

Elham Pi I var-260969214 with 20 Linear Elements

```

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401  402  423  422
402  403  424  423
403  404  425  424
404  405  426  425
405  406  427  426
406  407  428  427
407  408  429  428
408  409  430  429
409  410  431  430
410  411  432  431
411  412  433  432
412  413  434  433
413  414  435  434
414  415  436  435
415  416  437  436
416  417  438  437
417  418  439  438
418  419  440  439

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Node	x	y	u	u_exact
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1	0.050000	0.000000	0	0
2	0.100000	0.000000	0	0
3	0.150000	0.000000	0	0
4	0.200000	0.000000	0	0
5	0.250000	0.000000	0	0
6	0.300000	0.000000	0	0
7	0.350000	0.000000	0	0
8	0.400000	0.000000	0	0
9	0.450000	0.000000	0	0
10	0.500000	0.000000	0	0
11	0.550000	0.000000	0	0
12	0.600000	0.000000	0	0
13	0.650000	0.000000	0	0
14	0.700000	0.000000	0	0
15	0.750000	0.000000	0	0
16	0.800000	0.000000	0	0
17	0.850000	0.000000	0	0
18	0.900000	0.000000	0	0
19	0.950000	0.000000	0	0
20	1.000000	0.000000	0	0
21	0.000000	0.050000	0	0
22	0.050000	0.050000	0.00226367	0.00225625
23	0.100000	0.050000	0.00428747	0.004275
24	0.150000	0.050000	0.00607253	0.00605625
25	0.200000	0.050000	0.00761922	0.0076
26	0.250000	0.050000	0.00892776	0.00890625
27	0.300000	0.050000	0.00999826	0.009975

28	0.350000	0.050000	0.0108308	0.0108062
29	0.400000	0.050000	0.0114255	0.0114
30	0.450000	0.050000	0.0117822	0.0117563
31	0.500000	0.050000	0.0119012	0.011875
32	0.550000	0.050000	0.0117822	0.0117562
33	0.600000	0.050000	0.0114255	0.0114
34	0.650000	0.050000	0.0108308	0.0108062
35	0.700000	0.050000	0.00999826	0.009975
36	0.750000	0.050000	0.00892776	0.00890625
37	0.800000	0.050000	0.00761922	0.0076
38	0.850000	0.050000	0.00607253	0.00605625
39	0.900000	0.050000	0.00428747	0.004275
40	0.950000	0.050000	0.00226367	0.00225625
41	1.000000	0.050000	0	0
42	0.000000	0.100000	0	0
43	0.050000	0.100000	0.00428747	0.004275
44	0.100000	0.100000	0.00812191	0.0081
45	0.150000	0.100000	0.0115042	0.011475
46	0.200000	0.100000	0.0144349	0.0144
47	0.250000	0.100000	0.0169144	0.016875
48	0.300000	0.100000	0.0189428	0.0189
49	0.350000	0.100000	0.0205204	0.020475
