15	<b>35.23</b>
2/20/5	DELEqC-III-trand*	<b>35.23</b>	<b>35.23</b>	35.23	5.87e-03	35.29
2/20/5	DELEqC-III-rand	<b>35.23</b>	<b>35.23</b>	35.27	2.29e-01	36.87
2/20/10	DELEqC-II	<b>115.69</b>	<b>115.69</b>	<b>115.71</b>	4.63e-02	<b>115.83</b>
2/20/10	DELEqC-III-trand*	115.70	115.95	116.60	2.69e+00	136.00
2/20/10	DELEqC-III-rand*	115.69	115.71	115.88	1.18e+00	127.59
2/30/5	DELEqC-II*	37.96	87.40	101.34	5.14e+01	310.91
2/30/5	DELEqC-III-trand	<b>35.20</b>	<b>35.20</b>	<b>35.20</b>	2.74e-06	<b>35.20</b>
2/30/5	DELEqC-III-rand	<b>35.20</b>	<b>35.20</b>	35.26	3.26e-01	36.86
2/30/10	DELEqC-II*	<b>115.64</b>	116.04	120.37	6.55e+00	142.52
2/30/10	DELEqC-III-trand*	115.65	115.77	<b>115.80</b>	1.50e-01	<b>116.60</b>
2/30/10	DELEqC-III-rand	<b>115.64</b>	<b>115.65</b>	116.30	2.57e+00	128.61
2/30/15	DELEqC-II	<b>242.15</b>	<b>242.15</b>	<b>242.42</b>	1.43e+00	256.23
2/30/15	DELEqC-III-trand*	242.43	244.35	245.15	5.07e+00	287.28
2/30/15	DELEqC-III-rand*	<b>242.15</b>	242.16	242.54	5.86e-01	<b>244.51</b>
2/40/5	DELEqC-II*	230.91	792.14	813.87	2.86e+02	1705.64
2/40/5	DELEqC-III-trand	<b>35.18</b>	<b>35.18</b>	<b>35.18</b>	9.95e-08	<b>35.18</b>
2/40/5	DELEqC-III-rand*	<b>35.18</b>	<b>35.18</b>	35.61	1.80e+00	47.67
2/40/10	DELEqC-II*	231.75	482.90	539.13	2.22e+02	1584.27
2/40/10	DELEqC-III-trand*	115.62	115.67	<b>115.69</b>	7.02e-02	<b>115.96</b>
2/40/10	DELEqC-III-rand	<b>115.62</b>	<b>115.62</b>	117.18	4.07e+00	128.61
2/40/15	DELEqC-II*	248.33	305.58	317.27	5.48e+01	529.92
2/40/15	DELEqC-III-trand*	242.04	242.65	243.96	5.69e+00	279.57
2/40/15	DELEqC-III-rand	<b>241.94</b>	<b>241.94</b>	<b>242.08</b>	4.36e-01	<b>244.31</b>
2/40/20	DELEqC-II*	400.60	402.01	405.23	6.68e+00	428.97
2/40/20	DELEqC-III-trand*	401.11	402.97	406.86	9.32e+00	458.70
2/40/20	DELEqC-III-rand	<b>400.60</b>	<b>401.25</b>	<b>402.64</b>	2.80e+00	<b>412.16</b>
2/50/5	DELEqC-II*	917.49	1889.41	1920.50	5.45e+02	3603.68
2/50/5	DELEqC-III-trand	<b>35.17</b>	<b>35.17</b>	<b>35.48</b>	2.46e+00	59.74
2/50/5	DELEqC-III-rand	<b>35.17</b>	<b>35.17</b>	35.99	2.62e+00	<b>50.57</b>
2/50/10	DELEqC-II*	795.82	1454.06	1529.16	4.20e+02	2920.15
2/50/10	DELEqC-III-trand	<b>115.61</b>	115.63	<b>115.86</b>	1.54e+00	<b>129.21</b>
2/50/10	DELEqC-III-rand	<b>115.61</b>	<b>115.61</b>	118.95	6.23e+00	142.52
2/50/15	DELEqC-II*	440.50	1042.90	1114.27	3.16e+02	2005.85
2/50/15	DELEqC-III-trand*	241.85	242.15	242.72	3.63e+00	<b>278.38</b>
2/50/15	DELEqC-III-rand	<b>241.84</b>	<b>241.84</b>	<b>242.40</b>	5.01e+00	292.18
2/50/20	DELEqC-II*	469.07	757.45	788.38	1.83e+02	1419.47
2/50/20	DELEqC-III-trand*	400.21	401.95	403.05	3.75e+00	423.57
2/50/20	DELEqC-III-rand	<b>400.03</b>	<b>400.03</b>	<b>401.17</b>	2.22e+00	<b>408.52</b>
2/50/25	DELEqC-II*	593.55	646.93	657.49	4.65e+01	813.00
2/50/25	DELEqC-III-trand*	590.81	600.10	605.89	1.72e+01	695.19
2/50/25	DELEqC-III-rand	<b>589.30</b>	<b>596.93</b>	<b>599.04</b>	9.51e+00	<b>638.73</b>

Table 4: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

2/100/5	DELEqC-II*	9864.88	13093.95	13198.65	1.99e+03	19352.34
2/100/5	DELEqC-III-trand	<b>35.15</b>	<b>35.15</b>	<b>38.83</b>	7.27e+00	67.76
