Solução do Problema FIT1D - Solver HiGHS

Análise Computacional

17 de setembro de 2025

1 Informações do Problema

Informações do Problema:

- Nome: FIT1D

- Número de Variáveis: 1026

- Número de Restrições: 24

- Inviabilidade Primal: 0.000e+00

- Inviabilidade Dual: 0.000e+00

- Valor Primal: -9.146e+03

- Valor Dual: 0.000e+00

- Gap: -4.348e-20

- Número de Iterações: 19

2 Variáveis Primais e Custos Reduzidos

Tabela 1: Variáveis primais e custos reduzidos do problema FIT1D

Coordenada x	Valor x	Coordenada z	Valor z
1	0.000000	1	267.814471
2	1.000000	2	-12.814471
3	0.000000	3	405.715026
4	1.000000	4	-48.715026
5	0.000000	5	183.422348
6	1.000000	6	-4.922348
7	0.000000	7	142.083433
8	1.000000	8	-6.083433
9	0.000000	9	112.133907
10	0.000000	10	6.866093
11	0.000000	11	153.320984
12	1.000000	12	-8.820984
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Coordenada x	Valor x	Coordenada z	Valor z
13	0.000000	13	308.335355
14	1.000000	14	-10.835355
15	0.000000	15	76.077814
16	0.000000	16	8.922186
17	0.000000	17	74.767143
18	0.000000	18	10.232857
19	0.000000	19	147.922570
20	0.000000	20	13.577430
21	0.000000	21	143.536276
22	0.000000	22	9.463724
23	0.000000	23	126.023689
24	1.000000	24	-7.023689
25	0.000000	25	85.494049
26	1.000000	26	-0.494049
27	0.000000	27	150.262696
28	0.000000	28	2.737304
29	0.000000	29	137.445934
30	0.000000	30	7.054066
31	0.000000	31	69.674880
32	0.000000	32	15.325120
33	0.000000	33	72.678523
34	0.000000	34	12.321477
35	0.000000	35	218.678845
36	1.000000	36	-23.178845
37	0.000000	37	137.865058
38	1.000000	38	-1.865058
39	0.000000	39	513.438550
40	1.000000	40	-54.438550
41	0.000000	41	77.859292
42	0.000000	42	7.140708
43	0.000000	43	76.873206
44	0.000000	44	8.126794
45	0.000000	45	479.392237
46	1.000000	46	-54.392237
47	0.000000	47	283.451190
48	1.000000	48	-36.951190
49	0.000000	49	105.591202
50	0.000000	50	4.908798
51	0.000000	51	350.930994
52	1.000000	52	-19.430994
53	0.000000	53	366.261479
54	1.000000	54	-51.761479
55	0.000000	55	213.528331
56	1.000000	56	-1.028331
57	0.000000	57	131.902540
58	0.000000	58	4.097460
59	0.000000	59	68.747639
60	0.000000	60	16.252361
61	0.000000	61	349.325461

Coordenada x	Valor x	Coordenada z	Valor z
62	1.000000	62	-17.825461
63	0.000000	63	266.021067
64	1.000000	64	-19.521067
65	0.000000	65	166.426052
66	1.000000	66	-4.926052
67	0.000000	67	514.666347
68	1.000000	68	-55.666347
69	0.000000	69	287.751180
70	1.000000	70	-15.751180
71	0.000000	71	229.950177
72	1.000000	72	-8.950177
73	0.000000	73	145.399284
74	1.000000	74	-0.899284
75	0.000000	75	297.836445
76	1.000000	76	-17.336445
77	0.000000	77	84.986670
78	0.000000	78	0.013330
79	0.000000	79	125.602110
80	1.000000	80	-15.102110
81	0.000000	81	142.353735
82	1.000000	82	-14.853735
83	0.000000	83	328.112240
84	1.000000	84	-30.612240
85	0.000000	85	72.757228
86	0.000000	86	29.242772
87	0.000000	87	216.366784
88	1.000000	88	-20.866784
89	0.000000	89	146.935666
90	0.000000	90	6.064334
91	0.000000	91	52.371657
92	0.000000	92	32.628343
93	0.000000	93	372.065348
94	1.000000	94	-40.565348
95	0.000000	95	539.554930
96	1.000000	96	-46.554930
97	0.000000	97	332.165516
98	1.000000	98	-43.165516
99	0.000000	99	185.598583
100	1.000000	100	-24.098583
101	0.000000	101	89.386217
102	0.000000	102	21.113783
103	0.000000	103	667.330194
104	1.000000	104	-63.830194
105	0.000000	105	749.431855
106	1.000000	106	-69.431855
107	0.000000	107	104.350116
108	1.000000	108	-2.350116
109	0.000000	109	50.894049
110	0.000000	110	34.105951

Coordenada x	Valor x	Coordenada z	Valor z
111	0.000000	111	287.937679
112	1.000000	112	-24.437679
113	0.000000	113	144.093201
114	0.000000	114	0.406799
115	0.000000	115	222.497702
116	1.000000	116	-1.497702
117	0.000000	117	94.084663
118	1.000000	118	-9.084663
119	0.000000	119	249.255144
120	1.000000	120	-28.255144
121	0.000000	121	306.727564
122	1.000000	122	-26.227564
123	0.000000	123	287.031839
124	1.000000	124	-32.031839
125	0.000000	125	249.838387
126	1.000000	126	-20.338387
127	0.000000	127	88.890514
128	1.000000	128	-3.890514
129	0.000000	129	94.291799
130	0.000000	130	7.708201
131	0.000000	131	391.497361
132	1.000000	132	-34.497361
133	0.000000	133	67.612295
134	0.000000	134	17.387705
135	0.000000	135	69.665526
136	0.000000	136	15.334474
137	0.000000	137	92.855553
138	0.000000	138	0.644447
139	0.000000	139	473.299034
140	1.000000	140	-65.299034
141	0.000000	141	447.745480
142	1.000000	142	-39.745480
143	0.000000	143	314.896545
144	1.000000	144	-34.396545
145	0.000000	145	239.958562
146	1.000000	146	-1.958562
147	0.000000	147	224.152360
148	0.000000	148	5.347640
149	0.000000	149	70.693672
150	0.000000	150	14.306328
151	0.000000	151	552.978567
152	1.000000	152	-42.978567
153	0.000000	153	76.411710
154	0.000000	154	8.588290
155	0.000000	155	72.382001
156	0.000000	156	12.617999
157	0.000000	157	128.075007
158	1.000000	158	-9.075007
159	0.000000	159	213.331898

Coordenada x	Valor x	Coordenada z	Valor z
160	1.000000	160	-9.331898
161	0.000000	161	522.968245
162	1.000000	162	-63.968245
163	0.000000	163	249.405471
164	1.000000	164	-19.905471
165	0.000000	165	343.294396
166	1.000000	166	-37.294396
167	0.000000	167	97.915916
168	1.000000	168	-4.415916
169	0.000000	169	83.013795
170	0.000000	170	1.986205
171	0.000000	171	228.364432
172	1.000000	172	-24.364432
173	0.000000	173	344.050579
174	1.000000	174	-12.550579
175	0.000000	175	221.782078
176	1.000000	176	-9.282078
177	0.000000	177	91.713375
178	1.000000	178	-6.713375
179	0.000000	179	80.211240
180	0.000000	180	4.788760
181	0.000000	181	320.721981
182	1.000000	182	-31.721981
183	0.000000	183	127.943206
184	0.000000	184	8.056794
185	0.000000	185	155.226218
186	1.000000	186	-10.726218
187	0.000000	187	309.969254
188	1.000000	188	-3.969254
189	0.000000	189	450.156575
190	1.000000	190	-50.656575
191	0.000000	191	345.486722
192	1.000000	192	-47.986722
193	0.000000	193	86.252177
194	0.000000	194	7.247823
195	0.000000	195	565.672495
196	1.000000	196	-72.672495
197	0.000000	197	56.998164
198	0.000000	198	28.001836
199	0.000000	199	306.452837
200	1.000000	200	-25.952837
201	0.000000	201	91.240545
202	0.000000	202	10.759455
203	0.000000	203	80.508404
204	0.000000	204	4.491596
205	0.000000	205	163.158478
206	1.000000	206	-18.658478
207	0.000000	207	182.638154
208	1.000000	208	-4.138154

Coordenada x	Valor x	Coordenada z	Valor z
209	0.000000	209	453.348702
210	1.000000	210	-45.348702
211	0.000000	211	80.337367
212	0.000000	212	4.662633
213	0.000000	213	286.909451
214	1.000000	214	-23.409451
215	0.000000	215	377.670111
216	1.000000	216	-29.170111
217	0.000000	217	267.080355
218	1.000000	218	-29.080355
219	0.000000	219	157.824041
220	0.000000	220	12.175959
221	0.000000	221	343.655182
222	1.000000	222	-46.155182
223	0.000000	223	106.940935
224	0.000000	224	3.559065
225	0.000000	225	81.683123
226	0.000000	226	37.316877
227	0.000000	227	121.097965
228	0.000000	228	14.902035
229	0.000000	229	419.692641
230	1.000000	230	-45.692641
231	0.000000	231	440.451547
232	1.000000	232	-49.451547
233	0.000000	233	227.612295
234	1.000000	234	-6.612295
235	0.000000	235	150.879937
236	1.000000	236	-23.379937
237	0.000000	237	343.916490
238	1.000000	238	-29.416490
239	0.000000	239	180.649888
240	1.000000	240	-10.649888
241	0.000000	241	318.643872
242	1.000000	242	-21.143872
243	0.000000	243	161.249345
244	1.000000	244	-8.249345
245	0.000000	245	152.975721
246	1.000000	246	-16.975721
247	0.000000	247	162.289333
248	1.000000	248	-0.789333
249	0.000000	249	276.437750
250	1.000000	250	-29.937750
251	0.000000	251	88.057737
252	1.000000	252	-3.057737
253	0.000000	253	74.362669
254	0.000000	254	10.637331
255	0.000000	255	94.507933
256	1.000000	256	-9.507933
257	0.000000	257	39.336770