50	0.400000	0.100000	0.0216471	0.0216
51	0.450000	0.100000	0.0223232	0.022275
52	0.500000	0.100000	0.0225485	0.0225
53	0.550000	0.100000	0.0223232	0.022275
54	0.600000	0.100000	0.0216471	0.0216
55	0.650000	0.100000	0.0205204	0.020475
56	0.700000	0.100000	0.0189428	0.0189
57	0.750000	0.100000	0.0169144	0.016875
58	0.800000	0.100000	0.0144349	0.0144
59	0.850000	0.100000	0.0115042	0.011475
60	0.900000	0.100000	0.00812191	0.0081
61	0.950000	0.100000	0.00428747	0.004275
62	1.000000	0.100000	0	0
63	0.000000	0.150000	0	0
64	0.050000	0.150000	0.00607253	0.00605625
65	0.100000	0.150000	0.0115042	0.011475
66	0.150000	0.150000	0.0162957	0.0162563
67	0.200000	0.150000	0.0204476	0.0204
68	0.250000	0.150000	0.0239603	0.0239063
69	0.300000	0.150000	0.0268341	0.026775
70	0.350000	0.150000	0.029069	0.0290063
71	0.400000	0.150000	0.0306653	0.0306
72	0.450000	0.150000	0.0316231	0.0315563
73	0.500000	0.150000	0.0319423	0.031875
74	0.550000	0.150000	0.0316231	0.0315563
75	0.600000	0.150000	0.0306653	0.0306
76	0.650000	0.150000	0.029069	0.0290063
77	0.700000	0.150000	0.0268341	0.026775

78	0.750000	0.150000	0.0239603	0.0239063
79	0.800000	0.150000	0.0204476	0.0204
80	0.850000	0.150000	0.0162957	0.0162562
81	0.900000	0.150000	0.0115042	0.011475
82	0.950000	0.150000	0.00607253	0.00605625
83	1.000000	0.150000	0	0
84	0.000000	0.200000	0	0
85	0.050000	0.200000	0.00761922	0.0076
86	0.100000	0.200000	0.0144349	0.0144
87	0.150000	0.200000	0.0204476	0.0204
88	0.200000	0.200000	0.0256579	0.0256
89	0.250000	0.200000	0.0300661	0.03
90	0.300000	0.200000	0.0336724	0.0336
91	0.350000	0.200000	0.0364771	0.0364
92	0.400000	0.200000	0.0384804	0.0384
93	0.450000	0.200000	0.0396824	0.0396
94	0.500000	0.200000	0.040083	0.04
95	0.550000	0.200000	0.0396824	0.0396
96	0.600000	0.200000	0.0384804	0.0384
97	0.650000	0.200000	0.0364771	0.0364
98	0.700000	0.200000	0.0336724	0.0336
99	0.750000	0.200000	0.0300661	0.03
100	0.800000	0.200000	0.0256579	0.0256
101	0.850000	0.200000	0.0204476	0.0204
102	0.900000	0.200000	0.0144349	0.0144
103	0.950000	0.200000	0.00761922	0.0076
104	1.000000	0.200000	0	0
105	0.000000	0.250000	0	0
106	0.050000	0.250000	0.00892776	0.00890625
107	0.100000	0.250000	0.0169144	0.016875
108	0.150000	0.250000	0.0239603	0.0239063
