

Table 1: A performance comparison between the  $\epsilon$ -constraint and BOBLB&B&C algorithms.

Instance	n	m	$\epsilon$ -constraint	B&B		EPB B&C (ISC) ( $ \Lambda $ )		Cut&Branch	
			Time(s)	Time(s)	#Nodes	Time(s)	#Nodes	Time(s)	#Nodes
SCP_100_14_1	100	14	9.81	32.72	5907	14.32	2232	29.14	5519
SCP_100_14_2	100	14	13.56	55.36	10051	29.17	3739	52.17	9405
SCP_100_14_3	100	14	4.01	21.81	4323	5.59	543	20.48	4047
SCP_100_20_1	100	20	8.23	56.43	7217	24.02	2020	53.96	6195
SCP_100_20_2	100	20	9.18	40.29	6191	38.73	2884	42.74	6161
SCP_100_20_3	100	20	10.88	47.11	6201	23.69	2093	35.92	4765
SCP_100_23_1	100	23	10.85	87.97	7585	44.01	2854	72.54	6403
SCP_100_23_2	100	23	10.54	164.74	13737	92.85	4992	106.92	8963
SCP_100_23_3	100	23	9.75	145.81	9891	32.42	2307	100.61	6967
SCP_100_24_1	100	24	10.91	103.73	11587	73.29	4658	77.64	9335
SCP_100_24_2	100	24	6.66	106.54	8673	49.98	2314	60.97	4545
SCP_100_24_3	100	24	11.89	92.76	8503	78.02	3862	83.72	7573
SCP_100_29_1	100	29	9.98	277.07	17771	243.12	8040	231.28	15441
SCP_100_29_2	100	29	11.11	367.41	16579	259.76	8517	191.23	9735
SCP_100_29_3	100	29	8.68	117.25	7335	89.78	3291	81.95	5689
SCP_20_2_1	20	2	3.29	1.63	79	2.45	60	2.25	79
SCP_20_2_2	20	2	3.21	1.63	39	1.55	39	2.13	39
SCP_20_2_3	20	2	3.22	1.64	33	2.12	34	2.03	33
SCP_20_3_1	20	3	3.68	1.62	79	2.53	141	2.06	79
SCP_20_3_2	20	3	3.3	1.62	47	2.4	50	1.99	47
SCP_20_3_3	20	3	3.32	1.68	123	2.5	97	2.12	123
SCP_20_4_1	20	4	3.32	1.68	61	2.48	59	2.06	61
SCP_20_4_2	20	4	3.25	1.68	103	2.5	119	2.14	103
SCP_20_4_3	20	4	3.34	1.63	171	2.48	85	2.12	171
SCP_20_6_1	20	6	3.83	1.74	141	2.59	115	2.18	141
SCP_20_6_2	20	6	3.26	1.58	3	0.64	1	0.38	1
SCP_20_6_3	20	6	4.31	1.67	129	2.99	174	2.39	129
SCP_40_11_1	40	11	7.4	4.36	1449	6.04	829	5.59	1299
SCP_40_11_2	40	11	5.83	2.8	715	3.94	232	3.37	687
SCP_40_11_3	40	11	5.82	3.11	879	4.23	328	3.86	867
SCP_40_6_1	40	6	3.5	2.23	597	2.87	241	2.61	503
SCP_40_6_2	40	6	3.45	1.86	261	2.57	100	2.32	261
SCP_40_6_3	40	6	4.07	2.15	549	3.92	465	2.66	549
SCP_40_7_1	40	7	4.26	2.62	755	4.84	509	3.69	679
SCP_40_7_2	40	7	3.66	1.88	197	3.84	167	2.71	197
SCP_40_7_3	40	7	4.02	2.37	695	3.92	270	3.08	687
SCP_40_9_1	40	9	4.24	2.38	507	3.83	189	3.01	447
SCP_40_9_2	40	9	4.15	2.17	503	2.76	180	2.63	503
SCP_40_9_3	40	9	4.58	2.65	871	3.48	399	3.22	871
SCP_60_11_1	60	11	5.09	4.35	1143	4.68	390	5.43	1143
SCP_60_11_2	60	11	4.09	3.34	677	4.33	319	3.98	671
SCP_60_11_3	60	11	5.12	6.12	1935	5.0	642	6.74	1929
SCP_60_16_1	60	16	7.92	17.41	3353	11.49	1139	17.24	3229
SCP_60_16_2	60	16	4.62	8.98	2579	6.74	689	9.9	2579
SCP_60_16_3	60	16	7.99	10.86	2601	7.69	937	10.6	2397
SCP_60_18_1	60	18	7.42	11.32	3289	10.64	1438	12.11	3269
SCP_60_18_2	60	18	7.11	11.2	2647	6.37	640	9.91	2163
SCP_60_18_3	60	18	8.31	16.21	3695	12.6	1241	16.01	3643
SCP_60_7_1	60	7	5.71	4.13	1113	4.75	669	4.68	1029
SCP_60_7_2	60	7	6.9	5.19	1857	4.85	433	6.01	1833
SCP_60_7_3	60	7	4.08	3.34	759	3.48	341	3.94	747
SCP_60_8_1	60	8	5.55	3.99	1235	4.44	421	4.99	1053
SCP_60_8_2	60	8	5.36	6.15	2499	5.46	858	6.93	2499
SCP_60_8_3	60	8	6.93	5.5	1781	6.25	801	6.61	1781
SCP_80_15_1	80	15	6.77	7.5	1685	6.55	793	7.92	1677
SCP_80_15_2	80	15	9.74	12.75	4173	9.88	1297	17.73	4047
SCP_80_15_3	80	15	7.21	17.47	3433	6.77	751	14.8	2841
SCP_80_17_1	80	17	8.09	17.95	3317	11.8	909	19.41	3239
SCP_80_17_2	80	17	6.88	29.23	4339	23.85	1650	24.23	3653
SCP_80_17_3	80	17	10.92	37.63	5765	24.96	2564	31.33	4929
SCP_80_20_1	80	20	8.47	25.24	5037	10.43	1495	26.39	4837
SCP_80_20_2	80	20	10.2	102.42	13829	45.36	3884	76.49	10687
SCP_80_20_3	80	20	7.32	34.64	4435	23.23	1654	24.26	3279
SCP_80_9_1	80	9	9.24	12.75	3463	13.69	1876	12.85	3359
SCP_80_9_2	80	9	6.03	9.14	2369	6.06	895	9.99	2367
SCP_80_9_3	80	9	3.68	7.33	1725	4.38	376	7.9	1725