#	Re{gam}	Im{gam}	Re{gam/ak}	Im{gam/ak}	nz
128	-2.000000	0.0000	2.000000	-0.0000	0
64	0.409970	1.2902	-0.409970	-1.2902	1
34	0.620760	-5.0059	-0.620760	5.0059	1
35	0.666670	-4.2240	-0.666670	4.2240	1
62	1.255300	6.0721	-1.255300	-6.0721	2
31	0.451570	-9.1219	-0.451570	9.1219	2
33	-5.812700	-3.9005	5.812700	3.9005	2
59	0.665780	11.9880	-0.665780	-11.9880	3
30	0.667400	-11.9890	-0.667400	11.9890	3
29	0.464250	-12.8490	-0.464250	12.8490	3
58	1.009500	13.0960	-1.009500	-13.0960	3
60	1.137000	9.5962	-1.137000	-9.5962	3
27	0.492340	-16.3290	-0.492340	16.3290	4
28	0.669480	-15.5360	-0.669480	15.5360	4
32	0.666750	-8.2752	-0.666750	8.2752	4
63	0.666680	4.2240	-0.666680	-4.2240	4
56	0.928060	16.4790	-0.928060	-16.4790	4
25	0.514520	-19.5820	-0.514520	19.5820	5
61	0.666560	8.2751	-0.666560	-8.2751	5
26	0.675220	-18.9260	-0.675220	18.9260	5
55	0.657260	18.9200	-0.657260	-18.9200	5
54	0.877780	19.6840	-0.877780	-19.6840	5
23	0.516660	-22.5720	-0.516660	22.5720	6
57	0.663410	15.5340	-0.663410	-15.5340	6
24	0.697030	-22.1560	-0.697030	22.1560	6
53	0.637510	22.1400	-0.637510	-22.1400	6
52	0.856680	22.6540	-0.856680	-22.6540	6
51	0.520730	25.1730	-0.520730	-25.1730	7
22	0.842520	-25.1800	-0.842520	25.1800	7
50	0.941760	25.3460	-0.941760	-25.3460	7
21	0.391920	-25.2910	-0.391920	25.2910	7
70	-2.000000	0.0000	2.000000	-0.0000	7
49	0.337230	27.8270	-0.337230	-27.8270	8
19	0.238820	-27.8580	-0.238820	27.8580	8
20	1.014200	-27.8190	-1.014200	27.8190	8
48	1.099000	27.8850	-1.099000	-27.8850	8
47	0.181910	30.1430	-0.181910	-30.1430	9
18	1.162000	-30.1340	-1.162000	30.1340	9
17	0.108340	-30.1490	-0.108340	30.1490	9
46	1.231000	30.1650	-1.231000	-30.1650	9
15	-0.014607	-32.1170	0.014607	32.1170	10
45	0.037739	32.1200	-0.037739	-32.1200	10
44	1.353300	32.1260	-1.353300	-32.1260	10
102	-2.000000	0.0000	2.000000	-0.0000	10
73	-2.000000	0.0000	2.000000	-0.0000	10
106	-2.000000	0.0000	2.000000	-0.0000	10