109	0.200000	0.250000	0.0300661	0.03
110	0.250000	0.250000	0.0352319	0.0351562
111	0.300000	0.250000	0.0394581	0.039375
112	0.350000	0.250000	0.042745	0.0426562
113	0.400000	0.250000	0.0450927	0.045
114	0.450000	0.250000	0.0465012	0.0464063
115	0.500000	0.250000	0.0469707	0.046875
116	0.550000	0.250000	0.0465012	0.0464062
117	0.600000	0.250000	0.0450927	0.045
118	0.650000	0.250000	0.042745	0.0426562
119	0.700000	0.250000	0.0394581	0.039375
120	0.750000	0.250000	0.0352319	0.0351562
121	0.800000	0.250000	0.0300661	0.03
122	0.850000	0.250000	0.0239603	0.0239062
123	0.900000	0.250000	0.0169144	0.016875
124	0.950000	0.250000	0.00892776	0.00890625
125	1.000000	0.250000	0	0
126	0.000000	0.300000	0	0
127	0.050000	0.300000	0.00999826	0.009975

128	0.100000	0.300000	0.0189428	0.0189
129	0.150000	0.300000	0.0268341	0.026775
130	0.200000	0.300000	0.0336724	0.0336
131	0.250000	0.300000	0.0394581	0.039375
132	0.300000	0.300000	0.0441916	0.0441
133	0.350000	0.300000	0.0478729	0.047775
134	0.400000	0.300000	0.0505024	0.0504
135	0.450000	0.300000	0.05208	0.051975
136	0.500000	0.300000	0.0526058	0.0525
137	0.550000	0.300000	0.05208	0.051975
138	0.600000	0.300000	0.0505024	0.0504
139	0.650000	0.300000	0.0478729	0.047775
140	0.700000	0.300000	0.0441916	0.0441
141	0.750000	0.300000	0.0394581	0.039375
142	0.800000	0.300000	0.0336724	0.0336
143	0.850000	0.300000	0.0268341	0.026775
144	0.900000	0.300000	0.0189428	0.0189
145	0.950000	0.300000	0.00999826	0.009975
146	1.000000	0.300000	0	0
147	0.000000	0.350000	0	0
148	0.050000	0.350000	0.0108308	0.0108062
149	0.100000	0.350000	0.0205204	0.020475
150	0.150000	0.350000	0.029069	0.0290063
151	0.200000	0.350000	0.0364771	0.0364
152	0.250000	0.350000	0.042745	0.0426562
153	0.300000	0.350000	0.0478729	0.047775
154	0.350000	0.350000	0.0518611	0.0517562
155	0.400000	0.350000	0.0547097	0.0546
156	0.450000	0.350000	0.0564188	0.0563063
157	0.500000	0.350000	0.0569885	0.056875
158	0.550000	0.350000	0.0564188	0.0563062
159	0.600000	0.350000	0.0547097	0.0546
160	0.650000	0.350000	0.0518611	0.0517562
161	0.700000	0.350000	0.0478729	0.047775
162	0.750000	0.350000	0.042745	0.0426562
163	0.800000	0.350000	0.0364771	0.0364
164	0.850000	0.350000	0.029069	0.0290062