2/100/5	DELEqC-III-rand	<b>35.15</b>	36.85	41.57	7.40e+00	<b>55.52</b>
2/100/10	DELEqC-II*	8736.06	12136.65	12161.09	1.66e+03	16555.50
2/100/10	DELEqC-III-trand	<b>115.59</b>	<b>115.86</b>	<b>120.74</b>	7.32e+00	<b>158.09</b>
2/100/10	DELEqC-III-rand*	<b>115.59</b>	128.61	131.33	9.65e+00	160.11
2/100/15	DELEqC-II*	7551.76	11235.13	11356.86	1.60e+03	16907.32
2/100/15	DELEqC-III-trand*	241.67	241.78	<b>243.87</b>	9.63e+00	310.09
2/100/15	DELEqC-III-rand	<b>241.67</b>	<b>241.67</b>	246.95	9.44e+00	<b>272.79</b>
2/100/20	DELEqC-II*	6922.78	10015.67	10142.04	1.53e+03	15568.00
2/100/20	DELEqC-III-trand	399.23	<b>401.90</b>	<b>406.21</b>	1.47e+01	480.90
2/100/20	DELEqC-III-rand*	<b>399.17</b>	404.89	406.28	8.89e+00	<b>438.69</b>
2/100/25	DELEqC-II*	6421.49	9271.77	9298.71	1.34e+03	12327.87
2/100/25	DELEqC-III-trand*	586.66	588.39	593.89	1.28e+01	659.71
2/100/25	DELEqC-III-rand	<b>586.43</b>	<b>586.43</b>	<b>591.31</b>	1.09e+01	<b>626.71</b>
2/100/30	DELEqC-II*	5887.15	8616.59	8732.41	1.35e+03	13152.53
2/100/30	DELEqC-III-trand	820.19	830.78	839.13	3.32e+01	1029.71
2/100/30	DELEqC-III-rand	<b>819.79</b>	<b>828.24</b>	<b>836.50</b>	2.03e+01	<b>920.62</b>
2/100/35	DELEqC-II*	5563.13	7669.10	7823.66	1.23e+03	11584.01
2/100/35	DELEqC-III-trand	1077.16	<b>1109.66</b>	<b>1117.17</b>	4.55e+01	1431.77
2/100/35	DELEqC-III-rand	<b>1074.96</b>	1116.32	1126.66	4.77e+01	<b>1255.78</b>
2/100/40	DELEqC-II*	4669.74	6915.00	7001.13	1.01e+03	10443.57
2/100/40	DELEqC-III-trand	1394.84	<b>1435.04</b>	<b>1450.11</b>	5.72e+01	1771.36
2/100/40	DELEqC-III-rand*	<b>1387.07</b>	1494.33	1490.80	6.32e+01	<b>1657.81</b>
2/100/45	DELEqC-II*	4337.18	6509.64	6463.83	9.43e+02	10007.56
2/100/45	DELEqC-III-trand	1746.26	<b>1814.88</b>	<b>1827.69</b>	6.37e+01	2166.91
2/100/45	DELEqC-III-rand*	<b>1719.56</b>	1901.80	1907.64	8.11e+01	<b>2102.47</b>
2/100/50	DELEqC-II*	4072.78	5883.04	5865.06	8.01e+02	9006.94
2/100/50	DELEqC-III-trand	2164.64	<b>2239.74</b>	<b>2270.07</b>	9.95e+01	<b>2777.55</b>
2/100/50	DELEqC-III-rand*	<b>2157.51</b>	2441.79	2428.55	1.02e+02	2812.51

Table 5: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
3/10/5	DELEqC-II*	37.27	42.94	43.11	3.59e+00	55.05
3/10/5	DELEqC-III-trand*	37.01	37.94	38.39	2.21e+00	56.89
3/10/5	DELEqC-III-rand	<b>36.98</b>	<b>36.98</b>	<b>37.30</b>	8.03e-01	<b>41.86</b>
3/20/5	DELEqC-II*	74.26	107.14	106.16	1.02e+01	130.94
3/20/5	DELEqC-III-trand*	36.98	37.03	<b>37.23</b>	6.79e-01	<b>42.95</b>
3/20/5	DELEqC-III-rand	<b>36.98</b>	<b>36.98</b>	37.55	9.03e-01	<b>42.95</b>
3/20/10	DELEqC-II*	75.09	123.81	122.32	1.37e+01	150.74
3/20/10	DELEqC-III-trand*	73.96	74.84	75.71	3.66e+00	108.82
3/20/10	DELEqC-III-rand	<b>73.95</b>	<b>73.95</b>	<b>74.49</b>	9.99e-01	<b>78.93</b>
3/30/5	DELEqC-II*	146.25	182.06	181.37	1.09e+01	209.99
3/30/5	DELEqC-III-trand	36.98	<b>36.99</b>	<b>37.50</b>	3.57e+00	<b>72.79</b>
3/30/5	DELEqC-III-rand*	<b>36.98</b>	37.97	40.20	6.53e+00	72.95
3/30/10	DELEqC-II*	113.74	204.30	201.55	1.82e+01	229.47
3/30/10	DELEqC-III-trand	73.97	<b>74.30</b>	<b>74.88</b>	1.26e+00	<b>80.07</b>
3/30/10	DELEqC-III-rand*	<b>73.95</b>	74.45	76.00	6.13e+00	124.42