Figure 1: Propagating Modes - 32 Gridpoints

1

#	Re{gam}	Im{gam}	Re{gam/ak}	Im{gam/ak}	nz
106	-2.000000	0.000	2.000000	-0.000	10
67	0.000000	0.000	-0.000000	-0.000	10
16	1.301900	-32.113	-1.301900	32.113	10
13	-0.125380	-33.733	0.125380	33.733	11
103	-2.000000	0.000	2.000000	-0.000	11
43	-0.092378	33.737	0.092378	-33.737	11
42	1.462500	33.738	-1.462500	-33.738	11
14	1.429200	-33.733	-1.429200	33.733	11
113	-2.000000	0.000	2.000000	-0.000	12
79	-2.000000	0.000	2.000000	-0.000	12
119	-2.000000	0.000	2.000000	-0.000	12
68	-2.000000	0.000	2.000000	-0.000	12
115	-2.000000	0.000	2.000000	-0.000	13
114	-2.000000	0.000	2.000000	-0.000	13
92	-2.000000	0.000	2.000000	-0.000	13
90	-2.000000	0.000	2.000000	-0.000	13
85	-2.000000	0.000	2.000000	-0.000	13
10	-0.294720	-35.725	0.294720	35.725	13
39	-0.291950	35.723	0.291950	-35.723	13
38	1.628000	35.726	-1.628000	-35.726	13
9	1.625800	-35.723	-1.625800	35.723	13
7	-0.763890	-37.070	0.763890	37.070	14
6	0.666670	45.864	-0.666670	-45.864	14
12	1.524900	-34.972	-1.524900	34.972	14
96	-2.000000	0.000	2.000000	-0.000	14
11	-0.206180	-34.972	0.206180	34.972	14
93	-2.000000	0.000	2.000000	-0.000	14
2	0.666670	81.040	-0.666670	-81.040	14
41	-0.189800	34.974	0.189800	-34.974	14
82	-2.000000	0.000	2.000000	-0.000	14
81	-2.000000	0.000	2.000000	-0.000	14
40	1.541200	34.974	-1.541200	-34.974	14
37	-0.763890	37.070	0.763890	-37.070	14
74	-2.000000	0.000	2.000000	-0.000	14
36	2.097200	37.070	-2.097200	-37.070	14
4	0.666670	-45.864	-0.666670	45.864	14
69	-2.000000	0.000	2.000000	-0.000	14
8	2.097200	-37.070	-2.097200	37.070	14
1	0.666670	-81.040	-0.666670	81.040	14
125	-2.000000	0.000	2.000000	-0.000	15
121	-2.000000	0.000	2.000000	-0.000	15
109	-2.000000	0.000	2.000000	-0.000	15
101	-2.000000	0.000	2.000000	-0.000	15
97	-2.000000	0.000	2.000000	-0.000	15
88	-2.000000	0.000	2.000000	-0.000	15
86	-2.000000	0.000	2.000000	-0.000	15

Figure 2: Propagating Modes - 32 Gridpoints

#	Re{gam}	Im{gam}	Re{gam/ak}	Im{gam/ak}	nz
256	-2.00000	0.0000	2.00000	-0.0000	0
68	0.61983	-5.0120	-0.61983	5.0120	1
128	0.41007	1.2903	-0.41007	-1.2903	1
69	0.66667	-4.1893	-0.66667	4.1893	1
65	0.44678	-9.1715	-0.44678	9.1715	2
126	1.25850	6.0821	-1.25850	-6.0821	2
67	-5.81870	-3.8972	5.81870	3.8972	2
63	0.45639	-13.0120	-0.45639	13.0120	3
122	1.01870	13.2630	-1.01870	-13.2630	3
124	1.14350	9.6510	-1.14350	-9.6510	3
66	0.66667	-8.2349	-0.66667	8.2349	4
61	0.48291	-16.7060	-0.48291	16.7060	4
120	0.93854	16.8600	-0.93854	-16.8600	4
125	0.66666	8.2349	-0.66666	-8.2349	5
59	0.50696	-20.3100	-0.50696	20.3100	5
60	0.66716	-19.2820	-0.66716	19.2820	5
64	0.66672	-11.9960	-0.66672	11.9960	5
123	0.66660	11.9960	-0.66660	-11.9960	5
118	0.88613	20.4130	-0.88613	-20.4130	5
55	0.52656	-23.8360	-0.52656	23.8360	6
62	0.66686	-15.6690	-0.66686	15.6690	6
116	0.84993	23.9100	-0.84993	-23.9100	6
115	0.66430	26.3400	-0.66430	-26.3400	7
119	0.66606	19.2820	-0.66606	-19.2820	7
53	0.54212	-27.2860	-0.54212	27.2860	7
54	0.66869	-26.3410	-0.66869	26.3410	7
114	0.82388	27.3420	-0.82388	-27.3420	7
117	0.66541	22.8400	-0.66541	-22.8400	8
127	0.66667	4.1893	-0.66667	-4.1893	8
56	0.66772	-22.8400	-0.66772	22.8400	8
121	0.66643	15.6690	-0.66643	-15.6690	8
51	0.55419	-30.6550	-0.55419	30.6550	8
112	0.80483	30.6990	-0.80483	-30.6990	8
49	0.56287	-33.9350	-0.56287	33.9350	9
110	0.79135	33.9710	-0.79135	-33.9710	9
47	0.56716	-37.1120	-0.56716	37.1120	10
113	0.66247	29.7790	-0.66247	-29.7790	10
52	0.67033	-29.7810	-0.67033	29.7810	10
48	0.67874	-36.4620	-0.67874	36.4620	10
109	0.65346	36.4580	-0.65346	-36.4580	10
108	0.78366	37.1440	-0.78366	-37.1440	10
111	0.65935	33.1530	-0.65935	-33.1530	11
50	0.67318	-33.1550	-0.67318	33.1550	11
45	0.56121	-40.1690	-0.56121	40.1690	11
46	0.69325	-39.7060	-0.69325	39.7060	11
107	0.63909	39.6980	-0.63909	-39.6980	11