165	0.900000	0.350000	0.0205204	0.020475
166	0.950000	0.350000	0.0108308	0.0108062
167	1.000000	0.350000	0	0
168	0.000000	0.400000	0	0
169	0.050000	0.400000	0.0114255	0.0114
170	0.100000	0.400000	0.0216471	0.0216
171	0.150000	0.400000	0.0306653	0.0306
172	0.200000	0.400000	0.0384804	0.0384
173	0.250000	0.400000	0.0450927	0.045
174	0.300000	0.400000	0.0505024	0.0504
175	0.350000	0.400000	0.0547097	0.0546
176	0.400000	0.400000	0.0577148	0.0576
177	0.450000	0.400000	0.0595178	0.0594

178	0.500000	0.400000	0.0601188	0.06
179	0.550000	0.400000	0.0595178	0.0594
180	0.600000	0.400000	0.0577148	0.0576
181	0.650000	0.400000	0.0547097	0.0546
182	0.700000	0.400000	0.0505024	0.0504
183	0.750000	0.400000	0.0450927	0.045
184	0.800000	0.400000	0.0384804	0.0384
185	0.850000	0.400000	0.0306653	0.0306
186	0.900000	0.400000	0.0216471	0.0216
187	0.950000	0.400000	0.0114255	0.0114
188	1.000000	0.400000	0	0
189	0.000000	0.450000	0	0
190	0.050000	0.450000	0.0117822	0.0117563
191	0.100000	0.450000	0.0223232	0.022275
192	0.150000	0.450000	0.0316231	0.0315563
193	0.200000	0.450000	0.0396824	0.0396
194	0.250000	0.450000	0.0465012	0.0464063
195	0.300000	0.450000	0.05208	0.051975
196	0.350000	0.450000	0.0564188	0.0563063
197	0.400000	0.450000	0.0595178	0.0594
198	0.450000	0.450000	0.0613772	0.0612563
199	0.500000	0.450000	0.061997	0.061875
200	0.550000	0.450000	0.0613772	0.0612563
201	0.600000	0.450000	0.0595178	0.0594
202	0.650000	0.450000	0.0564188	0.0563063
203	0.700000	0.450000	0.05208	0.051975
204	0.750000	0.450000	0.0465012	0.0464063
205	0.800000	0.450000	0.0396824	0.0396
206	0.850000	0.450000	0.0316231	0.0315562
207	0.900000	0.450000	0.0223232	0.022275
208	0.950000	0.450000	0.0117822	0.0117562
209	1.000000	0.450000	0	0
210	0.000000	0.500000	0	0
211	0.050000	0.500000	0.0119012	0.011875
212	0.100000	0.500000	0.0225485	0.0225
213	0.150000	0.500000	0.0319423	0.031875
214	0.200000	0.500000	0.040083	0.04
215	0.250000	0.500000	0.0469707	0.046875
216	0.300000	0.500000	0.0526058	0.0525
217	0.350000	0.500000	0.0569885	0.056875
218	0.400000	0.500000	0.0601188	0.06
219	0.450000	0.500000	0.061997	0.061875
220	0.500000	0.500000	0.062623	0.0625
221	0.550000	0.500000	0.061997	0.061875