3/30/15	DELEqC-II*	111.34	227.22	223.92	2.06e+01	252.94
3/30/15	DELEqC-III-trand*	111.37	113.63	114.47	4.31e+00	149.81
3/30/15	DELEqC-III-rand	<b>110.93</b>	<b>111.92</b>	<b>112.92</b>	3.51e+00	<b>133.73</b>
3/40/5	DELEqC-II*	205.23	253.05	253.41	1.45e+01	279.11
3/40/5	DELEqC-III-trand	36.98	<b>36.98</b>	<b>37.57</b>	1.18e+00	<b>43.94</b>
3/40/5	DELEqC-III-rand*	<b>36.98</b>	40.96	55.67	2.19e+01	118.96
3/40/10	DELEqC-II*	128.61	280.59	277.70	2.02e+01	301.93
3/40/10	DELEqC-III-trand	73.95	<b>74.95</b>	<b>76.09</b>	8.20e+00	155.54
3/40/10	DELEqC-III-rand*	<b>73.95</b>	75.94	78.61	1.03e+01	<b>138.17</b>
3/40/15	DELEqC-II*	122.37	302.81	288.21	4.88e+01	329.10
3/40/15	DELEqC-III-trand*	110.97	112.85	115.50	1.14e+01	185.55
3/40/15	DELEqC-III-rand	<b>110.93</b>	<b>112.42</b>	<b>113.86</b>	6.30e+00	<b>168.91</b>
3/40/20	DELEqC-II*	151.99	321.19	305.00	4.99e+01	358.31
3/40/20	DELEqC-III-trand*	147.96	152.13	156.08	1.10e+01	199.64
3/40/20	DELEqC-III-rand	<b>147.90</b>	<b>148.90</b>	<b>150.30</b>	5.02e+00	<b>184.67</b>
3/50/5	DELEqC-II*	267.53	333.09	329.96	1.58e+01	355.99
3/50/5	DELEqC-III-trand	<b>36.98</b>	<b>37.97</b>	<b>38.39</b>	2.34e+00	<b>54.88</b>
3/50/5	DELEqC-III-rand*	36.98	113.38	108.77	3.27e+01	174.67
3/50/10	DELEqC-II*	157.19	357.67	349.67	3.30e+01	385.12
3/50/10	DELEqC-III-trand	<b>73.95</b>	<b>74.95</b>	<b>76.04</b>	3.42e+00	<b>96.32</b>
3/50/10	DELEqC-III-rand*	74.95	80.92	101.44	3.35e+01	197.99
3/50/15	DELEqC-II*	175.27	382.72	354.23	6.71e+01	421.00
3/50/15	DELEqC-III-trand	110.93	<b>112.93</b>	<b>117.09</b>	1.38e+01	<b>200.47</b>
3/50/15	DELEqC-III-rand	<b>110.93</b>	113.91	119.79	1.81e+01	213.87
3/50/20	DELEqC-II*	186.70	404.81	379.93	6.61e+01	440.76
3/50/20	DELEqC-III-trand*	147.92	153.01	156.43	1.58e+01	259.47
3/50/20	DELEqC-III-rand	<b>147.90</b>	<b>149.89</b>	<b>154.53</b>	1.41e+01	<b>241.69</b>
3/50/25	DELEqC-II*	220.48	415.64	373.82	8.15e+01	465.84
3/50/25	DELEqC-III-trand*	185.10	193.64	202.32	2.28e+01	324.39
3/50/25	DELEqC-III-rand	<b>184.88</b>	<b>187.36</b>	<b>190.84</b>	1.35e+01	<b>267.58</b>

Table 6: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

3/100/5	DELEqC-II*	326.45	736.12	685.15	1.24e+02	776.68
3/100/5	DELEqC-III-trand	<b>53.78</b>	<b>81.03</b>	<b>84.74</b>	2.75e+01	<b>286.75</b>
3/100/5	DELEqC-III-rand*	478.11	547.25	547.39	2.98e+01	606.56
3/100/10	DELEqC-II*	479.95	775.31	752.42	7.58e+01	808.62
3/100/10	DELEqC-III-trand	<b>78.02</b>	<b>119.53</b>	<b>127.54</b>	4.68e+01	<b>493.93</b>
3/100/10	DELEqC-III-rand*	475.24	564.23	564.18	3.38e+01	634.95
3/100/15	DELEqC-II*	441.48	797.10	766.96	8.50e+01	840.42
3/100/15	DELEqC-III-trand	<b>122.85</b>	<b>161.16</b>	<b>175.18</b>	4.76e+01	<b>385.29</b>
3/100/15	DELEqC-III-rand*	444.48	587.06	579.55	4.55e+01	685.23
3/100/20	DELEqC-II*	512.34	822.26	770.05	1.12e+02	869.48
3/100/20	DELEqC-III-trand	<b>160.03</b>	<b>199.41</b>	<b>222.73</b>	6.83e+01	<b>531.71</b>
3/100/20	DELEqC-III-rand*	436.21	611.60	603.81	5.97e+01	702.68
3/100/25	DELEqC-II*	526.09	836.00	754.53	1.31e+02	899.45
3/100/25	DELEqC-III-trand	<b>197.72</b>	<b>263.38</b>	<b>272.33</b>	5.43e+01	<b>511.75</b>