Figure 3: Propagating Modes - 64 Gridpoints

3

#	Re{gam}	Im{gam}	Re{gam/ak}	Im{gam/ak}	nz
512	-2.00000	0.0000	2.00000	-0.0000	0
256	0.41009	1.2904	-0.41009	-1.2904	1
234	0.61961	-5.0134	-0.61961	5.0134	1
235	0.66667	-4.1716	-0.66667	4.1716	1
254	1.25920	6.0844	-1.25920	-6.0844	2
231	0.44568	-9.1831	-0.44568	9.1831	2
233	-5.81940	-3.8968	5.81940	3.8968	2
250	1.02110	13.3030	-1.02110	-13.3030	3
229	0.45450	-13.0490	-0.45450	13.0490	3
252	1.14510	9.6638	-1.14510	-9.6638	3
227	0.48037	-16.7940	-0.48037	16.7940	4
248	0.94149	16.9490	-0.94149	-16.9490	4
223	0.50393	-20.4770	-0.50393	20.4770	5
246	0.88953	20.5820	-0.88953	-20.5820	5
213	0.52328	-24.1220	-0.52328	24.1220	6
244	0.85349	24.1970	-0.85349	-24.1970	6
119	0.53898	-27.7370	-0.53898	27.7370	7
242	0.82719	27.7940	-0.82719	-27.7940	7
117	0.55181	-31.3260	-0.55181	31.3260	8
232	0.66667	-8.2081	-0.66667	8.2081	8
240	0.80721	31.3700	-0.80721	-31.3700	8
115	0.56242	-34.8890	-0.56242	34.8890	9
230	0.66667	-11.9740	-0.66667	11.9740	9
238	0.79156	34.9240	-0.79156	-34.9240	9
113	0.57128	-38.4250	-0.57128	38.4250	10
236	0.77902	38.4540	-0.77902	-38.4540	10
253	0.66667	8.2081	-0.66667	-8.2081	11
111	0.57874	-41.9340	-0.57874	41.9340	11
225	0.76879	41.9590	-0.76879	-41.9590	11
109	0.58506	-45.4140	-0.58506	45.4140	12
228	0.66668	-15.6700	-0.66668	15.6700	12
221	0.76035	45.4350	-0.76035	-45.4350	12
107	0.59040	-48.8630	-0.59040	48.8630	13
251	0.66666	11.9740	-0.66666	-11.9740	13
219	0.75335	48.8810	-0.75335	-48.8810	13
118	0.66691	-30.1860	-0.66691	30.1860	14
255	0.66667	4.1716	-0.66667	-4.1716	14
241	0.66638	30.1860	-0.66638	-30.1860	14
105	0.59487	-52.2790	-0.59487	52.2790	14
249	0.66665	15.6700	-0.66665	-15.6700	14
217	0.74756	52.2940	-0.74756	-52.2940	14
243	0.66649	26.5880	-0.66649	-26.5880	15
103	0.59854	-55.6580	-0.59854	55.6580	15
104	0.66993	-54.7430	-0.66993	54.7430	15
216	0.66309	54.7430	-0.66309	-54.7430	15
120	0.66681	-26.5880	-0.66681	26.5880	15