222	0.600000	0.500000	0.0601188	0.06
223	0.650000	0.500000	0.0569885	0.056875
224	0.700000	0.500000	0.0526058	0.0525
225	0.750000	0.500000	0.0469707	0.046875
226	0.800000	0.500000	0.040083	0.04
227	0.850000	0.500000	0.0319423	0.031875

228	0.900000	0.500000	0.0225485	0.0225
229	0.950000	0.500000	0.0119012	0.011875
230	1.000000	0.500000	0	0
231	0.000000	0.550000	0	0
232	0.050000	0.550000	0.0117822	0.0117562
233	0.100000	0.550000	0.0223232	0.022275
234	0.150000	0.550000	0.0316231	0.0315563
235	0.200000	0.550000	0.0396824	0.0396
236	0.250000	0.550000	0.0465012	0.0464062
237	0.300000	0.550000	0.05208	0.051975
238	0.350000	0.550000	0.0564188	0.0563062
239	0.400000	0.550000	0.0595178	0.0594
240	0.450000	0.550000	0.0613772	0.0612563
241	0.500000	0.550000	0.061997	0.061875
242	0.550000	0.550000	0.0613772	0.0612562
243	0.600000	0.550000	0.0595178	0.0594
244	0.650000	0.550000	0.0564188	0.0563062
245	0.700000	0.550000	0.05208	0.051975
246	0.750000	0.550000	0.0465012	0.0464062
247	0.800000	0.550000	0.0396824	0.0396
248	0.850000	0.550000	0.0316231	0.0315562
249	0.900000	0.550000	0.0223232	0.022275
250	0.950000	0.550000	0.0117822	0.0117562
251	1.000000	0.550000	0	0
252	0.000000	0.600000	0	0
253	0.050000	0.600000	0.0114255	0.0114
254	0.100000	0.600000	0.0216471	0.0216
255	0.150000	0.600000	0.0306653	0.0306
256	0.200000	0.600000	0.0384804	0.0384
257	0.250000	0.600000	0.0450927	0.045
258	0.300000	0.600000	0.0505024	0.0504
259	0.350000	0.600000	0.0547097	0.0546
260	0.400000	0.600000	0.0577148	0.0576
261	0.450000	0.600000	0.0595178	0.0594
262	0.500000	0.600000	0.0601188	0.06
263	0.550000	0.600000	0.0595178	0.0594
264	0.600000	0.600000	0.0577148	0.0576
265	0.650000	0.600000	0.0547097	0.0546
266	0.700000	0.600000	0.0505024	0.0504
267	0.750000	0.600000	0.0450927	0.045
268	0.800000	0.600000	0.0384804	0.0384
269	0.850000	0.600000	0.0306653	0.0306
270	0.900000	0.600000	0.0216471	0.0216
271	0.950000	0.600000	0.0114255	0.0114
272	1.000000	0.600000	0	0
273	0.000000	0.650000	0	0
274	0.050000	0.650000	0.0108308	0.0108062
275	0.100000	0.650000	0.0205204	0.020475
276	0.150000	0.650000	0.029069	0.0290063
277	0.200000	0.650000	0.0364771	0.0364

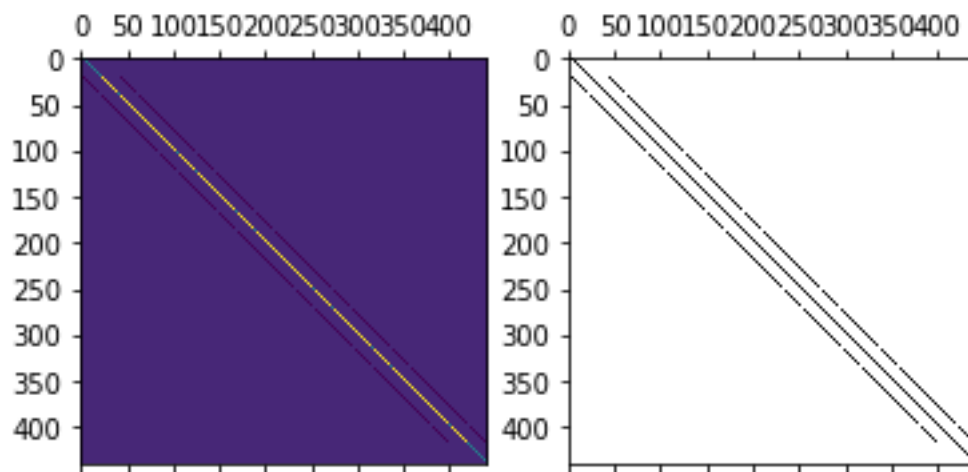
278	0.250000	0.650000	0.042745	0.0426562
