

Appendices

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Summary

- Table 1 contains the parameters returned by irace
- Tables 2–4 contain the mean hypervolumes returned by all the variants on all instances, with the same parameters (**experiment 1**)
- Tables 5–7 contain the mean hypervolumes returned by all the variants on all instances, with the parameters returned by irace (**experiment 2**)
- Tables 8–10 contain the mean time required to reach 95% of the mean hypervolume returned by \mathcal{A} (**experiment 3**).

Parameters	\mathcal{A}		\mathcal{A}_{int}^{all}		\mathcal{A}_{div}^{all}		\mathcal{A}_{int}^{lo}		\mathcal{A}_{div}^{lo}	
	50	100	50	100	50	100	50	100	50	100
M	94	68	50	52	61	60	23	45	31	50
m	73	55	15	6	15	5	7	20	8	15
δ	16	67	24	66	28	60	21	73	25	75
p_c	0.94	0.99	0.85	0.61	0.76	0.25	0.97	0.78	0.88	0.86
p_m	0.71	0.86	0.49	0.48	0.54	0.30	0.49	0.51	0.42	0.55
p_e	-	-	0.47	0.68	0.46	0.80	0.45	0.68	0.48	0.60
$MaxSize$	-	-	4	6	4	5	5	6	5	5
p_i	-	-	0.85	0.91	0.81	0.97	0.86	0.97	0.83	0.93
$N_{Frequent}$	-	-	132	180	124	150	86	171	74	135
$N_{Injected}$	-	-	48	70	32	60	25	44	17	34

Table 1. The configurations returned by irace for each variant and for both sizes of instance.

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
R101	50	0.795	0.807	0.808	0.807	0.809
R102	50	0.971	0.976	0.975	0.976	0.975
R103	50	0.976	0.987	0.985	0.985	0.985
R104	50	0.475	0.710	0.776	0.726	0.775
R105	50	0.804	0.885	0.897	0.889	0.890
R106	50	0.541	0.700	0.707	0.722	0.717
R107	50	0.633	0.783	0.798	0.802	0.821
R108	50	0.518	0.800	0.762	0.796	0.801
R109	50	0.571	0.742	0.745	0.749	0.725
R110	50	0.466	0.591	0.616	0.627	0.618
R111	50	0.625	0.769	0.772	0.735	0.779
R112	50	0.513	0.730	0.709	0.708	0.704
Mean gain		0.0	24.4	25.5	25.1	26.3
R201	50	0.751	0.747	0.748	0.748	0.747
R202	50	0.711	0.726	0.730	0.727	0.730
R203	50	0.635	0.680	0.662	0.680	0.669
R204	50	0.862	0.898	0.916	0.928	0.923
R205	50	0.673	0.736	0.735	0.744	0.714
R206	50	0.646	0.679	0.678	0.683	0.679
R207	50	0.713	0.749	0.741	0.754	0.745
R208	50	0.621	0.711	0.697	0.704	0.677
R209	50	0.704	0.746	0.728	0.727	0.732
R210	50	0.668	0.728	0.732	0.731	0.753
R211	50	0.568	0.576	0.645	0.607	0.607
Mean gain		0.0	5.7	6.3	6.5	5.7
R101	100	0.969	0.973	0.974	0.974	0.974
R102	100	0.970	0.979	0.979	0.978	0.979
R103	100	0.962	0.978	0.976	0.978	0.977
R104	100	0.591	0.741	0.746	0.740	0.761
R105	100	0.832	0.926	0.914	0.921	0.906
R106	100	0.937	0.966	0.966	0.967	0.964
R107	100	0.283	0.548	0.585	0.558	0.538
R108	100	0.211	0.566	0.545	0.572	0.572
R109	100	0.331	0.683	0.741	0.675	0.697
R110	100	0.211	0.486	0.514	0.491	0.510
R111	100	0.146	0.497	0.505	0.487	0.510
R112	100	0.154	0.501	0.463	0.489	0.489
Mean gain		0.0	83.9	85.1	83.2	85.3
R201	100	0.720	0.749	0.741	0.748	0.733
R202	100	0.704	0.743	0.741	0.754	0.742
R203	100	0.674	0.732	0.731	0.717	0.739
R204	100	0.393	0.517	0.482	0.544	0.506
R205	100	0.558	0.665	0.666	0.664	0.667
R206	100	0.585	0.726	0.720	0.705	0.714
R207	100	0.463	0.592	0.602	0.621	0.596
R208	100	0.256	0.361	0.389	0.394	0.342
R209	100	0.469	0.602	0.578	0.603	0.604
R210	100	0.556	0.644	0.640	0.636	0.639
R211	100	0.263	0.455	0.459	0.439	0.479
Mean gain		0.0	25.4	25.1	26.7	25.0