Coordenada x	Valor x	Coordenada z	Valor z
258	0.000000	258	45.663230
259	0.000000	259	89.159119
260	1.000000	260	-4.159119
261	0.000000	261	199.628631
262	1.000000	262	-12.628631
263	0.000000	263	367.933133
264	1.000000	264	-19.433133
265	0.000000	265	79.898510
266	0.000000	266	5.101490
267	0.000000	267	61.748964
268	0.000000	268	23.251036
269	0.000000	269	86.368068
270	1.000000	270	-1.368068
271	0.000000	271	72.702956
272	0.000000	272	20.797044
273	0.000000	273	250.947205
274	1.000000	274	-29.947205
275	0.000000	275	94.253288
276	0.000000	276	24.746712
277	0.000000	277	51.798314
278	0.000000	278	33.201686
279	0.000000	279	278.020462
280	1.000000	280	-31.520462
281	0.000000	281	329.250831
282	1.000000	282	-31.750831
283	0.000000	283	141.015453
284	1.000000	284	-13.515453
285	0.000000	285	133.724010
286	1.000000	286	-6.224010
287	0.000000	287	304.536260
288	1.000000	288	-24.036260
289	0.000000	289	402.262533
290	1.000000	290	-53.762533
291	0.000000	291	67.612295
292	0.000000	292	17.387705
293	0.000000	293	143.372533
294	1.000000	294	-7.372533
295	0.000000	295	209.200893
296	1.000000	296	-13.700893
297	0.000000	297	498.747373
298	1.000000	298	-65.247373
299	0.000000	299	75.263822
300	0.000000	300	9.736178
301	0.000000	301	127.508873
302	1.000000	302	-0.008873
303	0.000000	303	115.071398
304	1.000000	304	-4.571398
305	0.000000	305	105.828335
306	1.000000	306	-20.828335

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Coordenada x	Valor x	Coordenada z	Valor z
307	0.000000	307	155.737869
308	1.000000	308	-19.737869
309	0.000000	309	132.685179
310	1.000000	310	-5.185179
311	0.000000	311	101.272526
312	0.000000	312	17.727474
313	0.000000	313	164.399208
314	1.000000	314	-19.899208
315	0.000000	315	165.831750
316	0.000000	316	38.168250
317	0.000000	317	191.052270
318	0.000000	318	4.447730
319	0.000000	319	511.572075
320	1.000000	320	-52.572075
321	0.000000	321	178.390439
322	1.000000	322	-8.390439
323	0.000000	323	78.735282
324	0.000000	324	6.264718
325	0.000000	325	713.207706
326	1.000000	326	-58.707706
327	0.000000	327	70.639880
328	0.000000	328	14.360120
329	0.000000	329	83.195484
330	0.000000	330	1.804516
331	0.000000	331	73.602874
332	0.000000	332	11.397126
333	0.000000	333	346.841795
334	1.000000	334	-15.341795
335	0.000000	335	183.920316
336	1.000000	336	-30.920316
337	0.000000	337	253.337411
338	1.000000	338	-23.837411
339	0.000000	339	218.898978
340	1.000000	340	-6.398978
341	0.000000	341	372.134590
342	1.000000	342	-32.134590
343	0.000000	343	77.673144
344	0.000000	344	32.826856
345	0.000000	345	225.903191
346	1.000000	346	-13.403191
347	0.000000	347	229.858895
348	1.000000	348	-8.858895
349	0.000000	349	229.973243
350	1.000000	350	-25.973243
351	0.000000	351	237.246614
352	1.000000	352	-7.746614
353	0.000000	353	97.778145
354	0.000000	354	12.721855
355	0.000000	355	71.200561

Coordenada x	Valor x	Coordenada z	Valor z
356	0.000000	356	30.799439
357	0.000000	357	90.760957
358	1.000000	358	-5.760957
359	0.000000	359	148.844576
360	0.000000	360	4.155424
361	0.000000	361	123.993481
362	0.000000	362	3.506519
363	0.000000	363	156.979508
364	0.000000	364	4.520492
365	0.000000	365	64.459387
366	0.000000	366	20.540613
367	0.000000	367	215.325841
368	1.000000	368	-19.825841
369	0.000000	369	160.333293
370	1.000000	370	-7.333293
371	0.000000	371	75.442509
372	0.000000	372	9.557491
373	0.000000	373	82.442345
374	0.000000	374	11.057655
375	0.000000	375	113.832890
376	1.000000	376	-3.332890
377	0.000000	377	272.252922
378	1.000000	378	-0.252922
379	0.000000	379	463.425431
380	1.000000	380	-55.425431
381	0.000000	381	193.086579
382	1.000000	382	-14.586579
383	0.000000	383	159.269904
384	1.000000	384	-14.769904
385	0.000000	385	235.612743
386	1.000000	386	-14.612743
387	0.000000	387	56.151134
388	0.000000	388	28.848866
389	0.000000	389	61.431113
390	0.000000	390	23.568887
391	0.000000	391	432.793835
392	1.000000	392	-67.293835
393	0.000000	393	182.211649
394	0.000000	394	4.788351
395	0.000000	395	59.546258
396	0.000000	396	25.453742
397	0.000000	397	73.097865
398	0.000000	398	11.902135
399	0.000000	399	131.392324
400	1.000000	400	-3.892324
401	0.000000	401	253.683534
402	1.000000	402	-15.683534
403	0.000000	403	224.989743
404	1.000000	404	-20.989743

Coordenada x	Valor x	Coordenada z	Valor z
405	0.000000	405	425.229129
406	1.000000	406	-42.729129
407	0.000000	407	262.059865
408	1.000000	408	-24.059865
409	0.000000	409	109.994383
410	1.000000	410	-16.494383
411	0.000000	411	302.576559
412	1.000000	412	-22.076559
413	0.000000	413	109.725928
414	1.000000	414	-7.725928
415	0.000000	415	84.317558
416	0.000000	416	9.182442
417	0.000000	417	61.707392
418	0.000000	418	23.292608
419	0.000000	419	112.266302
420	1.000000	420	-1.766302
421	0.000000	421	78.979977
422	0.000000	422	6.020023
423	0.000000	423	178.089429
424	1.000000	424	-8.089429
425	0.000000	425	207.936164
426	1.000000	426	-3.936164
427	0.000000	427	484.973276
428	1.000000	428	-59.973276
429	0.000000	429	395.364464
430	1.000000	430	-46.864464
431	0.000000	431	174.222159
432	1.000000	432	-12.722159
433	0.000000	433	519.545700
434	1.000000	434	-43.545700
435	0.000000	435	272.000000
436	0.299009	436	0.000000
437	0.000000	437	76.261583
438	0.000000	438	8.738417
439	0.000000	439	239.383058
440	1.000000	440	-1.383058
441	0.000000	441	267.228538
442	1.000000	442	-20.728538
443	0.000000	443	581.230889
444	1.000000	444	-71.230889
445	0.000000	445	205.720006
446	1.000000	446	-10.220006
447	0.000000	447	127.951908
448	0.000000	448	8.048092
449	0.000000	449	224.612313
450	1.000000	450	-29.112313
451	0.000000	451	411.664170
452	1.000000	452	-29.164170
453	0.000000	453	398.370624

Coordenada x	Valor x	Coordenada z	Valor z
454	1.000000	454	-49.870624
455	0.000000	455	65.942108
456	0.000000	456	19.057892
457	0.000000	457	84.096037
458	0.000000	458	17.903963
459	0.000000	459	513.478808
460	1.000000	460	-54.478808
461	0.000000	461	168.637393
462	1.000000	462	-15.637393
463	0.000000	463	78.580437
464	0.000000	464	6.419563
465	0.000000	465	122.193405
466	0.000000	466	13.806595
467	0.000000	467	66.567102
468	0.000000	468	43.932898
469	0.000000	469	310.243411
470	1.000000	470	-46.743411
471	0.000000	471	133.079456
472	0.000000	472	2.920544
473	0.000000	473	146.236676
474	1.000000	474	-10.236676
475	0.000000	475	184.537831
476	1.000000	476	-6.037831
477	0.000000	477	263.701426
478	1.000000	478	-34.201426
479	0.000000	479	87.755196
480	1.000000	480	-2.755196
481	0.000000	481	340.158047
482	1.000000	482	-34.158047
483	0.000000	483	229.500000
484	0.738415	484	0.000000
485	0.000000	485	339.801830
486	1.000000	486	-25.301830
487	0.000000	487	317.802192
488	1.000000	488	-20.302192
489	0.000000	489	95.223712
490	1.000000	490	-10.223712
491	0.000000	491	150.923932
492	0.000000	492	2.076068
493	0.000000	493	229.413662
494	1.000000	494	-8.413662
495	0.000000	495	175.695496
496	1.000000	496	-5.695496
497	0.000000	497	66.658353
498	0.000000	498	52.341647
499	0.000000	499	59.746251
500	0.000000	500	25.253749
501	0.000000	501	169.197831
502	1.000000	502	-24.697831