279	0.300000	0.650000	0.0478729	0.047775
280	0.350000	0.650000	0.0518611	0.0517562
281	0.400000	0.650000	0.0547097	0.0546
282	0.450000	0.650000	0.0564188	0.0563063
283	0.500000	0.650000	0.0569885	0.056875
284	0.550000	0.650000	0.0564188	0.0563062
285	0.600000	0.650000	0.0547097	0.0546
286	0.650000	0.650000	0.0518611	0.0517562
287	0.700000	0.650000	0.0478729	0.047775
288	0.750000	0.650000	0.042745	0.0426562
289	0.800000	0.650000	0.0364771	0.0364
290	0.850000	0.650000	0.029069	0.0290062
291	0.900000	0.650000	0.0205204	0.020475
292	0.950000	0.650000	0.0108308	0.0108062
293	1.000000	0.650000	0	0
294	0.000000	0.700000	0	0
295	0.050000	0.700000	0.00999826	0.009975
296	0.100000	0.700000	0.0189428	0.0189
297	0.150000	0.700000	0.0268341	0.026775
298	0.200000	0.700000	0.0336724	0.0336
299	0.250000	0.700000	0.0394581	0.039375
300	0.300000	0.700000	0.0441916	0.0441
301	0.350000	0.700000	0.0478729	0.047775
302	0.400000	0.700000	0.0505024	0.0504
303	0.450000	0.700000	0.05208	0.051975
304	0.500000	0.700000	0.0526058	0.0525
305	0.550000	0.700000	0.05208	0.051975
306	0.600000	0.700000	0.0505024	0.0504
307	0.650000	0.700000	0.0478729	0.047775
308	0.700000	0.700000	0.0441916	0.0441
309	0.750000	0.700000	0.0394581	0.039375
310	0.800000	0.700000	0.0336724	0.0336
311	0.850000	0.700000	0.0268341	0.026775
312	0.900000	0.700000	0.0189428	0.0189
313	0.950000	0.700000	0.00999826	0.009975
314	1.000000	0.700000	0	0
315	0.000000	0.750000	0	0
316	0.050000	0.750000	0.00892776	0.00890625
317	0.100000	0.750000	0.0169144	0.016875
318	0.150000	0.750000	0.0239603	0.0239063
319	0.200000	0.750000	0.0300661	0.03
320	0.250000	0.750000	0.0352319	0.0351562
321	0.300000	0.750000	0.0394581	0.039375
322	0.350000	0.750000	0.042745	0.0426562
323	0.400000	0.750000	0.0450927	0.045
324	0.450000	0.750000	0.0465012	0.0464063
325	0.500000	0.750000	0.0469707	0.046875
326	0.550000	0.750000	0.0465012	0.0464062
327	0.600000	0.750000	0.0450927	0.045

328	0.650000	0.750000	0.042745	0.0426562
329	0.700000	0.750000	0.0394581	0.039375
330	0.750000	0.750000	0.0352319	0.0351562
331	0.800000	0.750000	0.0300661	0.03
332	0.850000	0.750000	0.0239603	0.0239062
333	0.900000	0.750000	0.0169144	0.016875
334	0.950000	0.750000	0.00892776	0.00890625