Table 2. Mean hypervolume obtained on Solomon’s R instances. All variants have the same parameters. The mean gain (%) is given with respect to \mathcal{A}

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
RC101	50	0.774	0.918	0.913	0.911	0.899
RC102	50	0.526	0.751	0.715	0.753	0.704
RC103	50	0.471	0.685	0.670	0.646	0.753
RC104	50	0.651	0.894	0.893	0.865	0.842
RC105	50	0.586	0.768	0.791	0.812	0.779
RC106	50	0.460	0.698	0.676	0.662	0.681
RC107	50	0.671	0.811	0.878	0.893	0.842
RC108	50	0.452	0.891	0.899	0.924	0.921
Mean gain		0.0	43.1	43.1	43.9	43.7
RC201	50	0.789	0.798	0.798	0.800	0.799
RC202	50	0.688	0.717	0.716	0.714	0.711
RC203	50	0.648	0.691	0.690	0.687	0.690
RC204	50	0.531	0.626	0.627	0.625	0.621
RC205	50	0.682	0.710	0.706	0.708	0.706
RC206	50	0.611	0.656	0.665	0.661	0.659
RC207	50	0.573	0.645	0.653	0.646	0.649
RC208	50	0.419	0.880	0.879	0.904	0.911
Mean gain		0.0	20.5	20.7	21.2	21.3
RC101	100	0.724	0.867	0.856	0.858	0.859
RC102	100	0.446	0.780	0.766	0.768	0.772
RC103	100	0.530	0.795	0.802	0.793	0.801
RC104	100	0.168	0.583	0.575	0.593	0.581
RC105	100	0.578	0.815	0.810	0.820	0.795
RC106	100	0.254	0.666	0.630	0.641	0.666
RC107	100	0.170	0.553	0.574	0.542	0.573
RC108	100	0.121	0.532	0.574	0.532	0.534
Mean gain		0.0	145.0	148.0	143.3	145.9
RC201	100	0.866	0.894	0.894	0.892	0.891
RC202	100	0.637	0.734	0.718	0.729	0.734
RC203	100	0.571	0.647	0.642	0.651	0.658
RC204	100	0.448	0.596	0.619	0.596	0.614
RC205	100	0.774	0.810	0.805	0.809	0.802
RC206	100	0.581	0.710	0.716	0.706	0.714
RC207	100	0.379	0.555	0.590	0.594	0.564
RC208	100	0.195	0.459	0.496	0.471	0.468
Mean gain		0.0	34.2	38.0	36.1	35.7

Table 3. Mean hypervolume obtained on Solomon’s RC instances. All variants have the same parameters. The mean gain (%) is given with respect to \mathcal{A}