Coordenada x	Valor x	Coordenada z	Valor z
503	0.000000	503	444.966199
504	1.000000	504	-36.966199
505	0.000000	505	85.000000
506	0.060991	506	0.000000
507	0.000000	507	143.432478
508	1.000000	508	-7.432478
509	0.000000	509	417.640305
510	1.000000	510	-26.640305
511	0.000000	511	81.089609
512	0.000000	512	3.910391
513	0.000000	513	179.312133
514	0.000000	514	7.687867
515	0.000000	515	381.481707
516	1.000000	516	-41.481707
517	0.000000	517	271.139585
518	1.000000	518	-24.639585
519	0.000000	519	615.316173
520	1.000000	520	-54.316173
521	0.000000	521	140.863825
522	0.000000	522	12.136175
523	0.000000	523	103.733501
524	1.000000	524	-1.733501
525	0.000000	525	87.110400
526	0.000000	526	6.389600
527	0.000000	527	506.921570
528	1.000000	528	-56.421570
529	0.000000	529	280.990369
530	1.000000	530	-17.490369
531	0.000000	531	190.420730
532	1.000000	532	-11.920730
533	0.000000	533	286.023689
534	1.000000	534	-31.023689
535	0.000000	535	77.955616
536	0.000000	536	15.544384
537	0.000000	537	261.534680
538	1.000000	538	-23.534680
539	0.000000	539	189.909757
540	0.000000	540	5.590243
541	0.000000	541	122.446906
542	1.000000	542	-3.446906
543	0.000000	543	173.733501
544	1.000000	544	-12.233501
545	0.000000	545	153.601880
546	1.000000	546	-0.601880
547	0.000000	547	421.481397
548	1.000000	548	-47.481397
549	0.000000	549	157.437256
550	1.000000	550	-4.437256
551	0.000000	551	99.683656

Coordenada x	Valor x	Coordenada z	Valor z
552	1.000000	552	-6.183656
553	0.000000	553	101.442760
554	0.000000	554	9.057240
555	0.000000	555	64.374695
556	0.000000	556	20.625305
557	0.000000	557	166.163950
558	0.000000	558	12.336050
559	0.000000	559	96.170474
560	0.000000	560	14.329526
561	0.000000	561	304.838696
562	1.000000	562	-32.838696
563	0.000000	563	44.936757
564	0.000000	564	40.063243
565	0.000000	565	65.305666
566	0.000000	566	19.694334
567	0.000000	567	64.290736
568	0.000000	568	20.709264
569	0.000000	569	156.661169
570	1.000000	570	-3.661169
571	0.000000	571	114.376010
572	0.000000	572	4.623990
573	0.000000	573	409.538667
574	1.000000	574	-18.538667
575	0.000000	575	203.681834
576	1.000000	576	-25.181834
577	0.000000	577	144.500000
578	0.321245	578	0.000000
579	0.000000	579	179.809349
580	1.000000	580	-26.809349
581	0.000000	581	158.246433
582	1.000000	582	-13.746433
583	0.000000	583	77.076947
584	0.000000	584	7.923053
585	0.000000	585	162.153019
586	1.000000	586	-9.153019
587	0.000000	587	177.995210
588	1.000000	588	-16.495210
589	0.000000	589	220.094283
590	1.000000	590	-16.094283
591	0.000000	591	161.763764
592	1.000000	592	-0.263764
593	0.000000	593	219.131441
594	1.000000	594	-15.131441
595	0.000000	595	404.352487
596	1.000000	596	-55.852487
597	0.000000	597	83.018308
598	0.000000	598	1.981692
599	0.000000	599	67.622757
600	0.000000	600	17.377243

Coordenada x	Valor x	Coordenada z	Valor z
601	0.000000	601	325.287644
602	1.000000	602	-44.787644
603	0.000000	603	84.377511
604	0.000000	604	0.622489
605	0.000000	605	467.576812
606	1.000000	606	-25.576812
607	0.000000	607	243.577855
608	1.000000	608	-22.577855
609	0.000000	609	120.439316
610	1.000000	610	-9.939316
611	0.000000	611	82.605995
612	0.000000	612	2.394005
613	0.000000	613	279.478293
614	1.000000	614	-15.978293
615	0.000000	615	388.453402
616	1.000000	616	-31.453402
617	0.000000	617	268.633354
618	1.000000	618	-13.633354
619	0.000000	619	76.650259
620	0.000000	620	8.349741
621	0.000000	621	147.921076
622	1.000000	622	-3.421076
623	0.000000	623	148.322683
624	1.000000	624	-3.822683
625	0.000000	625	79.163583
626	0.000000	626	5.836417
627	0.000000	627	461.510329
628	1.000000	628	-70.510329
629	0.000000	629	491.540004
630	1.000000	630	-24.040004
631	0.000000	631	191.655906
632	1.000000	632	-13.155906
633	0.000000	633	128.219284
634	1.000000	634	-0.719284
635	0.000000	635	108.847173
636	1.000000	636	-6.847173
637	0.000000	637	194.558535
638	1.000000	638	-16.058535
639	0.000000	639	469.587148
640	1.000000	640	-36.087148
641	0.000000	641	49.305803
642	0.000000	642	35.694197
643	0.000000	643	212.243566
644	1.000000	644	-16.743566
645	0.000000	645	242.040607
646	1.000000	646	-4.040607
647	0.000000	647	49.060719
648	0.000000	648	35.939281
649	0.000000	649	350.287197