335	1.000000	0.750000	0	0
336	0.000000	0.800000	0	0
337	0.050000	0.800000	0.00761922	0.0076
338	0.100000	0.800000	0.0144349	0.0144
339	0.150000	0.800000	0.0204476	0.0204
340	0.200000	0.800000	0.0256579	0.0256
341	0.250000	0.800000	0.0300661	0.03
342	0.300000	0.800000	0.0336724	0.0336
343	0.350000	0.800000	0.0364771	0.0364
344	0.400000	0.800000	0.0384804	0.0384
345	0.450000	0.800000	0.0396824	0.0396
346	0.500000	0.800000	0.040083	0.04
347	0.550000	0.800000	0.0396824	0.0396
348	0.600000	0.800000	0.0384804	0.0384
349	0.650000	0.800000	0.0364771	0.0364
350	0.700000	0.800000	0.0336724	0.0336
351	0.750000	0.800000	0.0300661	0.03
352	0.800000	0.800000	0.0256579	0.0256
353	0.850000	0.800000	0.0204476	0.0204
354	0.900000	0.800000	0.0144349	0.0144
355	0.950000	0.800000	0.00761922	0.0076
356	1.000000	0.800000	0	0
357	0.000000	0.850000	0	0
358	0.050000	0.850000	0.00607253	0.00605625
359	0.100000	0.850000	0.0115042	0.011475
360	0.150000	0.850000	0.0162957	0.0162562
361	0.200000	0.850000	0.0204476	0.0204
362	0.250000	0.850000	0.0239603	0.0239062
363	0.300000	0.850000	0.0268341	0.026775
364	0.350000	0.850000	0.029069	0.0290062
365	0.400000	0.850000	0.0306653	0.0306
366	0.450000	0.850000	0.0316231	0.0315562
367	0.500000	0.850000	0.0319423	0.031875
368	0.550000	0.850000	0.0316231	0.0315562
369	0.600000	0.850000	0.0306653	0.0306
370	0.650000	0.850000	0.029069	0.0290062
371	0.700000	0.850000	0.0268341	0.026775
372	0.750000	0.850000	0.0239603	0.0239062
373	0.800000	0.850000	0.0204476	0.0204
374	0.850000	0.850000	0.0162957	0.0162562
375	0.900000	0.850000	0.0115042	0.011475
376	0.950000	0.850000	0.00607253	0.00605625
377	1.000000	0.850000	0	0

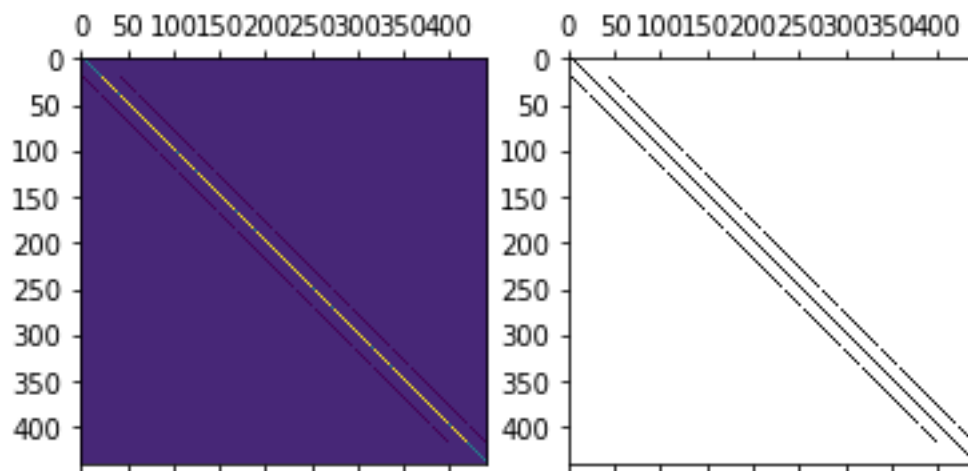
378	0.000000	0.900000	0	0
379	0.050000	0.900000	0.00428747	0.004275
380	0.100000	0.900000	0.00812191	0.0081
381	0.150000	0.900000	0.0115042	0.011475
382	0.200000	0.900000	0.0144349	0.0144
383	0.250000	0.900000	0.0169144	0.016875
384	0.300000	0.900000	0.0189428	0.0189
385	0.350000	0.900000	0.0205204	0.020475
386	0.400000	0.900000	0.0216471	0.0216
387	0.450000	0.900000	0.0223232	0.022275
388	0.500000	0.900000	0.0225485	0.0225
389	0.550000	0.900000	0.0223232	0.022275
390	0.600000	0.900000	0.0216471	0.0216