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
C101	50	0.419	0.427	0.428	0.428	0.427
C102	50	0.697	0.900	0.897	0.907	0.904
C103	50	0.431	0.923	0.926	0.923	0.919
C104	50	0.510	0.960	0.945	0.956	0.955
C105	50	0.754	0.925	0.925	0.925	0.925
C106	50	0.518	0.518	0.518	0.518	0.518
C107	50	0.584	0.791	0.790	0.788	0.788
C108	50	0.682	1.001	1.001	0.988	1.001
C109	50	0.424	0.998	0.997	0.990	0.990
Mean gain		0.0	52.6	52.3	52.2	52.2
C201	50	0.501	0.504	0.484	0.520	0.519
C202	50	0.713	0.737	0.737	0.737	0.737
C203	50	0.495	0.554	0.550	0.551	0.552
C204	50	0.481	0.748	0.750	0.736	0.754
C205	50	0.388	0.400	0.399	0.399	0.400
C206	50	0.437	0.461	0.460	0.459	0.458
C207	50	0.386	0.429	0.440	0.445	0.430
C208	50	0.713	0.761	0.751	0.766	0.761
Mean gain		0.0	12.2	11.8	12.8	12.7
C101	100	0.770	1.001	1.001	1.001	1.001
C102	100	0.286	0.977	0.990	0.990	0.995
C103	100	0.250	0.809	0.833	0.831	0.821
C104	100	0.173	0.667	0.665	0.650	0.685
C105	100	0.427	1.001	1.001	1.001	1.001
C106	100	0.362	1.001	1.001	1.001	1.001
C107	100	0.329	1.001	1.001	1.001	1.001
C108	100	0.281	1.001	1.001	0.997	0.993
C109	100	0.151	0.961	0.978	0.985	0.961
Mean gain		0.0	232.2	234.9	234.2	234.2
C201	100	1.001	1.001	1.001	1.001	1.001
C202	100	0.887	1.001	1.001	1.001	1.001
C203	100	0.405	0.966	0.970	0.949	0.968
C204	100	0.367	0.874	0.859	0.862	0.863
C205	100	0.771	1.001	1.001	1.001	1.001
C206	100	0.513	1.001	1.000	0.999	1.001
C207	100	0.646	0.999	1.001	0.998	0.999
C208	100	0.505	1.001	0.998	0.993	0.990
Mean gain		0.0	70.9	70.5	69.7	70.3

Table 4. Mean hypervolume obtained on Solomon’s C instances. All variants have the same parameters. The mean gain (%) is given with respect to \mathcal{A}

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
R101	50	0.795	0.819	0.822	0.819	0.818
R102	50	0.971	0.981	0.98	0.979	0.979
R103	50	0.976	0.991	0.991	0.987	0.989
R104	50	0.475	0.888	0.889	0.833	0.749
R105	50	0.804	0.914	0.916	0.905	0.911
R106	50	0.541	0.783	0.773	0.740	0.735
R107	50	0.633	0.854	0.821	0.793	0.779
R108	50	0.518	0.837	0.85	0.834	0.778
R109	50	0.571	0.777	0.833	0.785	0.775
R110	50	0.466	0.720	0.710	0.676	0.590
R111	50	0.625	0.840	0.855	0.803	0.789
R112	50	0.513	0.815	0.819	0.716	0.719
Mean gain		0.0	35.9	36.5	30.5	26.2
R201	50	0.751	0.803	0.803	0.789	0.790
R202	50	0.711	0.771	0.776	0.766	0.764
R203	50	0.635	0.760	0.752	0.739	0.743
R204	50	0.862	0.944	0.948	0.906	0.934
R205	50	0.673	0.785	0.796	0.771	0.778
R206	50	0.646	0.738	0.721	0.701	0.704
R207	50	0.713	0.807	0.816	0.796	0.792
R208	50	0.621	0.698	0.711	0.666	0.697
R209	50	0.704	0.783	0.794	0.762	0.765
R210	50	0.668	0.789	0.797	0.780	0.793
R211	50	0.568	0.700	0.665	0.600	0.500
Mean gain		0.0	14.0	13.9	9.7	9.2
R101	100	0.969	0.975	0.977	0.977	0.977
R102	100	0.970	0.986	0.987	0.987	0.988
R103	100	0.962	0.986	0.991	0.989	0.989
R104	100	0.591	0.891	0.89	0.888	0.886
R105	100	0.832	0.919	0.944	0.951	0.955
R106	100	0.937	0.974	0.979	0.976	0.978
R107	100	0.283	0.702	0.771	0.752	0.733
R108	100	0.211	0.764	0.778	0.813	0.802
R109	100	0.331	0.663	0.828	0.843	0.860
R110	100	0.211	0.641	0.709	0.723	0.754
R111	100	0.146	0.706	0.779	0.738	0.789
R112	100	0.154	0.686	0.741	0.713	0.705
Mean gain		0.0	126.1	143.0	140.9	144.1
R201	100	0.720	0.720	0.752	0.774	0.800
R202	100	0.704	0.757	0.796	0.800	0.822
R203	100	0.674	0.745	0.781	0.805	0.823
R204	100	0.393	0.646	0.724	0.685	0.714
R205	100	0.558	0.667	0.704	0.753	0.731
R206	100	0.585	0.742	0.774	0.789	0.799
R207	100	0.463	0.649	0.707	0.744	0.758
R208	100	0.256	0.530	0.622	0.633	0.626
R209	100	0.469	0.632	0.720	0.738	0.716
R210	100	0.556	0.692	0.763	0.751	0.791
R211	100	0.263	0.626	0.668	0.676	0.698
Mean gain		0.0	43.0	56.0	58.4	60.7

Table 5. Mean hypervolume obtained on Solomon’s R instances. Each algorithm is used with the parameters returned by irace. The mean gain (%) is given with respect to \mathcal{A} .

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
RC101	50	0.774	0.953	0.949	0.949	0.958
RC102	50	0.526	0.781	0.795	0.781	0.837
RC103	50	0.471	0.822	0.787	0.764	0.718
RC104	50	0.651	0.945	0.941	0.938	0.925
RC105	50	0.586	0.923	0.919	0.891	0.867
RC106	50	0.460	0.737	0.815	0.697	0.675
RC107	50	0.671	0.929	0.931	0.909	0.861
RC108	50	0.452	0.982	0.987	0.957	0.930
Mean gain		0.0	58.1	59.6	53.5	50.8
RC201	50	0.789	0.803	0.804	0.794	0.800
RC202	50	0.688	0.748	0.747	0.739	0.740
RC203	50	0.648	0.722	0.735	0.705	0.708
RC204	50	0.531	0.672	0.685	0.669	0.658
RC205	50	0.682	0.744	0.742	0.732	0.731
RC206	50	0.611	0.727	0.722	0.703	0.698
RC207	50	0.573	0.716	0.712	0.690	0.694
RC208	50	0.419	0.954	0.956	0.936	0.881
Mean gain		0.0	28.6	29.0	26.1	24.4
RC101	100	0.724	0.872	0.908	0.924	0.929
RC102	100	0.446	0.759	0.877	0.891	0.917
RC103	100	0.530	0.823	0.882	0.914	0.915
RC104	100	0.168	0.666	0.773	0.756	0.813
RC105	100	0.578	0.829	0.888	0.898	0.91
RC106	100	0.254	0.671	0.81	0.793	0.826
RC107	100	0.170	0.599	0.738	0.751	0.773
RC108	100	0.121	0.618	0.69	0.747	0.790
Mean gain		0.0	164.1	203.2	209.6	222.6
RC201	100	0.866	0.870	0.899	0.910	0.924
RC202	100	0.637	0.682	0.780	0.811	0.848
RC203	100	0.571	0.643	0.740	0.769	0.806
RC204	100	0.448	0.612	0.727	0.775	0.779
RC205	100	0.774	0.784	0.825	0.852	0.866
RC206	100	0.581	0.710	0.768	0.799	0.826
RC207	100	0.379	0.558	0.675	0.723	0.730
RC208	100	0.195	0.496	0.629	0.680	0.741
Mean gain		0.0	35.2	57.2	65.9	72.7

Table 6. Mean hypervolume obtained on Solomon’s RC instances. Each algorithm is used with the parameters returned by irace. The mean gain (%) is given with respect to \mathcal{A} .