Coordenada x	Valor x	Coordenada z	Valor z
650	1.000000	650	-44.287197
651	0.000000	651	178.305739
652	1.000000	652	-8.305739
653	0.000000	653	309.544857
654	1.000000	654	-29.044857
655	0.000000	655	137.525300
656	1.000000	656	-1.525300
657	0.000000	657	365.115469
658	1.000000	658	-16.615469
659	0.000000	659	247.579909
660	1.000000	660	-9.579909
661	0.000000	661	64.024764
662	0.000000	662	20.975236
663	0.000000	663	284.056149
664	1.000000	664	-29.056149
665	0.000000	665	348.722420
666	1.000000	666	-51.222420
667	0.000000	667	94.227839
668	1.000000	668	-9.227839
669	0.000000	669	72.531845
670	0.000000	670	12.468155
671	0.000000	671	85.598103
672	0.000000	672	7.901897
673	0.000000	673	120.594441
674	1.000000	674	-1.594441
675	0.000000	675	247.825645
676	1.000000	676	-18.325645
677	0.000000	677	160.396424
678	1.000000	678	-15.896424
679	0.000000	679	84.728023
680	0.000000	680	0.271977
681	0.000000	681	172.584663
682	1.000000	682	-19.584663
683	0.000000	683	363.065482
684	1.000000	684	-40.065482
685	0.000000	685	115.801547
686	1.000000	686	-5.301547
687	0.000000	687	211.614859
688	1.000000	688	-7.614859
689	0.000000	689	680.632765
690	1.000000	690	-85.632765
691	0.000000	691	74.139199
692	0.000000	692	10.860801
693	0.000000	693	246.111607
694	1.000000	694	-8.111607
695	0.000000	695	74.024790
696	0.000000	696	10.975210
697	0.000000	697	153.746817
698	1.000000	698	-0.746817

Coordenada x	Valor x	Coordenada z	Valor z
699	0.000000	699	84.210539
700	0.000000	700	0.789461
701	0.000000	701	257.061203
702	1.000000	702	-27.561203
703	0.000000	703	360.583028
704	1.000000	704	-37.583028
705	0.000000	705	331.449443
706	1.000000	706	-33.949443
707	0.000000	707	75.450903
708	0.000000	708	9.549097
709	0.000000	709	220.572589
710	1.000000	710	-25.072589
711	0.000000	711	438.416923
712	1.000000	712	-38.916923
713	0.000000	713	283.079456
714	1.000000	714	-19.579456
715	0.000000	715	164.533971
716	1.000000	716	-3.033971
717	0.000000	717	621.690812
718	1.000000	718	-69.190812
719	0.000000	719	161.228548
720	1.000000	720	-16.728548
721	0.000000	721	442.897751
722	1.000000	722	-34.897751
723	0.000000	723	73.468986
724	0.000000	724	11.531014
725	0.000000	725	224.406781
726	1.000000	726	-20.406781
727	0.000000	727	145.055205
728	0.000000	728	16.444795
729	0.000000	729	252.650500
730	1.000000	730	-23.150500
731	0.000000	731	426.544606
732	1.000000	732	-44.044606
733	0.000000	733	206.377379
734	1.000000	734	-10.877379
735	0.000000	735	80.861692
736	0.000000	736	4.138308
737	0.000000	737	69.691645
738	0.000000	738	15.308355
739	0.000000	739	150.125095
740	1.000000	740	-14.125095
741	0.000000	741	228.117266
742	1.000000	742	-24.117266
743	0.000000	743	239.734755
744	1.000000	744	-18.734755
745	0.000000	745	432.673149
746	1.000000	746	-24.673149
747	0.000000	747	113.685722

Coordenada x	Valor x	Coordenada z	Valor z
748	1.000000	748	-11.685722
749	0.000000	749	1390.872164
750	1.000000	750	-166.872164
751	0.000000	751	192.741435
752	1.000000	752	-22.741435
753	0.000000	753	64.273417
754	0.000000	754	29.226583
755	0.000000	755	121.431373
756	1.000000	756	-2.431373
757	0.000000	757	67.131300
758	0.000000	758	17.868700
759	0.000000	759	209.813701
760	1.000000	760	-22.813701
761	0.000000	761	89.169431
762	1.000000	762	-4.169431
763	0.000000	763	140.006171
764	0.000000	764	4.493829
765	0.000000	765	76.589259
766	0.000000	766	8.410741
767	0.000000	767	491.304222
768	1.000000	768	-57.804222
769	0.000000	769	149.905837
770	0.000000	770	3.094163
771	0.000000	771	110.902751
772	1.000000	772	-0.402751
773	0.000000	773	52.643708
774	0.000000	774	40.856292
775	0.000000	775	187.387521
776	1.000000	776	-8.887521
777	0.000000	777	58.565531
778	0.000000	778	26.434469
779	0.000000	779	548.165696
780	1.000000	780	-55.165696
781	0.000000	781	204.890476
782	1.000000	782	-17.890476
783	0.000000	783	109.508221
784	0.000000	784	0.991779
785	0.000000	785	102.837006
786	1.000000	786	-9.337006
787	0.000000	787	439.409823
788	1.000000	788	-82.409823
789	0.000000	789	217.687899
790	1.000000	790	-30.687899
791	0.000000	791	157.871460
792	1.000000	792	-4.871460
793	0.000000	793	94.328273
794	1.000000	794	-9.328273
795	0.000000	795	206.419915
796	1.000000	796	-19.419915

Coordenada x	Valor x	Coordenada z	Valor z
797	0.000000	797	161.122238
798	1.000000	798	-16.622238
799	3.000000	799	-7.415616
800	3.000000	800	-0.555468
801	3.000000	801	-14.983280
802	0.700000	802	0.000000
803	3.000000	803	-27.609769
804	3.000000	804	-18.363826
805	0.005502	805	0.000000
806	3.000000	806	-8.976039
807	3.000000	807	-20.774637
808	0.000000	808	11.146240
809	3.000000	809	-1.497539
810	3.000000	810	-10.160461
811	3.000000	811	-25.517195
812	1.382236	812	0.000000
813	0.000000	813	0.619426
814	3.000000	814	-4.014143
815	3.000000	815	-1.371060
816	3.000000	816	-16.706816
817	0.000000	817	5.102404
818	0.000000	818	5.354463
819	0.000000	819	12.646141
820	0.000000	820	3.125627
821	3.000000	821	-0.553747
822	3.000000	822	-9.396144
823	0.000000	823	7.922843
824	3.000000	824	-7.882344
825	0.612177	825	0.000000
826	3.000000	826	-1.808303
827	3.000000	827	-8.507330
828	0.000000	828	10.828491
829	0.000000	829	5.091112
830	3.000000	830	-13.367120
831	3.000000	831	-8.713315
832	0.000000	832	4.648162
833	3.000000	833	-16.032255
834	3.000000	834	-12.156870
835	3.000000	835	-15.663195
836	0.000000	836	12.510269
837	1.654498	837	0.000000
838	3.000000	838	-15.230831
839	0.000000	839	1.946905
840	3.000000	840	-10.882348
841	3.000000	841	-10.859146
842	3.000000	842	-15.491694
843	0.000000	843	0.767163
844	0.000000	844	6.305395
845	0.000000	845	30.526738

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Coordenada x	Valor x	Coordenada z	Valor z
846	0.000000	846	2.368684
847	3.000000	847	-11.318875
848	2.065248	848	0.000000
849	0.000000	849	5.637474
850	3.000000	850	-17.166528
851	3.000000	851	-3.334098
852	3.000000	852	-9.261129
853	3.000000	853	-26.897058
854	3.000000	854	-1.254111
855	2.000000	855	0.000000
856	0.000000	856	16.504475
857	3.000000	857	-14.050275
858	0.000000	858	2.823021
859	3.000000	859	-11.182071
860	0.000000	860	21.790761
861	0.000000	861	0.368724
862	0.000000	862	0.024558
863	0.000000	863	2.231774
864	3.000000	864	-2.750977
865	3.000000	865	-13.900334
866	3.000000	866	-6.766499
867	3.000000	867	-4.254163
868	3.000000	868	-30.012655
869	3.000000	869	-8.619006
870	0.000000	870	3.897569
871	3.000000	871	-8.010679
872	3.000000	872	-13.812432
873	3.000000	873	-12.252761
874	3.000000	874	-18.478305
875	3.000000	875	-8.155597
876	0.000000	876	4.370168
877	3.000000	877	-20.570577
878	3.000000	878	-1.536742
879	3.000000	879	-22.637957
880	3.000000	880	-17.162498
881	3.000000	881	-3.347587
882	3.000000	882	-0.121897
883	0.000000	883	14.801998
884	3.000000	884	-10.290845
885	3.000000	885	-11.842038
886	3.000000	886	-9.154960
887	3.000000	887	-4.468570
888	3.000000	888	-14.198427
889	3.000000	889	-6.363622
890	3.000000	890	-10.707976
891	3.000000	891	-15.218883
892	0.000000	892	7.514814
893	3.000000	893	-4.442856
894	3.000000	894	-29.606548

Coordenada x	Valor x	Coordenada z	Valor z
895	0.000000	895	3.381466
896	3.000000	896	-13.295374
897	0.000000	897	7.369074
898	3.000000	898	-46.769223
899	0.000000	899	3.910346
900	0.000000	900	34.883123
901	0.000000	901	12.808748
902	3.000000	902	-9.894674
903	3.000000	903	-7.982241
904	0.000000	904	0.802425
905	3.000000	905	-12.297785
906	3.000000	906	-16.691960
907	0.000000	907	11.342798
908	0.000000	908	7.450779
909	0.000000	909	5.412496
910	0.000000	910	35.289073
911	3.000000	911	-4.619304
912	3.000000	912	-10.975334
913	3.000000	913	-6.633458
914	0.000000	914	7.925863
915	3.000000	915	-10.194078
916	0.000000	916	3.022831
917	3.000000	917	-4.456431
918	3.000000	918	-0.792669
919	3.000000	919	-3.755454
920	3.000000	920	-24.857583
921	3.000000	921	-12.973493
922	0.000000	922	1.245388
923	3.000000	923	-10.402891
924	3.000000	924	-6.019172
925	0.000000	925	0.842225
926	3.000000	926	-2.627409
927	3.000000	927	-2.859697
928	0.000000	928	40.680523
929	3.000000	929	-8.289373
930	3.000000	930	-7.279369
931	3.000000	931	-5.266341
932	0.000000	932	1.833790
933	0.000000	933	4.002701
934	3.000000	934	-8.039128
935	0.000000	935	17.751696
936	0.000000	936	27.411668
937	0.000000	937	27.749297
938	0.000000	938	30.231145
939	3.000000	939	-18.279430
940	0.000000	940	24.010133
941	0.000000	941	22.205418
942	0.000000	942	46.156691
943	0.000000	943	6.983684

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Coordenada x	Valor x	Coordenada z	Valor z
944	0.000000	944	16.581115
945	0.000000	945	19.468113
946	2.000000	946	0.000000
947	0.000000	947	18.538253
948	0.000000	948	29.487721
949	0.000000	949	9.621713
950	0.000000	950	33.571548
951	0.000000	951	60.580575
952	0.000000	952	10.005145
953	0.000000	953	15.044885
954	0.000000	954	41.086884
955	0.000000	955	4.106160
956	0.000000	956	46.010279
957	0.000000	957	33.057972
958	0.000000	958	6.804924
959	0.000000	959	22.274722
960	0.000000	960	32.003556
961	0.000000	961	35.616190
962	0.000000	962	9.789846
963	0.000000	963	3.317489
964	0.000000	964	8.509103
965	0.000000	965	28.984903
966	0.000000	966	20.713650
967	0.000000	967	23.320676
968	0.000000	968	53.530062
969	0.000000	969	33.829090
970	0.000000	970	17.632275
971	0.000000	971	31.082921
972	0.000000	972	25.397267
973	0.000000	973	27.471194
974	0.000000	974	28.321690
975	0.000000	975	59.646470
976	0.000000	976	0.194932
977	0.000000	977	50.102066
978	0.000000	978	12.860093
979	0.000000	979	46.354112
980	0.000000	980	35.050694
981	0.000000	981	19.194452
982	0.000000	982	21.579544
983	0.000000	983	12.524475
984	0.000000	984	24.316534
985	0.000000	985	32.096147
986	0.000000	986	27.255195
987	0.000000	987	30.401551
988	0.000000	988	16.644293
989	0.000000	989	13.961294
990	0.000000	990	11.932425
991	0.000000	991	45.082935
992	0.000000	992	43.956084

Coordenada x	Valor x	Coordenada z	Valor z
993	0.000000	993	57.950621
994	0.000000	994	69.023467
995	0.000000	995	24.963829
996	0.000000	996	45.383036
997	0.000000	997	70.641231
998	0.000000	998	15.493692
999	0.000000	999	34.371163
1000	0.000000	1000	49.394079
1001	0.000000	1001	47.946400
1002	0.000000	1002	58.467340
1003	0.000000	1003	23.120191
1004	0.000000	1004	50.175446
1005	0.000000	1005	83.247901
1006	0.000000	1006	66.902998
1007	0.000000	1007	77.573578
1008	0.000000	1008	33.834780
1009	0.000000	1009	94.796152
1010	0.000000	1010	66.356552
1011	0.000000	1011	82.172839
1012	0.000000	1012	77.466731
1013	0.000000	1013	46.136558
1014	0.000000	1014	76.606419
1015	0.000000	1015	57.536460
1016	0.000000	1016	79.183293
1017	0.000000	1017	87.837021
1018	0.000000	1018	112.925207
1019	0.000000	1019	125.972125
1020	0.000000	1020	100.267669
1021	0.000000	1021	123.149078
1022	0.000000	1022	124.327447
1023	0.000000	1023	143.128596
1024	0.000000	1024	155.592381
1025	0.000000	1025	165.670554
1026	0.000000	1026	210.339909

3 Variáveis Duais (Multiplicadores de Lagrange)

Tabela 2: Variáveis duais do problema FIT1D

Coordenada y	Valor y
1	-8.344365
2	-0.000000
3	-2.676355
4	-0.000000
5	0.011473
6	4.288638

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Coordenada y	Valor y
7	37.844805
8	-0.000000
9	-0.068753
10	-5.854470
11	-0.000000
12	-0.000000
13	23.804456
14	-0.000000
15	-9.441702
16	-0.000000
17	-0.000000
18	-6.272066
19	-0.000000
20	-0.000000
21	-0.000000
22	-0.000000
23	0.471520
24	-1.507917

4 Observações

- O solver HiGHS foi configurado com o método IPM (Interior Point Method).

- Este arquivo contém a solução detalhada para o problema FIT1D.

- As variáveis duais representam os multiplicadores de Lagrange das restrições.

- Os custos reduzidos (z) indicam o impacto de forçar variáveis não-básicas na base.