391	0.650000	0.900000	0.0205204	0.020475
392	0.700000	0.900000	0.0189428	0.0189
393	0.750000	0.900000	0.0169144	0.016875
394	0.800000	0.900000	0.0144349	0.0144
395	0.850000	0.900000	0.0115042	0.011475
396	0.900000	0.900000	0.00812191	0.0081
397	0.950000	0.900000	0.00428747	0.004275
398	1.000000	0.900000	0	0
399	0.000000	0.950000	0	0
400	0.050000	0.950000	0.00226367	0.00225625
401	0.100000	0.950000	0.00428747	0.004275
402	0.150000	0.950000	0.00607253	0.00605625
403	0.200000	0.950000	0.00761922	0.0076
404	0.250000	0.950000	0.00892776	0.00890625
405	0.300000	0.950000	0.00999826	0.009975
406	0.350000	0.950000	0.0108308	0.0108062
407	0.400000	0.950000	0.0114255	0.0114
408	0.450000	0.950000	0.0117822	0.0117562
409	0.500000	0.950000	0.0119012	0.011875
410	0.550000	0.950000	0.0117822	0.0117562
411	0.600000	0.950000	0.0114255	0.0114
412	0.650000	0.950000	0.0108308	0.0108062
413	0.700000	0.950000	0.00999826	0.009975
414	0.750000	0.950000	0.00892776	0.00890625
415	0.800000	0.950000	0.00761922	0.0076
416	0.850000	0.950000	0.00607253	0.00605625
417	0.900000	0.950000	0.00428747	0.004275
418	0.950000	0.950000	0.00226367	0.00225625
419	1.000000	0.950000	0	0
420	0.000000	1.000000	0	0
421	0.050000	1.000000	0	0
422	0.100000	1.000000	0	0
423	0.150000	1.000000	0	0
424	0.200000	1.000000	0	0
425	0.250000	1.000000	0	0
426	0.300000	1.000000	0	0
427	0.350000	1.000000	0	0

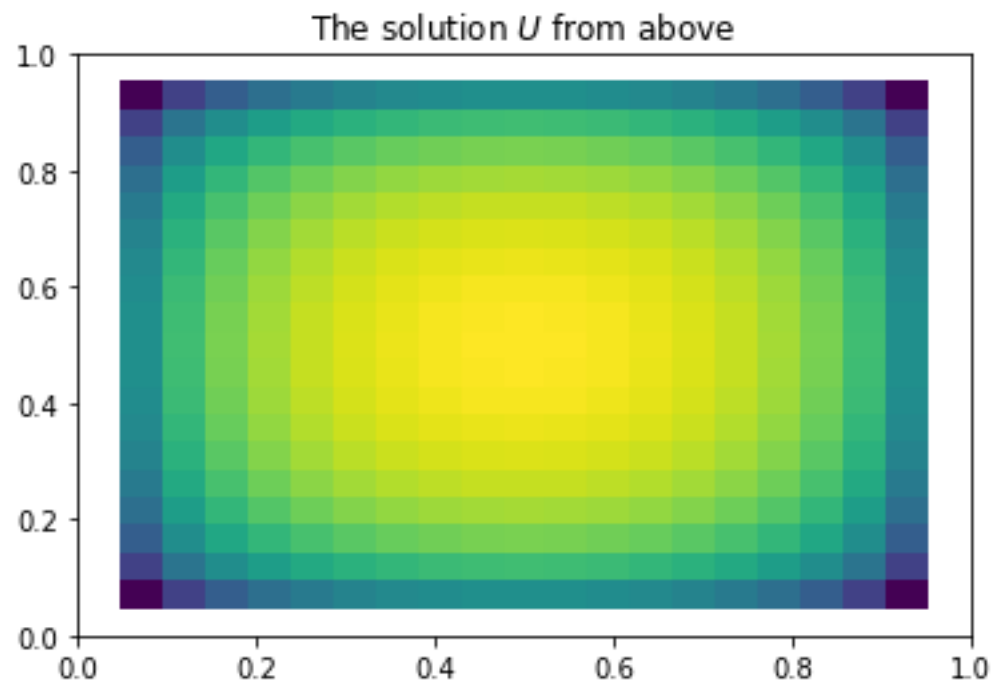
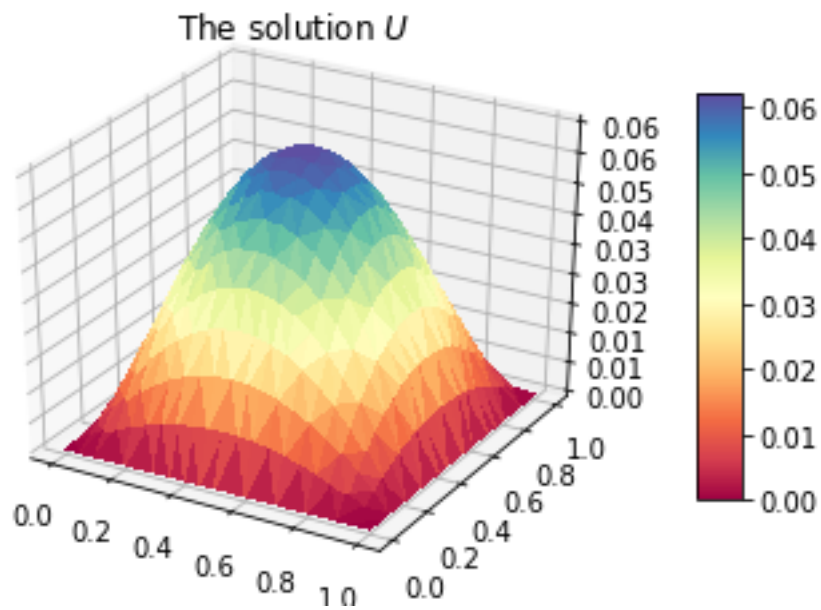
428	0.400000	1.000000	0	0
429	0.450000	1.000000	0	0
430	0.500000	1.000000	0	0
431	0.550000	1.000000	0	0
432	0.600000	1.000000	0	0
433	0.650000	1.000000	0	0
434	0.700000	1.000000	0	0
435	0.750000	1.000000	0	0
436	0.800000	1.000000	0	0
437	0.850000	1.000000	0	0
438	0.900000	1.000000	0	0
439	0.950000	1.000000	0	0
440	1.000000	1.000000	0	0

The Stiffness Matrix



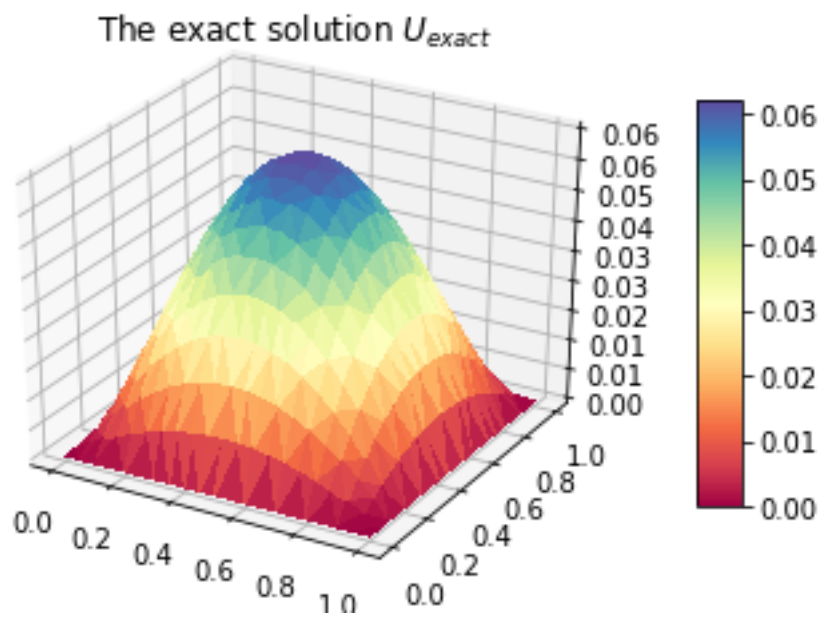
The Stiffness Matrix with BC contribution



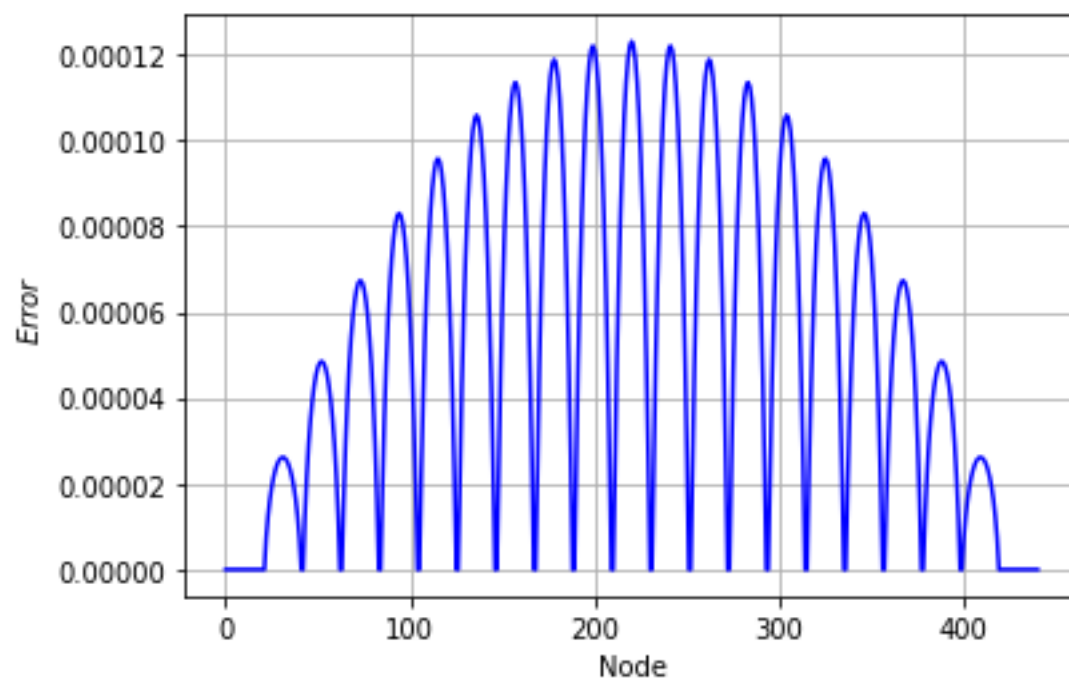


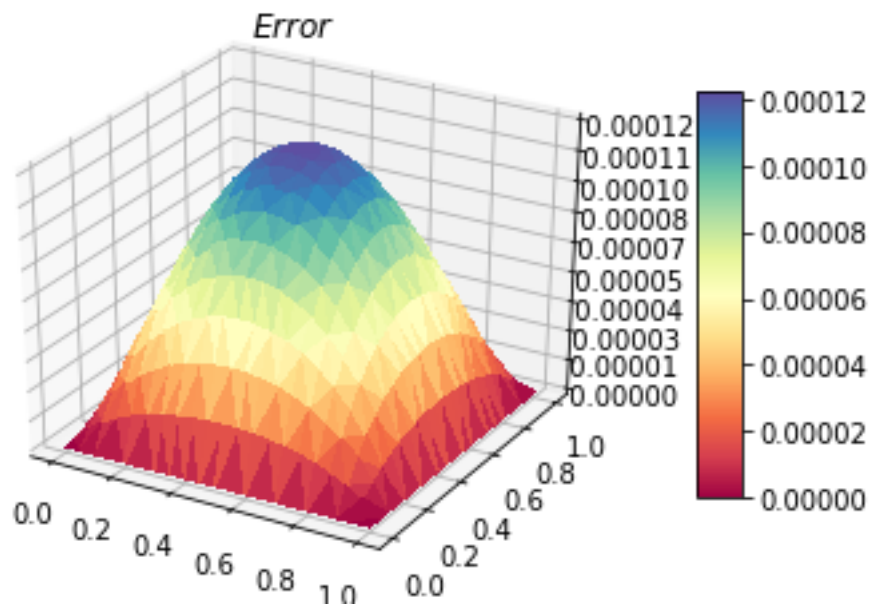
#####

The Exact Solution
 $U_{\text{exact}} = xy(1-x)(1-y)$
 evaluated on each node is



#####





The L2 error = 9.476203909265695e-05

The H1 error = 0.007456328684797033

#####

>> Normal end of execution.

In [2]: