

## A. Full numerical results

### A.1 Numerical comparisons

File	$n$	DM		DB		GS	
		$\rho$	$t$ (sec.)	$\rho$	$t$ (sec.)	$\rho$	$t$ (sec.)
estein10	10	0.969486	0.0015	0.968519	0.0015	0.967491	0.0067
estein20	20	0.970201	0.0020	0.969138	0.0019	0.968440	0.0227
estein30	30	0.971861	0.0032	0.969934	0.0031	0.969331	0.0480
estein40	40	0.971645	0.0037	0.969589	0.0037	0.968613	0.0867
estein50	50	0.972321	0.0034	0.970132	0.0036	0.969668	0.1080
estein60	60	0.972543	0.0039	0.968534	0.0042	0.967253	0.1347
estein70	70	0.973029	0.0043	0.969818	0.0047	0.968902	0.1840
estein80	80	0.973952	0.0049	0.970823	0.0060	0.969605	0.2287
estein90	90	0.971287	0.0068	0.969857	0.0071	0.968804	0.2447
estein100	100	0.971995	0.0080	0.968554	0.0076	0.967308	0.3593
estein250	250	0.971789	0.0153	0.969190	0.0175	0.967930	1.2893
estein500	500	0.970989	0.0225	0.967894	0.0286	0.966743	2.7920
estein1000	1000	0.971227	0.0463	0.968048	0.0598	0.967062	7.6140
estein10000	10000	0.971323	0.3683	0.968107	0.5615	0.967069	463.78 <sup>1</sup>

Table 1: ESTEIN instances in  $\mathcal{R}^2$  (averaged). GS is the GeoSteiner algorithm.

File	$n$	DM		DB		NO	
		$\rho$	$t$ (sec.)	$\rho$	$t$ (sec.)	$\rho$	$t$ (sec.)
estein10	10	0.954829	0.0021	0.953230	0.0030	0.950768	1.9220
estein20	20	0.954246	0.0036	0.950276	0.0075		
estein30	30	0.957947	0.0045	0.953583	0.0117		
estein40	40	0.953763	0.0055	0.950883	0.0168		
estein50	50	0.954314	0.0073	0.951331	0.0221		
estein60	60	0.954664	0.0094	0.948375	0.0278		
estein70	70	0.951694	0.0102	0.948135	0.0325		
estein80	80	0.950806	0.0109	0.947967	0.0381		
estein90	90	0.952914	0.0121	0.948913	0.0433		
estein100	100	0.954188	0.0138	0.947917	0.0481		
estein250	250	0.954184	0.0342	0.949257	0.1339		
estein500	500	0.953212	0.0694	0.948475	0.2809		
estein1000	1000	0.95333	0.1317	0.948397	0.5778		
estein10000	10000	0.953969	1.3076	0.948438	6.2301		

Table 2: ESTEIN instances in  $\mathcal{R}^3$  (averaged). NO is the numerical approximation.

<sup>1</sup> The computation finished without a result on our machine. The ratio given was found at [D. M. Warne, P. Winter, and M. Zachariasen, *GeoSteiner website*, <http://www.geosteiner.com/>]

File	$n$	DM		DB	
		$\rho$	$t(sec.)$	$\rho$	$t(sec.)$
1X00	1121	0.926427	0.1240	0.915738	0.6345
1X00_all	1925	0.994649	0.3275	0.994562	1.2435
2JZC	1865	0.926052	0.2015	0.90783	1.0741
2JZC_all	3170	0.994513	0.5314	0.994475	2.0735
3WCZ	2829	0.923487	0.3043	0.908296	1.6195
3WCZ_all	4808	0.994506	0.7620	0.994467	3.0943
4OAA	3594	0.923778	0.4399	0.908591	2.1538
4OAA_all	6230	0.994895	1.0616	0.994823	4.1685

Table 3: Protein instances in  $\mathcal{R}^3$ .

File	$n$	$d$	DM		DB	
			$\rho$	$t(sec.)$	$\rho$	$t(sec.)$
cancer1.4D	4	20	0.94865	0.0060	0.950218	0.0549
cancer2.4D	4	20	0.951633	0.0085	0.94895	0.0664
cancer3.6D	6	110	0.940448	0.5681	0.926784	57.7916
cancer4.6D	6	93	0.935912	0.4874	0.93236	49.2192
cancer5.6D	6	48	0.940607	0.1467	0.92766	13.0001
cancer6.6D	6	50	0.936097	0.1314	0.932536	11.6316
cancer7.6D	6	109	0.926911	0.7475	0.920344	59.4802
cancer8.6D	6	77	0.933821	0.3797	0.927901	30.2201
cancer9.6D	6	46	0.94531	0.2803	0.943849	12.4632
cancer10.6D	6	82	0.93432	0.5888	0.922862	34.9796

Table 4: Cancer instances in  $\mathcal{R}^4$  and  $\mathcal{R}^6$ .

## A.2 DB-heuristic: full results, ESTEIN-2D

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein10-00	10	2.11147	2.02067	0.957001	0.00128734
estein10-01	10	1.61457	1.60687	0.99523	0.00140402
estein10-02	10	2.33009	2.22807	0.956218	0.0013149
estein10-03	10	1.81952	1.7986	0.988498	0.00157647
estein10-04	10	1.73717	1.69443	0.975397	0.00134795
estein10-05	10	2.42116	2.3096	0.953922	0.00131295
estein10-06	10	2.33731	2.25155	0.963306	0.00133714
estein10-07	10	2.21278	2.18164	0.985931	0.00169342
estein10-08	10	2.01884	1.98072	0.981115	0.00128696
estein10-09	10	2.10091	2.05933	0.980207	0.0013883
estein10-10	10	2.06038	1.94732	0.945126	0.00131409
estein10-11	10	1.76333	1.75312	0.994215	0.00152306
estein10-12	10	1.82654	1.71389	0.938325	0.0014856
estein10-13	10	2.06534	1.94965	0.943985	0.00221595
estein10-14	10	1.72456	1.67165	0.969315	0.00135265
estein20-00	20	3.21282	3.07207	0.956189	0.00214878
estein20-01	20	2.92182	2.85463	0.977004	0.00193582
estein20-02	20	2.54801	2.45528	0.963606	0.00180613
estein20-03	20	2.537	2.47046	0.973775	0.00188828
estein20-04	20	3.07311	2.96473	0.964731	0.0019721
estein20-05	20	3.22076	3.13157	0.972307	0.00198049
estein20-06	20	3.12491	3.0722	0.983132	0.00177984
estein20-07	20	3.4827	3.31699	0.952419	0.00191691
estein20-08	20	3.183	3.13363	0.984491	0.00192617
estein20-09	20	3.12344	3.01187	0.964281	0.00178752
estein20-10	20	2.38992	2.31805	0.969928	0.00199459
estein20-11	20	2.77501	2.65375	0.956302	0.0018182
estein20-12	20	3.12048	3.02285	0.968712	0.00232889
estein20-13	20	3.03434	2.93301	0.966606	0.00192555
estein20-14	20	2.83805	2.79148	0.983589	0.00197165
estein30-00	30	3.65878	3.58205	0.97903	0.0024304
estein30-01	30	3.67824	3.57665	0.972382	0.00251163
estein30-02	30	3.76858	3.65806	0.970673	0.00283465
estein30-03	30	3.85458	3.71141	0.962857	0.00345693
estein30-04	30	3.74951	3.61384	0.963817	0.00226736
estein30-05	30	3.61114	3.50218	0.969827	0.00230072
estein30-06	30	3.93167	3.81368	0.969989	0.00233445
estein30-07	30	3.76791	3.68953	0.979198	0.0103025
estein30-08	30	3.31183	3.181	0.960496	0.00228212
estein30-09	30	3.84241	3.71899	0.967881	0.00275483
estein30-10	30	3.66658	3.59019	0.979165	0.00228707
estein30-11	30	3.53772	3.43098	0.969829	0.00297201
estein30-12	30	3.30439	3.22245	0.9752	0.00243999
estein30-13	30	4.0545	3.85675	0.951226	0.00338758
estein30-14	30	3.86941	3.78213	0.977445	0.00235583

Table 1: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 10, 20, 30$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein40-00	40	4.03362	3.93507	0.975568	0.002588
estein40-01	40	4.20052	4.07292	0.969623	0.00909883
estein40-02	40	4.50049	4.38888	0.975201	0.00291662
estein40-03	40	3.95143	3.85602	0.975856	0.0045681
estein40-04	40	4.72655	4.54325	0.96122	0.0028598
estein40-05	40	4.57058	4.42237	0.967572	0.00272654
estein40-06	40	4.15706	4.03816	0.971399	0.00257179
estein40-07	40	4.4273	4.28087	0.966926	0.00329664
estein40-08	40	4.83554	4.62453	0.956363	0.00384216
estein40-09	40	5.27566	5.08377	0.963627	0.00463359
estein40-10	40	4.2182	4.14144	0.981802	0.00336632
estein40-11	40	4.01668	3.92134	0.976262	0.00301506
estein40-12	40	4.71341	4.5605	0.967558	0.00400615
estein40-13	40	4.51137	4.35982	0.966407	0.00257027
estein40-14	40	4.65634	4.50944	0.968451	0.00307669
estein50-00	50	4.96763	4.83742	0.973789	0.00353396
estein50-01	50	5.14314	4.95493	0.963407	0.00367525
estein50-02	50	4.92898	4.74717	0.963114	0.00463233
estein50-03	50	4.59987	4.46907	0.971566	0.00345694
estein50-04	50	5.02338	4.87042	0.969551	0.00375943
estein50-05	50	5.09947	4.92394	0.965578	0.00390814
estein50-06	50	4.50109	4.36399	0.969541	0.00336073
estein50-07	50	4.82849	4.7035	0.974114	0.00353733
estein50-08	50	4.82491	4.67686	0.969315	0.00414274
estein50-09	50	4.7632	4.62779	0.971573	0.00328986
estein50-10	50	4.78786	4.67047	0.975482	0.00403693
estein50-11	50	4.81026	4.6747	0.971819	0.0029918
estein50-12	50	4.82544	4.66508	0.966768	0.0030975
estein50-13	50	4.84539	4.71324	0.972727	0.00300669
estein50-14	50	4.73466	4.60986	0.97364	0.00344617
estein60-00	60	4.93917	4.78522	0.96883	0.00415915
estein60-01	60	4.95833	4.81349	0.970789	0.0042944
estein60-02	60	5.13451	4.94873	0.963819	0.00369112
estein60-03	60	4.99571	4.85015	0.970863	0.00320129
estein60-04	60	5.03032	4.83599	0.961367	0.00429742
estein60-05	60	5.40162	5.25467	0.972794	0.00366925
estein60-06	60	5.40313	5.21593	0.965354	0.00698964
estein60-07	60	5.25224	5.11732	0.974311	0.00373877
estein60-08	60	5.07575	4.91658	0.968641	0.00370287
estein60-09	60	5.19936	5.06686	0.974516	0.00532083
estein60-10	60	5.08631	4.93627	0.970502	0.00470865
estein60-11	60	5.49385	5.30755	0.966089	0.00394167
estein60-12	60	5.47048	5.29219	0.967407	0.00338999
estein60-13	60	5.21858	5.03618	0.96505	0.00436079
estein60-14	60	5.13621	4.97017	0.967672	0.00334687

Table 2: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 40, 50, 60$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein70-00	70	5.58791	5.43408	0.97247	0.00588332
estein70-01	70	5.53935	5.32908	0.96204	0.0045971
estein70-02	70	5.55708	5.39745	0.971275	0.00533596
estein70-03	70	5.65368	5.49927	0.972688	0.0048767
estein70-04	70	5.65575	5.4767	0.968341	0.00386452
estein70-05	70	5.71604	5.53666	0.968619	0.00510559
estein70-06	70	5.68572	5.51366	0.969739	0.00408345
estein70-07	70	5.64316	5.48686	0.972302	0.00479256
estein70-08	70	5.60491	5.48135	0.977955	0.00448783
estein70-09	70	5.69944	5.5214	0.968761	0.00438555
estein70-10	70	5.90443	5.71836	0.968488	0.00429147
estein70-11	70	5.73675	5.53222	0.964347	0.00373999
estein70-12	70	5.61712	5.45307	0.970795	0.00525526
estein70-13	70	5.5079	5.3584	0.972857	0.00515226
estein70-14	70	5.721	5.5299	0.966598	0.00501582
estein80-00	80	6.44382	6.2614	0.97169	0.00541328
estein80-01	80	5.85718	5.70315	0.973703	0.0073045
estein80-02	80	6.05439	5.8799	0.971181	0.00611755
estein80-03	80	5.74802	5.62935	0.979356	0.0053036
estein80-04	80	5.88444	5.75687	0.97832	0.00538469
estein80-05	80	6.34446	6.18862	0.975437	0.00466642
estein80-06	80	6.30885	6.03627	0.956794	0.00477579
estein80-07	80	6.17257	5.96158	0.965818	0.00470235
estein80-08	80	6.35417	6.11311	0.962063	0.00777562
estein80-09	80	5.88623	5.72195	0.972092	0.0102674
estein80-10	80	5.93977	5.7741	0.972109	0.00484354
estein80-11	80	5.79133	5.68164	0.98106	0.0051165
estein80-12	80	6.16889	5.97829	0.969103	0.00739896
estein80-13	80	6.36334	6.12017	0.961786	0.0046124
estein80-14	80	6.3242	6.14607	0.971833	0.00685388
estein90-00	90	6.29063	6.06485	0.964107	0.00523825
estein90-01	90	6.43717	6.2342	0.968469	0.0211004
estein90-02	90	6.63911	6.46341	0.973535	0.00648216
estein90-03	90	6.43773	6.27348	0.974486	0.00612638
estein90-04	90	6.65917	6.3968	0.9606	0.00809296
estein90-05	90	6.17564	6.05076	0.979777	0.00539273
estein90-06	90	6.48048	6.24959	0.96437	0.00662747
estein90-07	90	6.50668	6.30999	0.969771	0.00607301
estein90-08	90	6.12547	5.953	0.971843	0.00494664
estein90-09	90	6.52315	6.3342	0.971035	0.00644888
estein90-10	90	6.50892	6.29203	0.966678	0.00737474
estein90-11	90	6.24838	6.08374	0.97365	0.00526477
estein90-12	90	6.48832	6.30932	0.972413	0.0067759
estein90-13	90	6.30815	6.09414	0.966074	0.00594958
estein90-14	90	6.43972	6.25328	0.971049	0.00494149

Table 3: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 70, 80, 90$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein100-00	100	6.60852	6.40689	0.969489	0.00684118
estein100-01	100	6.83285	6.60801	0.967094	0.00591446
estein100-02	100	6.7625	6.53233	0.965963	0.0055284
estein100-03	100	6.79778	6.59083	0.969557	0.00553377
estein100-04	100	6.90325	6.68939	0.96902	0.00714761
estein100-05	100	6.69425	6.4688	0.966322	0.00579175
estein100-06	100	7.27726	7.00055	0.961975	0.00744669
estein100-07	100	6.63145	6.39752	0.964724	0.00612079
estein100-08	100	7.16529	6.92428	0.966364	0.00656295
estein100-09	100	6.95398	6.71972	0.966313	0.0061707
estein100-10	100	7.03095	6.83295	0.971839	0.0134472
estein100-11	100	6.85487	6.67682	0.974026	0.00665516
estein100-12	100	6.68322	6.51179	0.974349	0.0145394
estein100-13	100	7.1371	6.89262	0.965744	0.00910342
estein100-14	100	6.38253	6.22633	0.975526	0.00702
estein250-00	250	10.6052	10.2869	0.96999	0.0123234
estein250-01	250	10.4208	10.1332	0.972403	0.0144198
estein250-02	250	10.3915	10.064	0.968476	0.0192968
estein250-03	250	10.7388	10.4097	0.96935	0.0153821
estein250-04	250	10.6104	10.2477	0.96582	0.0139697
estein250-05	250	10.5379	10.2326	0.971023	0.0275919
estein250-06	250	10.4267	10.1414	0.972645	0.0131508
estein250-07	250	10.6885	10.3205	0.965572	0.013563
estein250-08	250	10.6404	10.3241	0.970271	0.0205596
estein250-09	250	10.6076	10.2554	0.9668	0.0341031
estein250-10	250	10.2222	9.89917	0.968398	0.0173642
estein250-11	250	10.8584	10.4911	0.966181	0.013465
estein250-12	250	10.4982	10.1748	0.969196	0.0148552
estein250-13	250	10.5855	10.2862	0.971732	0.0140374
estein250-14	250	10.4839	10.1693	0.96999	0.0179268
estein500-00	500	14.8291	14.3481	0.967564	0.0270732
estein500-01	500	14.7147	14.2123	0.965853	0.0273925
estein500-02	500	14.8043	14.3238	0.967543	0.0259078
estein500-03	500	14.9447	14.4439	0.966488	0.0306615
estein500-04	500	14.4965	14.1003	0.97267	0.0302127
estein500-05	500	15.0407	14.5495	0.967344	0.0270839
estein500-06	500	14.5517	14.0745	0.967206	0.0255453
estein500-07	500	14.6164	14.1629	0.968974	0.0268862
estein500-08	500	14.6932	14.2082	0.966993	0.0284072
estein500-09	500	14.1706	13.6767	0.965144	0.0265286
estein500-10	500	14.654	14.1951	0.968686	0.0282515
estein500-11	500	14.8745	14.4083	0.968655	0.0283494
estein500-12	500	14.6337	14.1544	0.967242	0.0326835
estein500-13	500	15.147	14.6727	0.968692	0.0313225
estein500-14	500	14.5801	14.1332	0.96935	0.0322114

Table 4: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 100, 250, 500$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein1000-00	1000	20.9596	20.2566	0.966458	0.0597623
estein1000-01	1000	20.7829	20.0959	0.966941	0.0673611
estein1000-02	1000	20.6178	19.9865	0.969378	0.0492682
estein1000-03	1000	20.9238	20.2552	0.968044	0.0537866
estein1000-04	1000	20.7008	20.0822	0.97012	0.0608061
estein1000-05	1000	20.9762	20.3252	0.968967	0.0525352
estein1000-06	1000	20.9567	20.3003	0.968681	0.0546608
estein1000-07	1000	20.9334	20.2442	0.967074	0.0634936
estein1000-08	1000	20.7907	20.1151	0.967504	0.0560901
estein1000-09	1000	20.8304	20.1521	0.967438	0.058796
estein1000-10	1000	20.9711	20.3399	0.9699	0.0801491
estein1000-11	1000	21.1125	20.3819	0.965393	0.0560315
estein1000-12	1000	20.6511	20.0242	0.969643	0.0520104
estein1000-13	1000	21.3105	20.5929	0.966323	0.0582906
estein1000-14	1000	20.85	20.2006	0.968853	0.0743775
estein10000-0	10000	65.0675	62.9923	0.968107	0.561481

Table 5: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 1000, 10000$ ) using the DB-heuristic.

## A.3 DB-heuristic: full results, ESTEIN-3D

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein10-00	10	3.33254	3.21346	0.964269	0.00285582
estein10-01	10	3.30121	3.10008	0.939072	0.00274136
estein10-02	10	3.17651	3.00851	0.947111	0.00284096
estein10-03	10	3.03209	2.85374	0.941178	0.00265037
estein10-04	10	3.06878	2.95705	0.96359	0.00284938
estein10-05	10	3.41494	3.11734	0.912854	0.00260202
estein10-06	10	3.53768	3.27921	0.92694	0.00350925
estein10-07	10	3.10757	2.94078	0.946328	0.00274371
estein10-08	10	2.7329	2.62509	0.960551	0.00351435
estein10-09	10	3.1246	2.97064	0.950725	0.00229631
estein10-10	10	3.26161	3.19043	0.978176	0.00284851
estein10-11	10	3.07887	2.91954	0.948249	0.00318911
estein10-12	10	2.90027	2.82079	0.972596	0.00290091
estein10-13	10	3.21875	3.13832	0.975014	0.00374058
estein10-14	10	3.01279	2.92783	0.9718	0.00338024
estein20-00	20	4.97097	4.64244	0.933911	0.00651012
estein20-01	20	4.6131	4.46309	0.967482	0.00792022
estein20-02	20	4.94092	4.56536	0.923988	0.00725919
estein20-03	20	4.57347	4.33782	0.948474	0.00769879
estein20-04	20	4.93447	4.77452	0.967586	0.0070845
estein20-05	20	5.38111	5.21938	0.969945	0.00664063
estein20-06	20	4.81786	4.65125	0.965418	0.00720746
estein20-07	20	5.20534	4.90297	0.941912	0.00796277
estein20-08	20	5.06873	4.8335	0.953591	0.00706673
estein20-09	20	4.85265	4.69029	0.966543	0.00694772
estein20-10	20	4.77163	4.55506	0.954612	0.0072808
estein20-11	20	4.60359	4.33363	0.941359	0.00877878
estein20-12	20	5.13724	4.84463	0.943041	0.00924634
estein20-13	20	5.58437	5.14794	0.921848	0.00722908
estein20-14	20	4.91812	4.69402	0.954434	0.00761848
estein30-00	30	7.01432	6.64887	0.9479	0.0124709
estein30-01	30	6.65878	6.46753	0.97128	0.0107839
estein30-02	30	6.47612	6.15262	0.950046	0.0148986
estein30-03	30	6.71635	6.4346	0.95805	0.0106674
estein30-04	30	6.95497	6.53684	0.93988	0.0114584
estein30-05	30	6.47014	6.30651	0.974709	0.0126629
estein30-06	30	7.25329	6.8459	0.943835	0.0113832
estein30-07	30	6.15538	5.90154	0.958761	0.0109257
estein30-08	30	6.89295	6.51398	0.945021	0.0117491
estein30-09	30	6.63351	6.30648	0.950699	0.00990293
estein30-10	30	7.02758	6.69541	0.952734	0.0122468
estein30-11	30	6.57286	6.33709	0.96413	0.0133555
estein30-12	30	6.85188	6.46326	0.943284	0.0110721
estein30-13	30	6.33981	6.02687	0.95064	0.010732
estein30-14	30	7.0321	6.70007	0.952784	0.0117688

Table 1: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 10, 20, 30$ ) using the DB-heuristic.



Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein40-00	40	7.66669	7.37741	0.962268	0.0174554
estein40-01	40	7.76159	7.47006	0.962439	0.0174901
estein40-02	40	8.62943	8.20407	0.950708	0.018387
estein40-03	40	7.44513	7.07306	0.950026	0.0165761
estein40-04	40	8.04469	7.69721	0.956807	0.0138314
estein40-05	40	8.65937	8.1817	0.944838	0.0156015
estein40-06	40	8.16906	7.77553	0.951827	0.0155455
estein40-07	40	8.47427	8.07613	0.953018	0.0172946
estein40-08	40	8.96284	8.41721	0.939123	0.015898
estein40-09	40	8.98378	8.56077	0.952914	0.0156032
estein40-10	40	8.03186	7.68783	0.957168	0.0162843
estein40-11	40	7.6789	7.36979	0.959746	0.0152163
estein40-12	40	8.75273	8.2232	0.939502	0.0183347
estein40-13	40	8.1323	7.68032	0.944422	0.0200435
estein40-14	40	8.00802	7.515	0.938434	0.0186166
estein50-00	50	9.46093	8.96813	0.947912	0.0208267
estein50-01	50	9.50813	9.0722	0.954151	0.0220565
estein50-02	50	9.60233	9.0649	0.944032	0.0243933
estein50-03	50	9.06019	8.68157	0.95821	0.0231372
estein50-04	50	9.23986	8.86492	0.959422	0.0223646
estein50-05	50	9.48477	8.92977	0.941486	0.0221577
estein50-06	50	9.287	8.79628	0.94716	0.0223085
estein50-07	50	9.15102	8.74983	0.956159	0.0231883
estein50-08	50	8.6114	8.25788	0.958948	0.0208928
estein50-09	50	8.96103	8.40794	0.938278	0.0202959
estein50-10	50	9.72393	9.15541	0.941534	0.0219512
estein50-11	50	8.99159	8.69148	0.966623	0.0211113
estein50-12	50	9.20068	8.75787	0.951872	0.0229998
estein50-13	50	10.3316	9.87252	0.955562	0.0234697
estein50-14	50	9.87496	9.36748	0.948609	0.021009
estein60-00	60	10.1596	9.64762	0.949606	0.0341585
estein60-01	60	10.5666	9.96608	0.943169	0.0263021
estein60-02	60	10.9501	10.2583	0.936829	0.0276925
estein60-03	60	10.186	9.70248	0.952534	0.0300138
estein60-04	60	11.161	10.6281	0.952258	0.0279332
estein60-05	60	10.6887	10.2567	0.959585	0.02533
estein60-06	60	11.6261	10.9559	0.942353	0.0267227
estein60-07	60	11.0703	10.4657	0.945385	0.0241273
estein60-08	60	10.6514	10.0734	0.945731	0.0317208
estein60-09	60	10.6696	10.0913	0.945799	0.0272494
estein60-10	60	10.3296	9.80177	0.948898	0.026978
estein60-11	60	11.5656	10.9824	0.949578	0.0265648
estein60-12	60	11.0637	10.5676	0.955162	0.0265875
estein60-13	60	10.4158	9.9146	0.95188	0.0298995
estein60-14	60	11.3753	10.7708	0.946858	0.025523

Table 2: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 40, 50, 60$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein70-00	70	11.7109	11.061	0.944503	0.0350037
estein70-01	70	12.0846	11.4676	0.948946	0.0303229
estein70-02	70	11.8165	11.2621	0.953081	0.0308713
estein70-03	70	11.8165	11.2648	0.953313	0.0323331
estein70-04	70	11.826	11.3136	0.956667	0.0345224
estein70-05	70	11.9274	11.2611	0.944131	0.0326223
estein70-06	70	11.8306	11.1936	0.946155	0.0322315
estein70-07	70	11.8438	11.2016	0.945781	0.033767
estein70-08	70	11.7712	11.1313	0.945638	0.0319603
estein70-09	70	12.1782	11.4944	0.943855	0.0346711
estein70-10	70	11.9779	11.3187	0.944962	0.0313318
estein70-11	70	11.9486	11.35	0.949907	0.0314704
estein70-12	70	11.2702	10.7211	0.951277	0.0344939
estein70-13	70	12.1057	11.4423	0.945199	0.0314311
estein70-14	70	12.0685	11.4483	0.948608	0.0304559
estein80-00	80	13.238	12.5405	0.947315	0.0392776
estein80-01	80	12.8044	12.0927	0.944419	0.0385342
estein80-02	80	12.6707	12.0502	0.95103	0.0363164
estein80-03	80	11.8787	11.2525	0.947285	0.0382661
estein80-04	80	13.3848	12.6839	0.947631	0.036792
estein80-05	80	13.7129	13.0318	0.950329	0.0363413
estein80-06	80	13.9391	13.1302	0.941969	0.037075
estein80-07	80	12.8821	12.3074	0.955385	0.0395555
estein80-08	80	13.6495	12.868	0.942751	0.0403035
estein80-09	80	13.2128	12.5116	0.946934	0.0384521
estein80-10	80	12.7368	11.9799	0.940573	0.0395764
estein80-11	80	12.2738	11.7409	0.956588	0.0376326
estein80-12	80	13.6879	12.9413	0.945459	0.0360362
estein80-13	80	13.4411	12.7088	0.945519	0.0370154
estein80-14	80	13.2343	12.6563	0.956326	0.040514
estein90-00	90	14.0648	13.3874	0.951839	0.0411464
estein90-01	90	13.9575	13.1793	0.944248	0.0437491
estein90-02	90	14.1526	13.4362	0.949387	0.0425351
estein90-03	90	13.1386	12.5723	0.956899	0.0448723
estein90-04	90	13.7569	13.0676	0.949896	0.0394414
estein90-05	90	13.8111	13.0882	0.947659	0.0439188
estein90-06	90	13.7461	13.0351	0.94828	0.0452502
estein90-07	90	14.3591	13.5647	0.944676	0.0435254
estein90-08	90	13.2578	12.6468	0.95391	0.0422881
estein90-09	90	14.1914	13.4748	0.949505	0.0449355
estein90-10	90	14.0389	13.3302	0.949519	0.0436279
estein90-11	90	14.0244	13.2328	0.943556	0.0483023
estein90-12	90	14.0708	13.3512	0.948859	0.0445383
estein90-13	90	13.4268	12.7139	0.946908	0.0426029
estein90-14	90	14.3308	13.5936	0.948558	0.0387577

Table 3: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 70, 80, 90$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein100-00	100	15.1935	14.4259	0.949478	0.0493541
estein100-01	100	15.0617	14.2078	0.943307	0.0472918
estein100-02	100	15.4134	14.5797	0.945915	0.0488634
estein100-03	100	15.8369	15.066	0.951322	0.0466686
estein100-04	100	15.8219	15.0185	0.949221	0.0482313
estein100-05	100	14.4905	13.7347	0.947838	0.0471567
estein100-06	100	15.5273	14.5953	0.939971	0.0477364
estein100-07	100	15.8046	15.0511	0.952324	0.0489609
estein100-08	100	15.4278	14.568	0.944268	0.0478525
estein100-09	100	15.3972	14.6258	0.949901	0.0455236
estein100-10	100	15.475	14.7115	0.95066	0.0457605
estein100-11	100	15.2883	14.4726	0.946643	0.0506219
estein100-12	100	14.9266	14.214	0.952263	0.0485644
estein100-13	100	14.8634	14.1777	0.953866	0.0495396
estein100-14	100	15.7385	14.822	0.941771	0.0487963
estein250-00	250	26.9975	25.5359	0.945861	0.135999
estein250-01	250	27.4092	26.0612	0.950821	0.133714
estein250-02	250	26.6891	25.3406	0.949476	0.132095
estein250-03	250	27.1691	25.7987	0.949558	0.136018
estein250-04	250	26.9568	25.6393	0.951126	0.13095
estein250-05	250	27.8833	26.5113	0.950796	0.132695
estein250-06	250	27.5863	26.1714	0.94871	0.12734
estein250-07	250	27.4988	26.0764	0.948274	0.132206
estein250-08	250	28.1783	26.6911	0.94722	0.136953
estein250-09	250	26.6414	25.3136	0.950158	0.138854
estein250-10	250	26.0041	24.6544	0.948095	0.137731
estein250-11	250	26.6477	25.2953	0.94925	0.135543
estein250-12	250	27.0666	25.7394	0.950967	0.132109
estein250-13	250	27.3973	26.0742	0.951708	0.135044
estein250-14	250	27.4486	25.9894	0.94684	0.130795
estein500-00	500	42.8324	40.6168	0.948274	0.283548
estein500-01	500	42.5191	40.383	0.94976	0.275218
estein500-02	500	42.3945	40.0949	0.945758	0.280701
estein500-03	500	42.9536	40.718	0.947953	0.283393
estein500-04	500	42.3192	40.2006	0.949936	0.289001
estein500-05	500	42.9438	40.7688	0.949351	0.27168
estein500-06	500	41.9621	39.7073	0.946265	0.281282
estein500-07	500	42.0414	39.8713	0.948381	0.285869
estein500-08	500	42.7926	40.5305	0.94714	0.273839
estein500-09	500	41.7776	39.6945	0.95014	0.278556
estein500-10	500	41.3443	39.2483	0.949303	0.292584
estein500-11	500	42.9622	40.8109	0.949927	0.283978
estein500-12	500	42.1053	40.0827	0.951963	0.282328
estein500-13	500	43.2336	40.7806	0.943262	0.27217
estein500-14	500	42.446	40.3118	0.94972	0.279392

Table 4: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 100, 250, 500$ ) using the DB-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein1000-00	1000	67.0264	63.6071	0.948986	0.579686
estein1000-01	1000	66.6223	63.2023	0.948665	0.576577
estein1000-02	1000	67.2279	63.8675	0.950014	0.578217
estein1000-03	1000	66.8637	63.375	0.947825	0.58332
estein1000-04	1000	66.8818	63.43	0.948389	0.581888
estein1000-05	1000	66.7787	63.31	0.948056	0.575578
estein1000-06	1000	66.9816	63.5482	0.948741	0.569319
estein1000-07	1000	67.0887	63.6062	0.94809	0.577495
estein1000-08	1000	66.8243	63.3821	0.948489	0.588064
estein1000-09	1000	66.7329	63.2771	0.948214	0.568191
estein1000-10	1000	68.2402	64.6733	0.947731	0.581333
estein1000-11	1000	66.0117	62.7892	0.951184	0.570842
estein1000-12	1000	66.2443	62.885	0.94929	0.576032
estein1000-13	1000	67.8424	64.1307	0.94529	0.58687
estein1000-14	1000	67.0087	63.4568	0.946994	0.573031
estein10000-0	10000	305.303	289.561	0.948438	6.2301

Table 5: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 1000, 10000$ ) using the DB-heuristic.

## A.4 DM-heuristic: full results, ESTEIN-2D

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein10-00	10	2.11147	2.02067	0.957001	0.00135597
estein10-01	10	1.61457	1.60687	0.99523	0.00136199
estein10-02	10	2.33009	2.22807	0.956218	0.00135768
estein10-03	10	1.81952	1.7986	0.988498	0.00170185
estein10-04	10	1.73717	1.69443	0.975397	0.00146695
estein10-05	10	2.42116	2.36345	0.976163	0.00130482
estein10-06	10	2.33731	2.23386	0.955739	0.00132772
estein10-07	10	2.21278	2.18164	0.985931	0.00158003
estein10-08	10	2.01884	1.98036	0.98094	0.00149735
estein10-09	10	2.10091	2.05933	0.980207	0.00138379
estein10-10	10	2.06038	1.94732	0.945126	0.00132261
estein10-11	10	1.76333	1.75312	0.994215	0.00159552
estein10-12	10	1.82654	1.71389	0.938325	0.0014727
estein10-13	10	2.06534	1.94965	0.943985	0.00276513
estein10-14	10	1.72456	1.67165	0.969315	0.00154688
estein20-00	20	3.21282	3.07207	0.956189	0.00193555
estein20-01	20	2.92182	2.85463	0.977004	0.00200384
estein20-02	20	2.54801	2.45898	0.965059	0.00190527
estein20-03	20	2.537	2.48537	0.97965	0.0022869
estein20-04	20	3.07311	2.96473	0.964731	0.00178701
estein20-05	20	3.22076	3.13157	0.972307	0.00205366
estein20-06	20	3.12491	3.08534	0.987338	0.00165645
estein20-07	20	3.4827	3.31771	0.952628	0.0017439
estein20-08	20	3.183	3.13363	0.984491	0.00213817
estein20-09	20	3.12344	3.02501	0.968488	0.00224454
estein20-10	20	2.38992	2.31805	0.969928	0.00171256
estein20-11	20	2.77501	2.65375	0.956302	0.00165106
estein20-12	20	3.12048	3.02285	0.968712	0.00227225
estein20-13	20	3.03434	2.93301	0.966606	0.00194062
estein20-14	20	2.83805	2.79148	0.983589	0.00199393
estein30-00	30	3.65878	3.58205	0.97903	0.00231916
estein30-01	30	3.67824	3.57797	0.972741	0.00215104
estein30-02	30	3.76858	3.69004	0.979161	0.00375953
estein30-03	30	3.85458	3.71141	0.962857	0.00334809
estein30-04	30	3.74951	3.62226	0.966062	0.00191942
estein30-05	30	3.61114	3.50346	0.970181	0.00321269
estein30-06	30	3.93167	3.81368	0.969989	0.00211732
estein30-07	30	3.76791	3.6936	0.980277	0.00983475
estein30-08	30	3.31183	3.21212	0.969891	0.00269343
estein30-09	30	3.84241	3.71899	0.967881	0.00237951
estein30-10	30	3.66658	3.59466	0.980386	0.00229784
estein30-11	30	3.53772	3.44379	0.973449	0.00353906
estein30-12	30	3.30439	3.22245	0.9752	0.00271383
estein30-13	30	4.0545	3.85567	0.950961	0.00337708
estein30-14	30	3.86941	3.79141	0.979843	0.00223977

Table 1: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 10, 20, 30$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein40-00	40	4.03362	3.94289	0.977506	0.00260496
estein40-01	40	4.20052	4.07509	0.970141	0.00842418
estein40-02	40	4.50049	4.38455	0.974238	0.00526462
estein40-03	40	3.95143	3.85803	0.976363	0.00448
estein40-04	40	4.72655	4.54325	0.96122	0.00272051
estein40-05	40	4.57058	4.45832	0.975439	0.00258153
estein40-06	40	4.15706	4.04451	0.972928	0.00249849
estein40-07	40	4.4273	4.28722	0.968361	0.00295523
estein40-08	40	4.83554	4.65761	0.963203	0.00416089
estein40-09	40	5.27566	5.08692	0.964225	0.00416181
estein40-10	40	4.2182	4.1493	0.983667	0.00303227
estein40-11	40	4.01668	3.92134	0.976262	0.00314575
estein40-12	40	4.71341	4.56209	0.967897	0.00399878
estein40-13	40	4.51137	4.39011	0.973121	0.00253764
estein40-14	40	4.65634	4.51716	0.970108	0.00302898
estein50-00	50	4.96763	4.84245	0.974802	0.00310868
estein50-01	50	5.14314	4.99538	0.971271	0.00378929
estein50-02	50	4.92898	4.74717	0.963114	0.00391773
estein50-03	50	4.59987	4.46907	0.971566	0.00300988
estein50-04	50	5.02338	4.87155	0.969776	0.00333275
estein50-05	50	5.09947	4.95355	0.971385	0.00433688
estein50-06	50	4.50109	4.37096	0.971091	0.00323391
estein50-07	50	4.82849	4.72578	0.978728	0.00370379
estein50-08	50	4.82491	4.69991	0.974093	0.00395602
estein50-09	50	4.7632	4.63414	0.972905	0.00348279
estein50-10	50	4.78786	4.67187	0.975774	0.00367741
estein50-11	50	4.81026	4.68958	0.974912	0.00253998
estein50-12	50	4.82544	4.66287	0.966311	0.00285356
estein50-13	50	4.84539	4.71324	0.972727	0.00286335
estein50-14	50	4.73466	4.62274	0.976362	0.00280399
estein60-00	60	4.93917	4.80739	0.973319	0.00340685
estein60-01	60	4.95833	4.84128	0.976393	0.00425941
estein60-02	60	5.13451	4.96505	0.966996	0.00370234
estein60-03	60	4.99571	4.84982	0.970797	0.00328102
estein60-04	60	5.03032	4.89532	0.973161	0.00415974
estein60-05	60	5.40162	5.27768	0.977055	0.00338879
estein60-06	60	5.40313	5.22576	0.967174	0.0067428
estein60-07	60	5.25224	5.11732	0.974311	0.00339731
estein60-08	60	5.07575	4.95431	0.976074	0.00366777
estein60-09	60	5.19936	5.07625	0.976322	0.005017
estein60-10	60	5.08631	4.94215	0.971658	0.00431895
estein60-11	60	5.49385	5.35658	0.975013	0.00378528
estein60-12	60	5.47048	5.32562	0.97352	0.00305098
estein60-13	60	5.21858	5.04187	0.96614	0.0036467
estein60-14	60	5.13621	4.98325	0.970218	0.00321272

Table 2: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 40, 50, 60$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein70-00	70	5.58791	5.4322	0.972133	0.00522829
estein70-01	70	5.53935	5.40369	0.97551	0.00399704
estein70-02	70	5.55708	5.41264	0.974008	0.00333529
estein70-03	70	5.65368	5.50872	0.97436	0.00429837
estein70-04	70	5.65575	5.50783	0.973846	0.00545143
estein70-05	70	5.71604	5.54701	0.970429	0.00481769
estein70-06	70	5.68572	5.51176	0.969405	0.00359608
estein70-07	70	5.64316	5.52297	0.978701	0.00437237
estein70-08	70	5.60491	5.4943	0.980265	0.00398832
estein70-09	70	5.69944	5.52339	0.969112	0.00387157
estein70-10	70	5.90443	5.75755	0.975124	0.00386174
estein70-11	70	5.73675	5.55707	0.968678	0.00406643
estein70-12	70	5.61712	5.45923	0.97189	0.00464698
estein70-13	70	5.5079	5.3567	0.972548	0.00472955
estein70-14	70	5.721	5.54611	0.96943	0.00442398
estein80-00	80	6.44382	6.28089	0.974715	0.00413176
estein80-01	80	5.85718	5.72138	0.976814	0.00508901
estein80-02	80	6.05439	5.88876	0.972643	0.00484186
estein80-03	80	5.74802	5.63622	0.98055	0.00506703
estein80-04	80	5.88444	5.77344	0.981137	0.00500512
estein80-05	80	6.34446	6.19408	0.976297	0.00413805
estein80-06	80	6.30885	6.05195	0.959279	0.00484086
estein80-07	80	6.17257	5.98991	0.970407	0.00403449
estein80-08	80	6.35417	6.17849	0.972352	0.00683858
estein80-09	80	5.88623	5.74165	0.975438	0.00772081
estein80-10	80	5.93977	5.79936	0.976361	0.00408129
estein80-11	80	5.79133	5.68512	0.981659	0.00410718
estein80-12	80	6.16889	5.99019	0.971032	0.00380359
estein80-13	80	6.36334	6.13062	0.963427	0.00459004
estein80-14	80	6.3242	6.1798	0.977167	0.00593726
estein90-00	90	6.29063	6.06485	0.964107	0.00471619
estein90-01	90	6.43717	6.22652	0.967276	0.0210184
estein90-02	90	6.63911	6.46602	0.973929	0.0056948
estein90-03	90	6.43773	6.27531	0.97477	0.00535355
estein90-04	90	6.65917	6.41871	0.96389	0.00724362
estein90-05	90	6.17564	6.06249	0.981677	0.00679626
estein90-06	90	6.48048	6.26268	0.966391	0.00606951
estein90-07	90	6.50668	6.31507	0.970552	0.00554471
estein90-08	90	6.12547	5.95758	0.972592	0.00435774
estein90-09	90	6.52315	6.33761	0.971557	0.00555718
estein90-10	90	6.50892	6.29203	0.966678	0.00675368
estein90-11	90	6.24838	6.09007	0.974663	0.00433227
estein90-12	90	6.48832	6.32566	0.974931	0.00740804
estein90-13	90	6.30815	6.12575	0.971085	0.00652893
estein90-14	90	6.43972	6.28004	0.975203	0.00501183

Table 3: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 70, 80, 90$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein100-00	100	6.60852	6.42487	0.972209	0.00718327
estein100-01	100	6.83285	6.63816	0.971507	0.00805302
estein100-02	100	6.7625	6.5572	0.96964	0.00806864
estein100-03	100	6.79778	6.61822	0.973586	0.00721636
estein100-04	100	6.90325	6.69199	0.969397	0.00881588
estein100-05	100	6.69425	6.49748	0.970607	0.00704399
estein100-06	100	7.27726	7.04554	0.968158	0.00780665
estein100-07	100	6.63145	6.40918	0.966482	0.00537853
estein100-08	100	7.16529	6.94648	0.969463	0.00641192
estein100-09	100	6.95398	6.76336	0.972589	0.00626751
estein100-10	100	7.03095	6.85805	0.975409	0.0122735
estein100-11	100	6.85487	6.71144	0.979076	0.00642784
estein100-12	100	6.68322	6.51179	0.974349	0.01607
estein100-13	100	7.1371	6.92976	0.970948	0.00746806
estein100-14	100	6.38253	6.23262	0.976512	0.00596335
estein250-00	250	10.6052	10.3088	0.972057	0.0126354
estein250-01	250	10.4208	10.1445	0.973487	0.013504
estein250-02	250	10.3915	10.0906	0.971037	0.0132337
estein250-03	250	10.7388	10.4347	0.971678	0.012942
estein250-04	250	10.6104	10.2808	0.968943	0.0122131
estein250-05	250	10.5379	10.2763	0.975172	0.0216225
estein250-06	250	10.4267	10.1746	0.975825	0.0112587
estein250-07	250	10.6885	10.3572	0.969009	0.011965
estein250-08	250	10.6404	10.3631	0.973944	0.0177638
estein250-09	250	10.6076	10.2723	0.968391	0.031309
estein250-10	250	10.2222	9.9174	0.970182	0.0149763
estein250-11	250	10.8584	10.5251	0.969311	0.0170391
estein250-12	250	10.4982	10.1965	0.97126	0.0119671
estein250-13	250	10.5855	10.3054	0.97354	0.011313
estein250-14	250	10.4839	10.2009	0.973002	0.0163912
estein500-00	500	14.8291	14.3919	0.970514	0.0232744
estein500-01	500	14.7147	14.2653	0.969459	0.0220992
estein500-02	500	14.8043	14.368	0.970523	0.0204157
estein500-03	500	14.9447	14.4645	0.967869	0.0246543
estein500-04	500	14.4965	14.1249	0.974367	0.0252426
estein500-05	500	15.0407	14.587	0.969837	0.0225746
estein500-06	500	14.5517	14.1183	0.970218	0.0210107
estein500-07	500	14.6164	14.1905	0.970863	0.0208233
estein500-08	500	14.6932	14.2602	0.970531	0.0237324
estein500-09	500	14.1706	13.7534	0.970558	0.0225481
estein500-10	500	14.654	14.2377	0.971593	0.0227134
estein500-11	500	14.8745	14.4648	0.972458	0.0206911
estein500-12	500	14.6337	14.2044	0.970662	0.0224234
estein500-13	500	15.147	14.7318	0.972594	0.0209424
estein500-14	500	14.5801	14.1833	0.972783	0.0248171

Table 4: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 100, 250, 500$ ) using the DM-heuristic.



Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein1000-00	1000	20.9596	20.3265	0.969793	0.0484203
estein1000-01	1000	20.7829	20.1483	0.969464	0.0485292
estein1000-02	1000	20.6178	20.0324	0.971604	0.0397816
estein1000-03	1000	20.9238	20.3293	0.971585	0.0427392
estein1000-04	1000	20.7008	20.1365	0.972742	0.0420907
estein1000-05	1000	20.9762	20.3916	0.972133	0.0445422
estein1000-06	1000	20.9567	20.3545	0.971264	0.0425363
estein1000-07	1000	20.9334	20.3129	0.970355	0.0422117
estein1000-08	1000	20.7907	20.1948	0.971336	0.0462464
estein1000-09	1000	20.8304	20.2223	0.970807	0.0476209
estein1000-10	1000	20.9711	20.415	0.973482	0.0698547
estein1000-11	1000	21.1125	20.4591	0.969049	0.0446476
estein1000-12	1000	20.6511	20.0622	0.97148	0.0479067
estein1000-13	1000	21.3105	20.7005	0.971374	0.0482091
estein1000-14	1000	20.85	20.2647	0.971928	0.0397975
estein10000-0	10000	65.0675	63.2016	0.971323	0.368323

Table 5: Full results achieved on the 2-dimensional ESTEIN instances ( $n = 1000, 10000$ ) using the DM-heuristic.

## A.5 DM-heuristic: full results, ESTEIN-3D

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein10-00	10	3.33254	3.21346	0.964269	0.00209174
estein10-01	10	3.30121	3.10614	0.940908	0.00156485
estein10-02	10	3.17651	3.00851	0.947111	0.00171471
estein10-03	10	3.03209	2.85374	0.941178	0.00182625
estein10-04	10	3.06878	2.95705	0.96359	0.00244562
estein10-05	10	3.41494	3.14027	0.91957	0.00220979
estein10-06	10	3.53768	3.27921	0.92694	0.00239717
estein10-07	10	3.10757	2.94078	0.946328	0.00206299
estein10-08	10	2.7329	2.62509	0.960551	0.0019714
estein10-09	10	3.1246	2.97064	0.950725	0.0016614
estein10-10	10	3.26161	3.1957	0.979792	0.00250902
estein10-11	10	3.07887	2.91954	0.948249	0.00196315
estein10-12	10	2.90027	2.82079	0.972596	0.00208599
estein10-13	10	3.21875	3.13832	0.975014	0.00278774
estein10-14	10	3.01279	2.96947	0.985619	0.00241897
estein20-00	20	4.97097	4.64244	0.933911	0.00300033
estein20-01	20	4.6131	4.49341	0.974054	0.00351822
estein20-02	20	4.94092	4.65336	0.9418	0.00281842
estein20-03	20	4.57347	4.40717	0.963637	0.00405789
estein20-04	20	4.93447	4.77452	0.967586	0.00313447
estein20-05	20	5.38111	5.24457	0.974626	0.00299201
estein20-06	20	4.81786	4.6458	0.964287	0.0029222
estein20-07	20	5.20534	4.89915	0.941179	0.00375281
estein20-08	20	5.06873	4.84983	0.956812	0.00347976
estein20-09	20	4.85265	4.69029	0.966543	0.00339743
estein20-10	20	4.77163	4.55506	0.954612	0.00318346
estein20-11	20	4.60359	4.33363	0.941359	0.00476341
estein20-12	20	5.13724	4.84463	0.943041	0.00603241
estein20-13	20	5.58437	5.22591	0.93581	0.00300826
estein20-14	20	4.91812	4.69402	0.954434	0.00382557
estein30-00	30	7.01432	6.66494	0.950191	0.00533717
estein30-01	30	6.65878	6.4951	0.975419	0.00438322
estein30-02	30	6.47612	6.15346	0.950176	0.00611634
estein30-03	30	6.71635	6.4346	0.95805	0.00385906
estein30-04	30	6.95497	6.53684	0.93988	0.00350046
estein30-05	30	6.47014	6.35907	0.982833	0.00564293
estein30-06	30	7.25329	6.85568	0.945183	0.0037834
estein30-07	30	6.15538	5.94993	0.966623	0.00479612
estein30-08	30	6.89295	6.56657	0.95265	0.00442202
estein30-09	30	6.63351	6.37529	0.961072	0.0034422
estein30-10	30	7.02758	6.80236	0.967953	0.00391731
estein30-11	30	6.57286	6.34189	0.96486	0.00505441
estein30-12	30	6.85188	6.46326	0.943284	0.00406235
estein30-13	30	6.33981	6.07511	0.958249	0.00399487
estein30-14	30	7.0321	6.70007	0.952784	0.00476435

Table 1: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 10, 20, 30$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein40-00	40	7.66669	7.37741	0.962268	0.00506313
estein40-01	40	7.76159	7.48703	0.964626	0.0054753
estein40-02	40	8.62943	8.24817	0.955818	0.00776288
estein40-03	40	7.44513	7.11218	0.95528	0.00512014
estein40-04	40	8.04469	7.7295	0.960821	0.00521008
estein40-05	40	8.65937	8.21838	0.949074	0.00527695
estein40-06	40	8.16906	7.79646	0.954389	0.0046512
estein40-07	40	8.47427	8.1179	0.957947	0.00560279
estein40-08	40	8.96284	8.42385	0.939864	0.00469745
estein40-09	40	8.98378	8.58169	0.955243	0.00392837
estein40-10	40	8.03186	7.7095	0.959865	0.0057892
estein40-11	40	7.6789	7.3721	0.960047	0.00544015
estein40-12	40	8.75273	8.27936	0.945918	0.00528906
estein40-13	40	8.1323	7.68032	0.944422	0.00750395
estein40-14	40	8.00802	7.53441	0.940858	0.00562673
estein50-00	50	9.46093	9.0365	0.955139	0.00711627
estein50-01	50	9.50813	9.08874	0.955891	0.0083905
estein50-02	50	9.60233	9.066	0.944146	0.00644325
estein50-03	50	9.06019	8.69446	0.959633	0.00776618
estein50-04	50	9.23986	8.86492	0.959422	0.00771153
estein50-05	50	9.48477	8.98387	0.947189	0.00778566
estein50-06	50	9.287	8.82325	0.950065	0.00736961
estein50-07	50	9.15102	8.74277	0.955387	0.00749338
estein50-08	50	8.6114	8.26943	0.960288	0.00661714
estein50-09	50	8.96103	8.47866	0.94617	0.00644069
estein50-10	50	9.72393	9.25088	0.951352	0.00792124
estein50-11	50	8.99159	8.69897	0.967457	0.00744072
estein50-12	50	9.20068	8.75787	0.951872	0.00788794
estein50-13	50	10.3316	9.90477	0.958683	0.00718451
estein50-14	50	9.87496	9.40119	0.952023	0.00649891
estein60-00	60	10.1596	9.7025	0.955007	0.0146452
estein60-01	60	10.5666	9.98463	0.944924	0.00880664
estein60-02	60	10.9501	10.2708	0.937966	0.00855113
estein60-03	60	10.186	9.81013	0.963103	0.00877749
estein60-04	60	11.161	10.7229	0.960748	0.00699858
estein60-05	60	10.6887	10.3223	0.965725	0.00950729
estein60-06	60	11.6261	11.0394	0.949539	0.00727552
estein60-07	60	11.0703	10.5441	0.952467	0.00768084
estein60-08	60	10.6514	10.1254	0.950617	0.00859672
estein60-09	60	10.6696	10.1463	0.950959	0.00910097
estein60-10	60	10.3296	9.80177	0.948898	0.0130592
estein60-11	60	11.5656	11.1258	0.961977	0.00842423
estein60-12	60	11.0637	10.665	0.963971	0.00852004
estein60-13	60	10.4158	10.0097	0.961012	0.0129435
estein60-14	60	11.3753	10.8412	0.953045	0.00792396

Table 2: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 40, 50, 60$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein70-00	70	11.7109	11.0698	0.945261	0.0141903
estein70-01	70	12.0846	11.5294	0.954063	0.00910988
estein70-02	70	11.8165	11.3417	0.959824	0.0115551
estein70-03	70	11.8165	11.2673	0.953529	0.011475
estein70-04	70	11.826	11.3238	0.957533	0.0121204
estein70-05	70	11.9274	11.3266	0.94963	0.010384
estein70-06	70	11.8306	11.2176	0.948184	0.00880942
estein70-07	70	11.8438	11.222	0.947503	0.0101456
estein70-08	70	11.7712	11.1607	0.948136	0.0104248
estein70-09	70	12.1782	11.5429	0.947838	0.0107251
estein70-10	70	11.9779	11.3426	0.946958	0.00934933
estein70-11	70	11.9486	11.3701	0.951583	0.00863313
estein70-12	70	11.2702	10.8418	0.961988	0.00891783
estein70-13	70	12.1057	11.518	0.951447	0.0078594
estein70-14	70	12.0685	11.4885	0.951939	0.00888798
estein80-00	80	13.238	12.562	0.948938	0.00892858
estein80-01	80	12.8044	12.1288	0.947243	0.00985121
estein80-02	80	12.6707	12.0816	0.953507	0.00949065
estein80-03	80	11.8787	11.2401	0.946238	0.0104165
estein80-04	80	13.3848	12.7102	0.949598	0.00945595
estein80-05	80	13.7129	13.013	0.948959	0.009273
estein80-06	80	13.9391	13.2378	0.949687	0.00871154
estein80-07	80	12.8821	12.3697	0.960221	0.0117816
estein80-08	80	13.6495	12.8779	0.943472	0.0149298
estein80-09	80	13.2128	12.5116	0.946934	0.0129014
estein80-10	80	12.7368	12.0223	0.943903	0.012007
estein80-11	80	12.2738	11.7939	0.960899	0.0140703
estein80-12	80	13.6879	12.9577	0.946653	0.0109078
estein80-13	80	13.4411	12.8207	0.953843	0.0103881
estein80-14	80	13.2343	12.7314	0.961999	0.0101041
estein90-00	90	14.0648	13.4076	0.953271	0.0132817
estein90-01	90	13.9575	13.1991	0.945663	0.0117421
estein90-02	90	14.1526	13.4682	0.951643	0.0121836
estein90-03	90	13.1386	12.6634	0.963832	0.0137279
estein90-04	90	13.7569	13.0934	0.951766	0.0129175
estein90-05	90	13.8111	13.1283	0.950563	0.0107817
estein90-06	90	13.7461	13.1216	0.95457	0.0117243
estein90-07	90	14.3591	13.6366	0.949684	0.0107778
estein90-08	90	13.2578	12.6944	0.957505	0.0123151
estein90-09	90	14.1914	13.6027	0.958513	0.0118027
estein90-10	90	14.0389	13.3868	0.953555	0.011207
estein90-11	90	14.0244	13.2634	0.945734	0.0153859
estein90-12	90	14.0708	13.4523	0.956048	0.0117088
estein90-13	90	13.4268	12.7457	0.949279	0.0114272
estein90-14	90	14.3308	13.6441	0.952081	0.0106317

Table 3: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 70, 80, 90$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein100-00	100	15.1935	14.5528	0.957833	0.0124499
estein100-01	100	15.0617	14.3938	0.955658	0.0138938
estein100-02	100	15.4134	14.599	0.947164	0.0161119
estein100-03	100	15.8369	15.1885	0.959055	0.0129998
estein100-04	100	15.8219	15.0319	0.950071	0.0154812
estein100-05	100	14.4905	13.785	0.951312	0.0133187
estein100-06	100	15.5273	14.6301	0.942212	0.0131223
estein100-07	100	15.8046	15.1401	0.957954	0.014021
estein100-08	100	15.4278	14.7947	0.958961	0.0143919
estein100-09	100	15.3972	14.7208	0.956066	0.0128634
estein100-10	100	15.475	14.7703	0.954461	0.0140741
estein100-11	100	15.2883	14.6879	0.960725	0.0125978
estein100-12	100	14.9266	14.2796	0.956653	0.0145246
estein100-13	100	14.8634	14.1804	0.954045	0.0143398
estein100-14	100	15.7385	14.9617	0.950646	0.012332
estein250-00	250	26.9975	25.7201	0.952685	0.0323165
estein250-01	250	27.4092	26.1522	0.954141	0.0321437
estein250-02	250	26.6891	25.4261	0.95268	0.0314368
estein250-03	250	27.1691	25.9591	0.955462	0.0400441
estein250-04	250	26.9568	25.7959	0.956936	0.0335622
estein250-05	250	27.8833	26.6817	0.956907	0.0357696
estein250-06	250	27.5863	26.292	0.953081	0.0325068
estein250-07	250	27.4988	26.2246	0.953663	0.0322297
estein250-08	250	28.1783	26.8719	0.953635	0.0303696
estein250-09	250	26.6414	25.5081	0.957459	0.0372197
estein250-10	250	26.0041	24.7128	0.950341	0.0367869
estein250-11	250	26.6477	25.4306	0.954327	0.0355886
estein250-12	250	27.0666	25.8782	0.956094	0.0358363
estein250-13	250	27.3973	26.1551	0.954659	0.0318729
estein250-14	250	27.4486	26.0949	0.950684	0.0355235
estein500-00	500	42.8324	40.8142	0.952883	0.0639712
estein500-01	500	42.5191	40.5728	0.954223	0.0635265
estein500-02	500	42.3945	40.3342	0.951402	0.062296
estein500-03	500	42.9536	40.9675	0.953762	0.0641267
estein500-04	500	42.3192	40.4194	0.955107	0.0711412
estein500-05	500	42.9438	40.9002	0.952411	0.0643643
estein500-06	500	41.9621	39.9103	0.951102	0.0714179
estein500-07	500	42.0414	40.079	0.953322	0.0654829
estein500-08	500	42.7926	40.6617	0.950205	0.0629348
estein500-09	500	41.7776	39.8922	0.954872	0.0629285
estein500-10	500	41.3443	39.4704	0.954675	0.0766216
estein500-11	500	42.9622	41.0292	0.955008	0.0857504
estein500-12	500	42.1053	40.277	0.956578	0.0834543
estein500-13	500	43.2336	41.0164	0.948716	0.0685607
estein500-14	500	42.446	40.49	0.953918	0.0747969

Table 4: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 100, 250, 500$ ) using the DM-heuristic.

Set	$n$	MST	SMT	$\rho$	$t$ (sec.)
estein1000-00	1000	67.0264	63.986	0.954639	0.140831
estein1000-01	1000	66.6223	63.4783	0.952809	0.126362
estein1000-02	1000	67.2279	64.2024	0.954996	0.123688
estein1000-03	1000	66.8637	63.6504	0.951943	0.127155
estein1000-04	1000	66.8818	63.7294	0.952866	0.138582
estein1000-05	1000	66.7787	63.6206	0.952708	0.140638
estein1000-06	1000	66.9816	63.9304	0.954447	0.134901
estein1000-07	1000	67.0887	64.0338	0.954464	0.126274
estein1000-08	1000	66.8243	63.7459	0.953933	0.130661
estein1000-09	1000	66.7329	63.6203	0.953358	0.124558
estein1000-10	1000	68.2402	64.9425	0.951675	0.122508
estein1000-11	1000	66.0117	63.0414	0.955003	0.121543
estein1000-12	1000	66.2443	63.2869	0.955357	0.141703
estein1000-13	1000	67.8424	64.4798	0.950437	0.140269
estein1000-14	1000	67.0087	63.7461	0.95131	0.135477
estein10000-0	10000	305.303	291.249	0.953969	1.30755

Table 5: Full results achieved on the 3-dimensional ESTEIN instances ( $n = 1000, 10000$ ) using the DM-heuristic.