3/100/25	DELEqC-III-rand*	417.34	625.58	619.41	7.12e+01	761.69
3/100/30	DELEqC-II*	528.20	808.54	753.85	1.37e+02	937.68
3/100/30	DELEqC-III-trand	<b>246.74</b>	<b>313.69</b>	<b>334.94</b>	7.71e+01	<b>689.19</b>
3/100/30	DELEqC-III-rand*	383.26	675.33	655.57	7.70e+01	778.75
3/100/35	DELEqC-II*	588.31	677.62	752.71	1.32e+02	953.00
3/100/35	DELEqC-III-trand	<b>281.13</b>	<b>368.16</b>	<b>392.27</b>	8.67e+01	<b>706.99</b>
3/100/35	DELEqC-III-rand*	379.45	718.35	696.55	8.64e+01	826.56
3/100/40	DELEqC-II*	620.35	700.80	742.70	1.10e+02	979.64
3/100/40	DELEqC-III-trand	<b>328.06</b>	<b>431.56</b>	<b>455.79</b>	1.03e+02	1084.15
3/100/40	DELEqC-III-rand*	361.19	751.71	729.78	1.08e+02	<b>872.75</b>
3/100/45	DELEqC-II*	617.62	717.01	747.70	9.88e+01	1002.80
3/100/45	DELEqC-III-trand	<b>383.27</b>	<b>500.43</b>	<b>519.49</b>	1.05e+02	932.20
3/100/45	DELEqC-III-rand*	398.82	796.98	779.09	9.58e+01	<b>923.60</b>
3/100/50	DELEqC-II*	645.45	742.76	786.19	1.10e+02	1041.15
3/100/50	DELEqC-III-trand	400.23	<b>532.20</b>	<b>557.77</b>	1.02e+02	975.98
3/100/50	DELEqC-III-rand*	<b>374.77</b>	849.49	836.54	8.26e+01	<b>953.27</b>

Table 7: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
4/10/5	DELEqC-II	<b>21485.30</b>	<b>21485.31</b>	<b>21485.30</b>	2.88e-05	<b>21485.31</b>
4/10/5	DELEqC-III-trand*	21485.31	21485.31	21485.33	4.21e-02	21485.56
4/10/5	DELEqC-III-rand*	21485.31	21485.31	21485.31	0.00e+00	21485.31
4/20/5	DELEqC-II	<b>21495.27</b>	<b>21495.27</b>	<b>21499.37</b>	1.50e+01	21561.12
4/20/5	DELEqC-III-trand*	21495.28	21551.15	21575.88	2.61e+02	24165.91
4/20/5	DELEqC-III-rand*	21495.27	<b>21495.27</b>	21504.27	1.98e+01	<b>21553.86</b>
4/20/10	DELEqC-II	<b>43035.03</b>	<b>43035.03</b>	<b>43035.03</b>	1.03e-04	<b>43035.03</b>
4/20/10	DELEqC-III-trand*	43035.03	43035.03	43317.85	1.64e+03	57161.55
4/20/10	DELEqC-III-rand*	43035.03	43035.03	43035.03	7.28e-12	43035.03
4/30/5	DELEqC-II*	21531.89	23084.39	31395.42	2.18e+04	148436.29
4/30/5	DELEqC-III-trand*	21505.17	21561.16	21664.85	7.21e+02	28431.36
4/30/5	DELEqC-III-rand	<b>21505.17</b>	<b>21505.17</b>	<b>21523.23</b>	2.21e+01	<b>21551.39</b>
4/30/10	DELEqC-II*	<b>43044.97</b>	43051.78	43153.54	6.20e+02	49151.41
4/30/10	DELEqC-III-trand*	43044.97	43101.38	43153.78	3.21e+02	46158.28
4/30/10	DELEqC-III-rand	<b>43044.97</b>	<b>43044.97</b>	<b>43046.03</b>	7.40e+00	<b>43098.65</b>
4/30/15	DELEqC-II	<b>64584.83</b>	<b>64584.83</b>	<b>64584.83</b>	1.73e-06	<b>64584.83</b>
4/30/15	DELEqC-III-trand*	64584.83	64598.43	68373.56	1.84e+04	209336.32
4/30/15	DELEqC-III-rand*	64584.83	64584.83	64584.83	7.28e-12	<b>64584.83</b>
4/40/5	DELEqC-II*	58636.35	684030.04	997940.83	1.10e+06	8196801.86
4/40/5	DELEqC-III-trand*	21515.60	21611.01	21614.76	9.41e+01	22454.12
4/40/5	DELEqC-III-rand	<b>21515.07</b>	<b>21515.07</b>	<b>21531.45</b>	1.78e+01	<b>21566.19</b>
4/40/10	DELEqC-II*	45046.92	166267.17	275545.74	3.26e+05	2507052.96
4/40/10	DELEqC-III-trand*	43055.07	43120.16	44206.25	5.43e+03	94738.85
4/40/10	DELEqC-III-rand	<b>43054.87</b>	<b>43054.87</b>	<b>43075.65</b>	2.25e+01	<b>43100.06</b>
4/40/15	DELEqC-II*	64667.15	71299.38	84165.96	4.48e+04	473773.49
4/40/15	DELEqC-III-trand*	64594.77	64706.06	72935.21	4.46e+04	508482.70
4/40/15	DELEqC-III-rand	<b>64594.77</b>	<b>64594.77</b>	<b>64594.77</b>	1.46e-11	<b>64594.77</b>
4/40/20	DELEqC-II*	<b>86134.63</b>	86136.95	86319.18	6.24e+02	91227.58
4/40/20	DELEqC-III-trand*	86134.63	86941.24	98952.01	4.17e+04	467801.96
4/40/20	DELEqC-III-rand	<b>86134.63</b>	<b>86134.63</b>	<b>86134.63</b>	1.46e-11	<b>86134.63</b>
4/50/5	DELEqC-II*	1038892.96	3881430.34	4239970.88	2.56e+06	13032764.87
4/50/5	DELEqC-III-trand*	21525.36	21648.13	22044.35	1.87e+03	37061.10
4/50/5	DELEqC-III-rand	<b>21524.97</b>	<b>21524.97</b>	<b>21535.35</b>	1.25e+01	<b>21550.30</b>
4/50/10	DELEqC-II*	195381.22	1966953.58	2534779.02	1.92e+06	10205378.76
4/50/10	DELEqC-III-trand*	43071.38	43172.71	44754.99	5.83e+03	82737.91
4/50/10	DELEqC-III-rand	<b>43064.77</b>	<b>43064.77</b>	<b>43078.18</b>	1.71e+01	<b>43100.06</b>
4/50/15	DELEqC-II*	145144.99	669957.15	946629.68	8.23e+05	5713910.43
4/50/15	DELEqC-III-trand*	64615.27	64985.77	73263.01	4.46e+04	505352.71
4/50/15	DELEqC-III-rand	<b>64604.67</b>	<b>64604.67</b>	<b>64621.39</b>	2.18e+01	<b>64649.85</b>
4/50/20	DELEqC-II*	92097.14	217628.99	317390.51	3.12e+05	2252585.84
4/50/20	DELEqC-III-trand*	86144.57	87127.57	102847.54	5.27e+04	522479.20
4/50/20	DELEqC-III-rand	<b>86144.56</b>	<b>86144.56</b>	<b>86144.56</b>	1.46e-11	<b>86144.56</b>
4/50/25	DELEqC-II*	107992.21	121596.41	137165.26	4.18e+04	367327.85
4/50/25	DELEqC-III-trand*	107684.43	113947.92	149255.80	1.06e+05	867204.44
4/50/25	DELEqC-III-rand	<b>107684.42</b>	<b>107684.42</b>	<b>107684.42</b>	1.46e-11	<b>107684.42</b>



Table 8: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
4/100/5	DELEqC-II*	19767594.53	45755571.14	51480364.73	2.47e+07	172329099.75
4/100/5	DELEqC-III-trand*	22160.46	31306.02	61101.67	1.03e+05	839071.98
4/100/5	DELEqC-III-rand	<b>21573.72</b>	<b>21574.46</b>	<b>21575.44</b>	1.96e+00	<b>21582.88</b>
4/100/10	DELEqC-II*	16426064.34	42588363.11	44919667.44	1.68e+07	93608430.46
4/100/10	DELEqC-III-trand*	43724.39	65844.83	116274.18	2.07e+05	1773695.43
4/100/10	DELEqC-III-rand	<b>43114.26</b>	<b>43114.26</b>	<b>43117.40</b>	4.21e+00	<b>43127.73</b>
4/100/15	DELEqC-II*	9401930.70	33919111.74	36911259.88	1.46e+07	94310090.54
4/100/15	DELEqC-III-trand*	65059.30	100981.50	233764.62	4.06e+05	2823400.29
4/100/15	DELEqC-III-rand	<b>64654.16</b>	<b>64654.16</b>	<b>64660.38</b>	6.91e+00	<b>64675.46</b>
4/100/20	DELEqC-II*	12099705.35	29730973.41	32021657.73	1.10e+07	67279513.73
4/100/20	DELEqC-III-trand*	87843.97	143043.48	261654.61	3.15e+05	2431064.58
4/100/20	DELEqC-III-rand	<b>86194.06</b>	<b>86194.06</b>	<b>86202.35</b>	9.80e+00	<b>86223.40</b>
4/100/25	DELEqC-II*	8017193.66	24999392.80	27184816.37	1.05e+07	65267913.65
4/100/25	DELEqC-III-trand*	110504.39	196676.65	295267.27	2.94e+05	2280732.19
4/100/25	DELEqC-III-rand	<b>107733.96</b>	<b>107733.96</b>	<b>107741.47</b>	1.08e+01	<b>107761.55</b>
4/100/30	DELEqC-II*	4707507.74	18184434.11	21530038.45	1.08e+07	55873818.42
4/100/30	DELEqC-III-trand*	130535.05	257536.14	473352.84	5.33e+05	3593624.29
4/100/30	DELEqC-III-rand	<b>129273.86</b>	<b>129273.86</b>	<b>129284.54</b>	1.47e+01	<b>129311.22</b>
4/100/35	DELEqC-II*	5991178.31	15475545.28	18224078.14	9.25e+06	44681001.73
4/100/35	DELEqC-III-trand*	157860.34	340656.06	561548.46	5.57e+05	3198086.42
4/100/35	DELEqC-III-rand	<b>150813.76</b>	<b>150813.76</b>	<b>150830.55</b>	1.87e+01	<b>150859.27</b>
4/100/40	DELEqC-II*	3992040.17	13248214.36	14292605.12	6.94e+06	36817944.74
4/100/40	DELEqC-III-trand*	186428.09	448024.77	739187.97	8.54e+05	6955800.16
4/100/40	DELEqC-III-rand	<b>172353.65</b>	<b>172353.65</b>	<b>172372.55</b>	2.27e+01	<b>172408.52</b>
4/100/45	DELEqC-II*	2715332.73	9461396.22	10658519.16	5.28e+06	27715015.98
4/100/45	DELEqC-III-trand*	212977.90	548684.99	874606.39	1.02e+06	8386464.21
4/100/45	DELEqC-III-rand	<b>193893.55</b>	<b>193893.55</b>	<b>193910.22</b>	2.56e+01	<b>193962.19</b>
4/100/50	DELEqC-II*	1875178.26	6054605.35	7252473.21	4.33e+06	31057093.16
4/100/50	DELEqC-III-trand*	231040.56	752186.89	1258778.84	1.77e+06	11682742.53
4/100/50	DELEqC-III-rand	<b>215433.41</b>	<b>215433.41</b>	<b>215433.42</b>	4.99e-02	<b>215433.86</b>

Table 9: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
5/10/5	DELEqC-II*	0.21	0.35	0.36	7.21e-02	0.51
5/10/5	DELEqC-III-trand*	0.16	0.28	0.28	6.40e-02	0.42
5/10/5	DELEqC-III-rand	<b>0.15</b>	<b>0.22</b>	<b>0.23</b>	4.98e-02	<b>0.39</b>
5/20/5	DELEqC-II*	0.20	0.48	0.54	1.59e-01	0.82
5/20/5	DELEqC-III-trand	0.15	<b>0.22</b>	<b>0.22</b>	5.06e-02	<b>0.36</b>
5/20/5	DELEqC-III-rand*	<b>0.15</b>	0.24	0.30	1.60e-01	0.62
5/20/10	DELEqC-II*	0.80	0.91	0.89	4.28e-02	0.96
5/20/10	DELEqC-III-trand*	0.70	0.91	0.89	3.93e-02	1.00
5/20/10	DELEqC-III-rand	<b>0.40</b>	<b>0.88</b>	<b>0.84</b>	1.12e-01	<b>0.91</b>
5/30/5	DELEqC-II*	0.63	0.99	0.97	1.19e-01	1.31
5/30/5	DELEqC-III-trand	<b>0.15</b>	<b>0.21</b>	<b>0.23</b>	7.63e-02	<b>0.62</b>
5/30/5	DELEqC-III-rand*	0.20	0.24	0.40	2.00e-01	0.82
5/30/10	DELEqC-II*	0.84	0.93	0.94	2.82e-02	1.00
5/30/10	DELEqC-III-trand*	0.80	<b>0.91</b>	0.89	3.02e-02	<b>0.96</b>
5/30/10	DELEqC-III-rand	<b>0.80</b>	<b>0.91</b>	<b>0.89</b>	3.83e-02	0.96
5/30/15	DELEqC-II*	0.94	1.00	0.99	7.89e-03	1.00
5/30/15	DELEqC-III-trand*	0.97	0.97	0.98	9.94e-03	1.02
5/30/15	DELEqC-III-rand	<b>0.93</b>	<b>0.97</b>	<b>0.98</b>	1.21e-02	<b>1.00</b>
5/40/5	DELEqC-II*	1.13	1.44	1.48	2.12e-01	2.14
5/40/5	DELEqC-III-trand	<b>0.15</b>	<b>0.21</b>	<b>0.29</b>	1.54e-01	<b>0.62</b>
5/40/5	DELEqC-III-rand*	0.20	0.62	0.49	1.90e-01	0.82
5/40/10	DELEqC-II*	1.01	1.17	1.20	1.29e-01	1.96
5/40/10	DELEqC-III-trand	0.80	<b>0.91</b>	<b>0.90</b>	3.35e-02	1.01
5/40/10	DELEqC-III-rand	<b>0.80</b>	<b>0.91</b>	0.91	3.06e-02	<b>0.96</b>
5/40/15	DELEqC-II*	0.98	1.03	1.04	2.69e-02	1.11
5/40/15	DELEqC-III-trand*	0.94	0.97	0.98	1.31e-02	1.02
5/40/15	DELEqC-III-rand	<b>0.94</b>	<b>0.97</b>	<b>0.98</b>	1.00e-02	<b>1.00</b>
5/40/20	DELEqC-II*	<b>1.00</b>	1.02	1.02	6.58e-03	1.04
5/40/20	DELEqC-III-trand*	1.01	1.02	1.02	9.78e-03	1.04
5/40/20	DELEqC-III-rand	1.01	<b>1.01</b>	<b>1.01</b>	5.62e-03	<b>1.02</b>
5/50/5	DELEqC-II*	1.36	2.06	2.12	3.94e-01	3.79
5/50/5	DELEqC-III-trand	<b>0.15</b>	<b>0.28</b>	<b>0.34</b>	1.81e-01	0.96
5/50/5	DELEqC-III-rand*	0.20	0.62	0.57	1.55e-01	<b>0.82</b>
5/50/10	DELEqC-II*	1.23	1.76	1.81	3.09e-01	2.81
5/50/10	DELEqC-III-trand	0.80	<b>0.91</b>	<b>0.90</b>	3.20e-02	1.02
5/50/10	DELEqC-III-rand*	<b>0.80</b>	<b>0.91</b>	0.91	2.86e-02	<b>0.96</b>
5/50/15	DELEqC-II*	1.11	1.47	1.51	2.27e-01	2.23
5/50/15	DELEqC-III-trand*	<b>0.94</b>	0.97	0.98	1.63e-02	1.04
5/50/15	DELEqC-III-rand	0.97	<b>0.97</b>	<b>0.98</b>	1.17e-02	<b>1.02</b>
5/50/20	DELEqC-II*	1.05	1.18	1.21	1.09e-01	1.55
5/50/20	DELEqC-III-trand	<b>1.01</b>	<b>1.02</b>	1.02	9.78e-03	1.05
5/50/20	DELEqC-III-rand*	<b>1.01</b>	1.02	<b>1.01</b>	6.00e-03	<b>1.03</b>
5/50/25	DELEqC-II*	1.03	1.05	1.07	4.94e-02	1.37
5/50/25	DELEqC-III-trand*	1.03	1.04	1.04	5.61e-03	1.05
5/50/25	DELEqC-III-rand	<b>1.03</b>	<b>1.03</b>	<b>1.03</b>	2.32e-03	<b>1.04</b>

Table 10: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

5/100/5	DELEqC-II*	3.86	5.58	5.61	1.00e+00	9.66
5/100/5	DELEqC-III-trand*	<b>0.15</b>	0.62	<b>0.64</b>	1.54e-01	0.98
5/100/5	DELEqC-III-rand	0.20	<b>0.62</b>	0.65	1.13e-01	<b>0.82</b>
5/100/10	DELEqC-II*	3.45	4.96	5.09	9.60e-01	7.78
5/100/10	DELEqC-III-trand*	<b>0.81</b>	0.96	0.96	4.76e-02	1.03
5/100/10	DELEqC-III-rand	0.87	<b>0.91</b>	<b>0.93</b>	2.90e-02	<b>1.01</b>
5/100/15	DELEqC-II*	2.97	4.68	4.75	7.69e-01	6.77
5/100/15	DELEqC-III-trand*	0.97	1.01	1.01	2.16e-02	1.07
5/100/15	DELEqC-III-rand	<b>0.97</b>	<b>1.00</b>	<b>0.99</b>	1.13e-02	<b>1.02</b>
5/100/20	DELEqC-II*	3.03	4.30	4.46	9.01e-01	7.33
5/100/20	DELEqC-III-trand*	1.01	1.03	1.03	1.25e-02	1.08
5/100/20	DELEqC-III-rand	<b>1.01</b>	<b>1.02</b>	<b>1.02</b>	4.24e-03	<b>1.03</b>
5/100/25	DELEqC-II*	2.50	4.00	4.05	7.29e-01	5.63
5/100/25	DELEqC-III-trand*	<b>1.03</b>	1.04	1.04	9.18e-03	1.08
5/100/25	DELEqC-III-rand	1.03	<b>1.03</b>	<b>1.03</b>	2.01e-03	<b>1.04</b>
5/100/30	DELEqC-II*	2.43	3.72	3.81	8.28e-01	6.50
5/100/30	DELEqC-III-trand*	1.04	1.05	1.06	9.60e-03	1.09
5/100/30	DELEqC-III-rand	<b>1.04</b>	<b>1.04</b>	<b>1.04</b>	2.39e-03	<b>1.05</b>
5/100/35	DELEqC-II*	2.26	3.29	3.38	6.56e-01	5.40
5/100/35	DELEqC-III-trand*	1.05	1.06	1.07	1.57e-02	1.12
5/100/35	DELEqC-III-rand	<b>1.05</b>	<b>1.05</b>	<b>1.05</b>	1.51e-03	<b>1.06</b>
5/100/40	DELEqC-II*	2.10	3.00	3.02	5.26e-01	4.56
5/100/40	DELEqC-III-trand*	1.06	1.08	1.08	2.19e-02	1.25
5/100/40	DELEqC-III-rand	<b>1.06</b>	<b>1.06</b>	<b>1.06</b>	6.57e-04	<b>1.06</b>
5/100/45	DELEqC-II*	1.85	2.70	2.75	4.60e-01	4.22
5/100/45	DELEqC-III-trand*	1.07	1.09	1.09	1.92e-02	1.20
5/100/45	DELEqC-III-rand	<b>1.07</b>	<b>1.07</b>	<b>1.07</b>	1.52e-04	<b>1.07</b>
5/100/50	DELEqC-II*	1.47	2.29	2.32	4.35e-01	3.75
5/100/50	DELEqC-III-trand*	1.08	1.10	1.10	2.06e-02	1.21
5/100/50	DELEqC-III-rand	<b>1.08</b>	<b>1.08</b>	<b>1.08</b>	2.22e-16	<b>1.08</b>

Table 11: Statistical results of DELEqC-II-CR0.7-F0.9-trand-NP100 (DELEqC-II), DELEqC-III-CR0.1-F0.5-trand-NP30 (DELEqC-III-trand) and DELEqC-III-CR0.3-F0.6-rand-NP20 (DELEqC-III-rand). A \* indicate that the results are statistical different (Mann-Whitney non-parametric test with  $p$ -value < 0.05) to those obtained by the best variant (with respect to the median).

TP/n/m	method	best	median	mean	std	worst
13/16/8	DELEqC-II	<b>216.04</b>	<b>301.99</b>	<b>298.33</b>	3.25e+01	<b>379.85</b>
13/16/8	DELEqC-III-trand*	3210.47	30646.47	38151.91	2.47e+04	143238.68
13/16/8	DELEqC-III-rand*	3210.47	43810.68	47425.86	3.15e+04	154392.78
14/10/2	DELEqC-II*	1.54	1.54	1.54	3.49e-04	1.54
14/10/2	DELEqC-III-trand*	1.80	9.79	13.21	9.63e+00	55.45
14/10/2	DELEqC-III-rand	<b>0.10</b>	<b>0.77</b>	<b>0.72</b>	2.03e-01	<b>1.27</b>
15/10/8	DELEqC-II*	26.27	26.27	26.27	3.55e-15	26.27
15/10/8	DELEqC-III-trand	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.00e+00	<b>0.00</b>
15/10/8	DELEqC-III-rand	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.00e+00	<b>0.00</b>
16/30/6	DELEqC-II	<b>426.18</b>	<b>478.01</b>	<b>480.28</b>	2.65e+01	<b>562.97</b>
16/30/6	DELEqC-III-trand*	6533.57	10797.39	11239.12	2.32e+03	16946.10
16/30/6	DELEqC-III-rand*	21332.77	35573.01	36533.21	7.34e+03	55192.38
17/30/24	DELEqC-II*	1451.30	1451.30	1451.30	8.02e-06	1451.30
17/30/24	DELEqC-III-trand*	2.09	11.01	14.48	1.11e+01	58.78
17/30/24	DELEqC-III-rand	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	2.73e-02	<b>0.13</b>
18/60/15	DELEqC-II	<b>6933.36</b>	<b>7866.78</b>	<b>7917.74</b>	5.41e+02	<b>9681.18</b>
18/60/15	DELEqC-III-trand*	114906.27	176702.84	175895.69	2.08e+04	223595.86
18/60/15	DELEqC-III-rand*	239047.96	527550.79	524232.91	8.45e+04	708527.08
19/60/45	DELEqC-II	<b>19015.34</b>	<b>19018.06</b>	<b>19018.18</b>	1.36e+00	<b>19022.02</b>
19/60/45	DELEqC-III-trand*	75293.84	177205.62	179278.52	5.12e+04	335935.88
19/60/45	DELEqC-III-rand*	211511.90	451569.04	471227.20	1.43e+05	907088.14
20/100/25	DELEqC-II	<b>70100.07</b>	<b>73816.77</b>	<b>73876.36</b>	1.61e+03	<b>78493.09</b>
20/100/25	DELEqC-III-trand*	186979.09	297208.54	293522.01	3.57e+04	374173.76
20/100/25	DELEqC-III-rand*	1294476.80	1644242.80	1669694.52	1.71e+05	2075921.20
28/1000/200	DELEqC-II	<b>406863111.43</b>	<b>466560138.15</b>	<b>463747866.07</b>	1.26e+07	<b>469111545.73</b>
28/1000/200	DELEqC-III-trand*	1602585656.08	1669397057.72	1667666627.82	2.82e+07	1737506060.41
28/1000/200	DELEqC-III-rand*	2275681550.51	2755201276.53	2747243522.68	1.60e+08	3118391639.24
29/1000/800	DELEqC-II*	1709348333.19	1709426361.05	1709433166.40	4.46e+04	1709564395.61
29/1000/800	DELEqC-III-trand	<b>529365475.04</b>	<b>624368456.34</b>	<b>620885013.72</b>	3.66e+07	<b>708768591.73</b>
29/1000/800	DELEqC-III-rand*	1288827526.15	2092913396.09	2063026235.91	2.82e+08	2620277191.84