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
C101	50	0.419	0.426	0.425	0.423	0.423
C102	50	0.697	0.910	0.911	0.897	0.904
C103	50	0.431	0.984	0.985	0.953	0.948
C104	50	0.510	0.993	0.992	0.970	0.973
C105	50	0.754	0.925	0.925	0.925	0.924
C106	50	0.518	0.518	0.518	0.501	0.518
C107	50	0.584	0.788	0.789	0.786	0.785
C108	50	0.682	1.002	1.002	1.002	1.002
C109	50	0.424	1.002	1.002	1.002	0.994
Mean gain		0.0	55.1	55.1	53.1	53.3
C201	50	0.501	0.500	0.512	0.485	0.506
C202	50	0.713	0.733	0.734	0.734	0.733
C203	50	0.495	0.527	0.527	0.532	0.525
C204	50	0.481	0.804	0.800	0.701	0.743
C205	50	0.388	0.399	0.398	0.397	0.329
C206	50	0.437	0.462	0.462	0.457	0.46
C207	50	0.386	0.518	0.53	0.446	0.384
C208	50	0.713	0.776	0.776	0.766	0.771
Mean gain		0.0	16.0	16.5	10.4	7.8
C101	100	0.770	1.002	1.002	1.002	1.002
C102	100	0.286	0.895	0.921	0.960	0.999
C103	100	0.250	0.818	0.86	0.859	0.928
C104	100	0.173	0.733	0.835	0.762	0.832
C105	100	0.427	0.988	0.994	0.990	1.002
C106	100	0.362	0.995	0.99	1.001	1.002
C107	100	0.329	0.971	0.941	0.99	0.998
C108	100	0.281	0.951	0.974	0.958	0.991
C109	100	0.151	0.922	0.957	0.929	0.973
Mean gain		0.0	227.2	239.1	235.0	249.3
C201	100	1.002	1.002	1.002	1.002	1.002
C202	100	0.887	0.85	1.002	0.979	1.002
C203	100	0.405	0.687	0.866	0.909	0.945
C204	100	0.367	0.725	0.836	0.936	0.944
C205	100	0.771	0.85	0.933	0.976	0.986
C206	100	0.513	0.871	0.923	0.985	1.0
C207	100	0.646	0.822	0.954	0.996	1.001
C208	100	0.505	0.819	0.96	0.993	0.999
Mean gain		0.0	41.6	61.7	69.9	72.4

Table 7. Mean hypervolume obtained on Solomon’s C instances. Each algorithm is used with the parameters returned by irace. The mean gain (%) is given with respect to \mathcal{A} .

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
R101	50	113.66	27.77	35.16	22.78	25.54
R102	50	38.13	16.84	15.05	11.12	10.74
R103	50	56.57	21.15	19.95	13.84	15.81
R104	50	276.28	61.0	71.22	58.46	68.86
R105	50	234.13	63.46	83.11	78.56	57.66
R106	50	253.48	45.04	52.83	41.07	41.66
R107	50	251.58	55.53	81.52	65.12	88.14
R108	50	244.63	55.47	71.86	57.8	80.93
R109	50	237.72	70.83	63.68	56.67	65.47
R110	50	233.94	45.45	53.82	35.47	51.12
R111	50	238.23	64.54	65.63	57.92	53.87
R112	50	253.81	53.36	72.67	57.36	58.74
Mean gain		0.0	73.7	70.4	76.7	74.3
R201	50	163.38	47.86	49.78	42.32	44.42
R202	50	185.45	48.77	60.9	39.57	44.45
R203	50	212.47	54.55	66.38	46.31	42.77
R204	50	243.15	81.57	112.17	99.63	95.51
R205	50	237.54	70.41	67.27	68.88	68.13
R206	50	233.53	72.55	108.82	121.05	89.35
R207	50	238.01	80.2	90.0	75.27	87.72
R208	50	243.07	98.98	123.8	99.38	125.43
R209	50	221.66	86.29	105.03	83.21	103.1
R210	50	226.49	69.85	73.31	63.67	55.48
R211	50	234.52	133.18	158.35	114.85	149.06
Mean gain		0.0	65.8	58.9	65.6	63.6
R101	100	94.8	48.38	33.61	42.48	49.32
R102	100	104.97	54.62	40.03	45.18	53.86
R103	100	120.28	67.6	56.95	59.31	65.29
R104	100	507.08	182.86	139.5	167.5	219.54
R105	100	417.55	166.74	136.19	147.03	171.7
R106	100	115.91	100.39	74.26	54.35	57.32
R107	100	517.85	188.89	151.62	177.07	223.41
R108	100	529.36	176.93	136.19	158.71	209.27
R109	100	531.84	198.71	154.29	187.56	250.59
R110	100	528.5	191.24	148.07	187.17	232.35
R111	100	528.84	180.42	139.9	163.28	222.06
R112	100	561.27	183.67	145.15	171.63	223.26
Mean gain		0.0	55.7	65.9	62.6	54.4
R201	100	409.56	180.19	163.01	168.17	218.81
R202	100	436.48	189.51	170.48	190.18	234.76
R203	100	484.79	200.92	206.56	229.46	256.97
R204	100	514.52	265.52	236.61	223.87	287.1
R205	100	534.01	220.02	216.45	209.64	266.06
R206	100	490.44	232.34	212.27	217.3	247.83
R207	100	511.93	251.3	219.46	223.81	294.29
R208	100	537.5	237.13	222.93	244.16	302.03
R209	100	527.32	239.54	191.71	217.33	267.44
R210	100	503.8	253.1	239.9	215.48	256.21
R211	100	530.92	288.66	214.3	252.5	297.81
Mean gain		0.0	53.4	58.2	56.4	46.6

Table 8. Mean time obtained on Solomon’s R instances to reach 95% of the mean hypervolume obtained with \mathcal{A} . The mean gain is given with respect to \mathcal{A} .

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
RC101	50	251.22	26.74	35.22	22.69	26.05
RC102	50	248.88	26.22	36.12	41.21	24.3
RC103	50	245.07	29.21	40.75	23.09	29.7
RC104	50	215.03	41.07	44.15	55.61	44.27
RC105	50	258.35	33.29	38.79	26.02	33.59
RC106	50	255.98	57.46	56.18	72.93	66.6
RC107	50	238.45	55.98	66.25	54.46	63.14
RC108	50	251.69	27.99	39.63	24.23	26.82
Mean gain		0.0	84.7	81.7	83.5	83.9
RC201	50	121.09	35.1	44.17	35.19	34.93
RC202	50	168.25	37.83	50.9	38.93	41.02
RC203	50	208.45	53.4	64.73	61.22	63.29
RC204	50	241.97	48.95	62.49	48.38	46.18
RC205	50	166.8	34.37	45.31	33.44	39.41
RC206	50	195.95	32.9	42.89	30.37	31.58
RC207	50	226.69	36.55	48.58	38.62	42.47
RC208	50	225.72	45.78	56.01	33.75	35.65
Mean gain		0.0	78.6	72.6	78.9	77.9
RC101	100	459.63	171.04	118.94	123.03	139.29
RC102	100	525.67	176.14	133.28	129.55	151.57
RC103	100	491.42	162.67	122.84	131.46	160.28
RC104	100	537.93	157.5	116.54	139.31	156.38
RC105	100	504.71	159.5	132.1	135.08	166.73
RC106	100	512.99	156.78	128.07	145.97	173.86
RC107	100	536.45	170.84	128.46	146.69	179.56
RC108	100	550.81	154.19	123.81	138.51	165.56
Mean gain		0.0	68.1	75.6	73.5	68.6
RC201	100	321.33	150.72	139.58	120.71	127.63
RC202	100	454.12	182.46	171.28	177.57	197.99
RC203	100	494.59	226.26	183.27	191.32	212.07
RC204	100	528.63	234.94	204.57	201.65	248.29
RC205	100	393.99	184.63	171.61	167.56	177.77
RC206	100	515.3	205.34	186.87	179.9	231.36
RC207	100	536.0	222.42	200.51	190.04	239.64
RC208	100	551.53	211.24	169.04	176.2	199.39
Mean gain		0.0	57.0	61.9	62.7	57.0

Table 9. Mean time obtained on Solomon’s R instances to reach 95% of the mean hypervolume obtained with \mathcal{A} . The mean gain is given with respect to \mathcal{A} .

Instance	Size	\mathcal{A}	\mathcal{A}_{int}^{all}	\mathcal{A}_{div}^{all}	\mathcal{A}_{int}^{lo}	\mathcal{A}_{div}^{lo}
C101	50	147.27	38.88	44.29	38.51	78.82
C102	50	218.45	36.31	43.93	35.63	39.63
C103	50	264.2	35.8	51.24	34.92	37.03
C104	50	242.72	27.2	40.71	22.31	28.53
C105	50	188.1	26.17	36.63	37.44	31.05
C106	50	101.68	22.44	31.1	23.73	25.59
C107	50	237.5	27.04	35.9	31.16	29.19
C108	50	240.17	25.33	37.09	25.34	27.49
C109	50	248.66	24.09	34.8	21.68	23.82
Mean gain		0.0	85.0	79.9	84.4	80.8
C201	50	186.71	218.44	137.42	205.02	159.9
C202	50	153.44	40.52	48.93	30.51	38.2
C203	50	223.63	59.6	73.42	53.56	49.9
C204	50	244.02	46.89	61.71	37.21	37.51
C205	50	169.62	37.16	52.65	41.52	140.36
C206	50	209.6	37.23	50.61	34.7	34.9
C207	50	229.29	74.69	88.92	215.7	206.15
C208	50	175.01	39.56	43.48	39.62	32.89
Mean gain		0.0	64.5	64.7	59.2	55.5
C101	100	513.51	134.09	92.13	121.42	156.13
C102	100	553.78	144.83	104.3	125.58	158.76
C103	100	511.84	157.78	112.74	134.91	174.88
C104	100	528.38	156.24	114.93	150.93	179.05
C105	100	548.59	132.0	92.24	111.13	148.03
C106	100	555.35	136.35	94.14	121.46	156.73
C107	100	540.11	125.68	87.83	112.14	148.66
C108	100	501.1	136.18	95.62	128.09	150.14
C109	100	492.84	136.33	95.34	122.46	153.5
Mean gain		0.0	73.4	81.2	76.2	69.9
C201	100	99.88	85.8	62.8	55.22	45.53
C202	100	498.43	170.43	125.07	146.22	182.11
C203	100	547.72	202.82	162.64	167.17	221.86
C204	100	529.17	216.21	182.17	183.9	238.21
C205	100	499.81	148.58	108.2	132.54	159.76
C206	100	536.51	155.16	115.0	141.3	174.26
C207	100	499.89	163.65	118.62	141.11	173.07
C208	100	543.67	170.49	114.48	136.63	180.19
Mean gain		0.0	59.9	70.0	68.0	62.5

Table 10. Mean time obtained on Solomon’s R instances to reach 95% of the mean hypervolume obtained with \mathcal{A} . The mean gain is given with respect to \mathcal{A} .