Figure 4: Propagating Modes - 128 Gridpoints

4

#	Re{gam}	Im{gam}	Re{gam/ak}	Im{gam/ak}	nz
1024	-2.00000	0.0000	2.00000	-0.0000	0
512	0.41010	1.2904	-0.41010	-1.2904	1
494	0.61956	-5.0137	-0.61956	5.0137	1
495	0.66667	-4.1627	-0.66667	4.1627	1
510	1.25940	6.0850	-1.25940	-6.0850	2
491	0.44542	-9.1859	-0.44542	9.1859	2
493	-5.81950	-3.8968	5.81950	3.8968	2
489	0.45404	-13.0590	-0.45404	13.0590	3
506	1.02160	13.3120	-1.02160	-13.3120	3
508	1.14550	9.6669	-1.14550	-9.6669	3
487	0.47973	-16.8150	-0.47973	16.8150	4
504	0.94225	16.9700	-0.94225	-16.9700	4
485	0.50314	-20.5180	-0.50314	20.5180	5
502	0.89044	20.6220	-0.89044	-20.6220	5
481	0.52234	-24.1910	-0.52234	24.1910	6
500	0.85454	24.2660	-0.85454	-24.2660	6
477	0.53792	-27.8450	-0.53792	27.8450	7
498	0.82835	27.9020	-0.82835	-27.9020	7
473	0.55066	-31.4850	-0.55066	31.4850	8
496	0.80845	31.5300	-0.80845	-31.5300	8
469	0.56122	-35.1140	-0.56122	35.1140	9
483	0.79284	35.1500	-0.79284	-35.1500	9
465	0.57008	-38.7340	-0.57008	38.7340	10
479	0.78028	38.7630	-0.78028	-38.7630	10
461	0.57761	-42.3440	-0.57761	42.3440	11
475	0.76995	42.3680	-0.76995	-42.3680	11
455	0.58408	-45.9450	-0.58408	45.9450	12
471	0.76133	45.9660	-0.76133	-45.9660	12
451	0.58969	-49.5380	-0.58969	49.5380	13
467	0.75401	49.5560	-0.75401	-49.5560	13
447	0.59460	-53.1210	-0.59460	53.1210	14
492	0.66667	-8.1932	-0.66667	8.1932	14
463	0.74774	53.1370	-0.74774	-53.1370	14
443	0.59893	-56.6950	-0.59893	56.6950	15
459	0.74230	56.7090	-0.74230	-56.7090	15
439	0.60277	-60.2590	-0.60277	60.2590	16
457	0.73755	60.2710	-0.73755	-60.2710	16
435	0.60619	-63.8130	-0.60619	63.8130	17
453	0.73336	63.8240	-0.73336	-63.8240	17
429	0.60925	-67.3570	-0.60925	67.3570	18
449	0.72966	67.3660	-0.72966	-67.3660	18
425	0.61200	-70.8890	-0.61200	70.8890	19
490	0.66667	-11.9560	-0.66667	11.9560	19
445	0.72636	70.8980	-0.72636	-70.8980	19
419	0.61448	-74.4100	-0.61448	74.4100	20
441	0.72342	74.4180	-0.72342	-74.4180	20

Figure 5: Propagating Modes - 256 Gridpoints
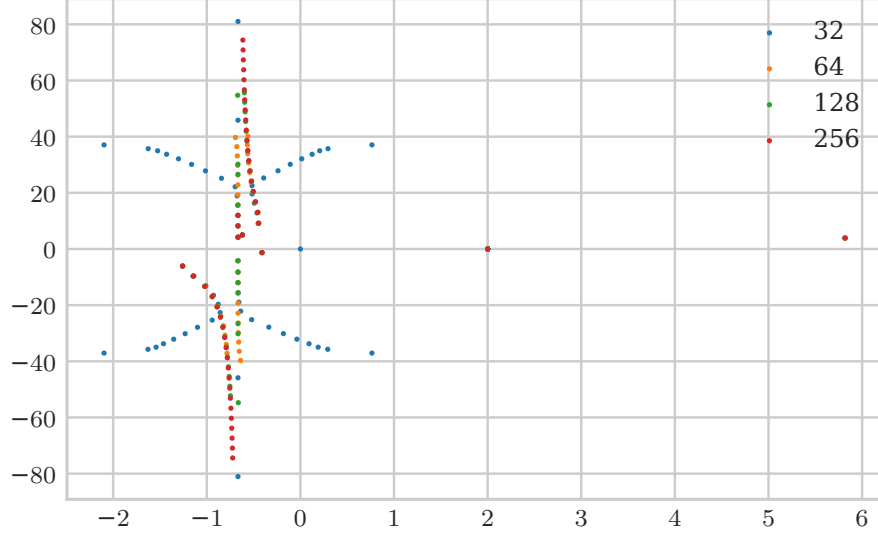
Figure 6: Discrete Acoustic Disturbances: Cylinder, Uniform Mean Flow with Liner.
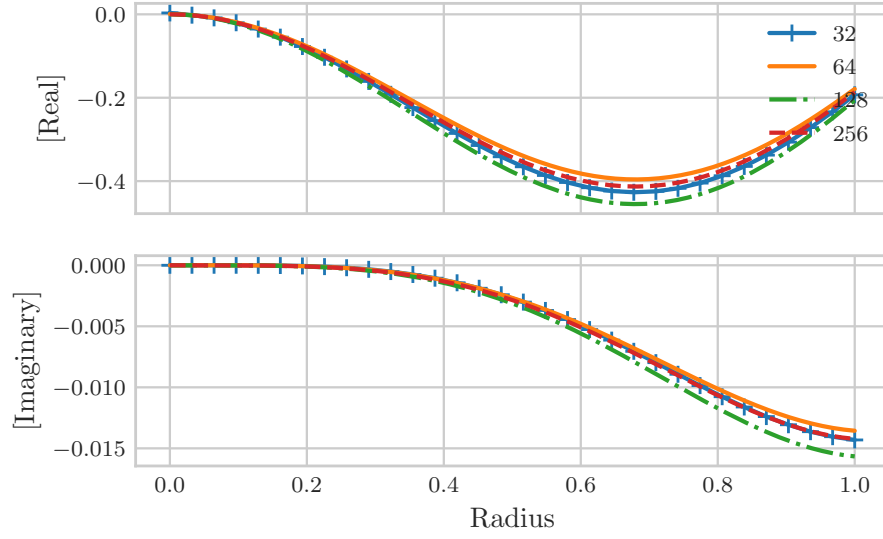
Figure 7: Propagating Mode $\gamma_0^+ = 0.620 - 5.014i$
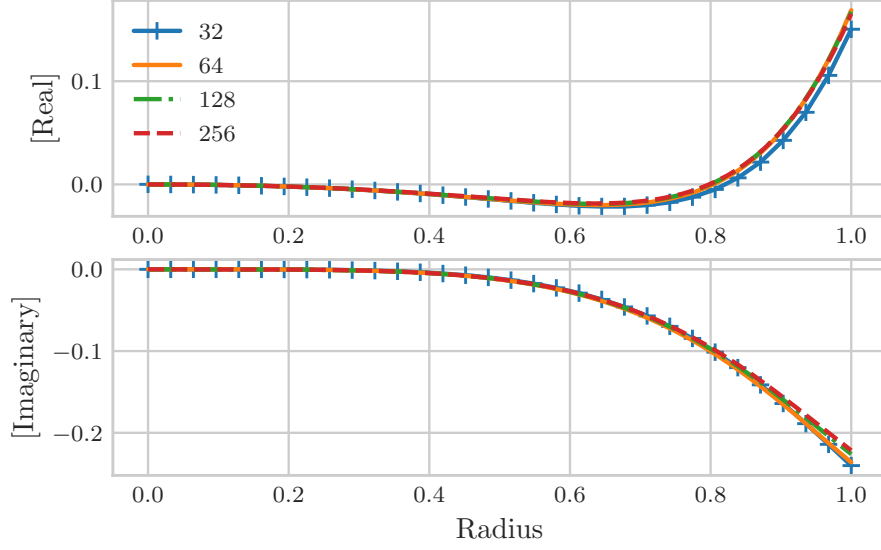
Figure 8: Propagating Mode $\gamma_1^+ = -5.820 - 3.897i$
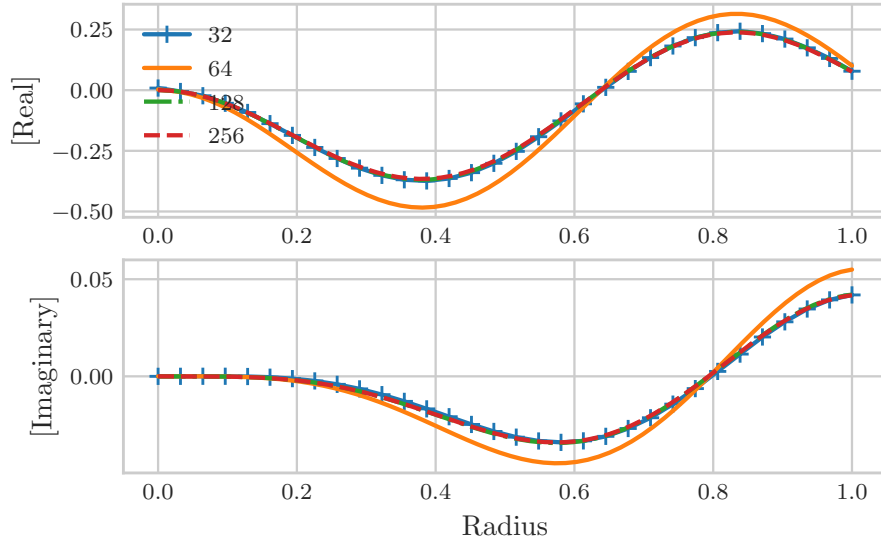
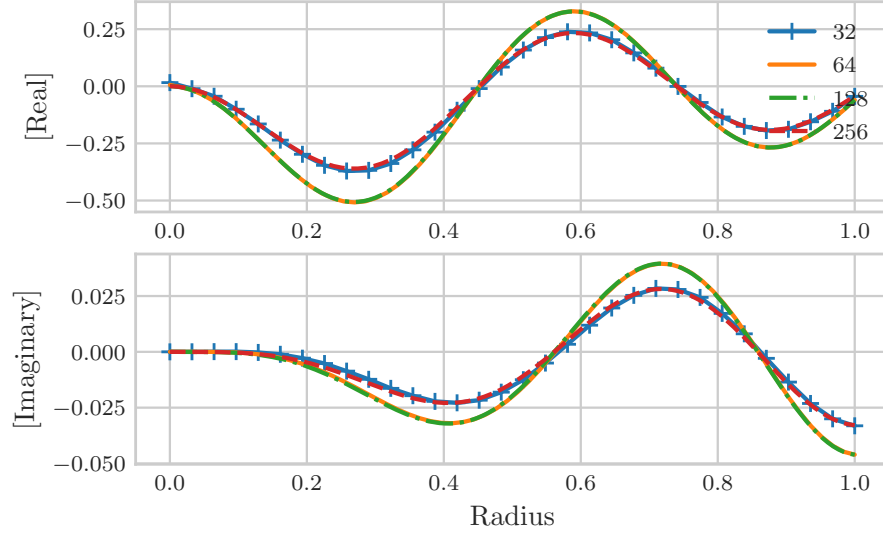Figure 9: Propagating Mode $\gamma_2^+ = 0.445 - 9.187i$

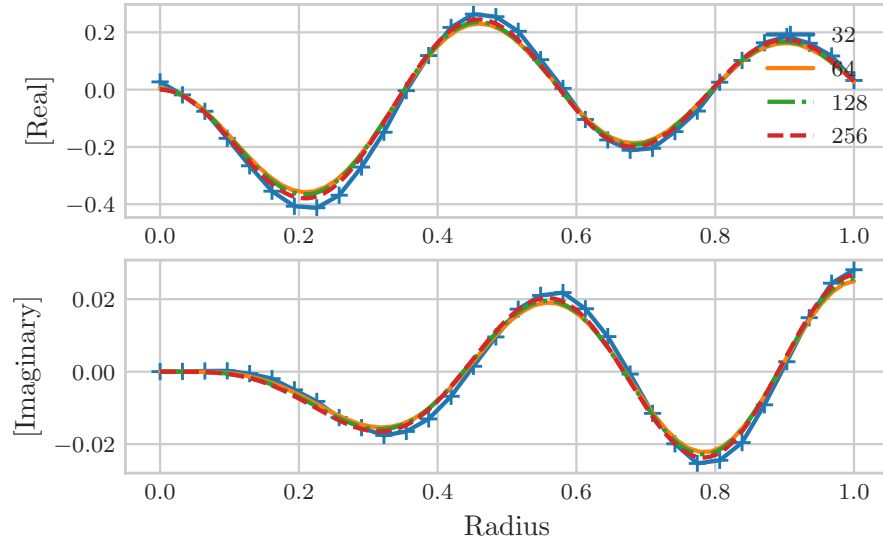Figure 10: Propagating Mode $\gamma_3^+ = 0.453 - 13.062i$

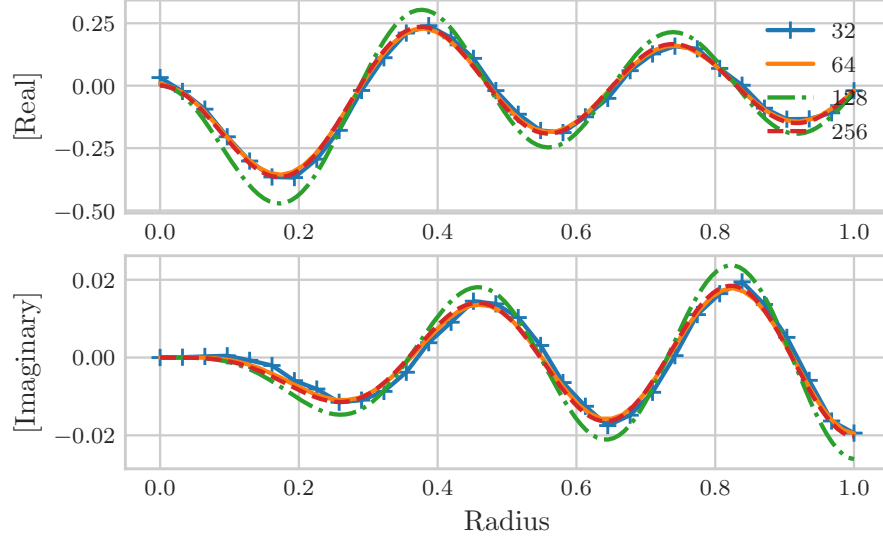Figure 11: Propagating Mode $\gamma_4^+ = 0.480 - 16.822i$

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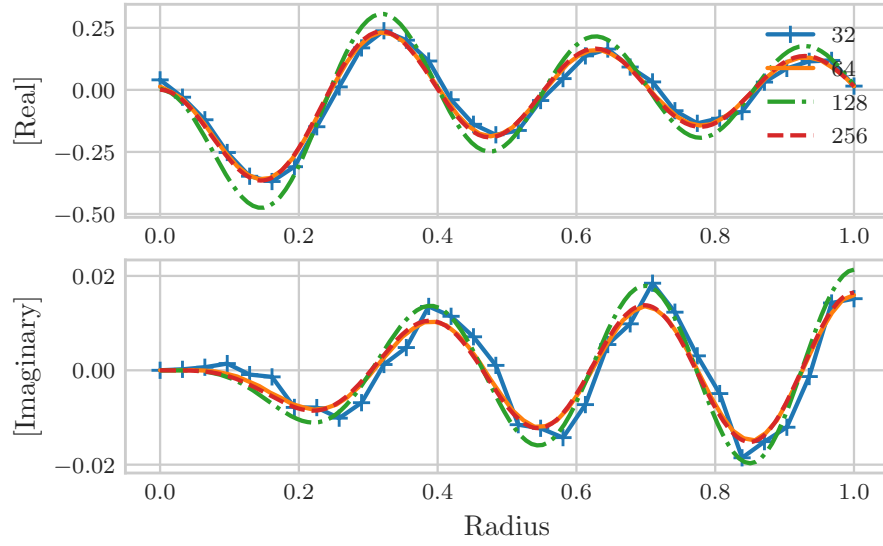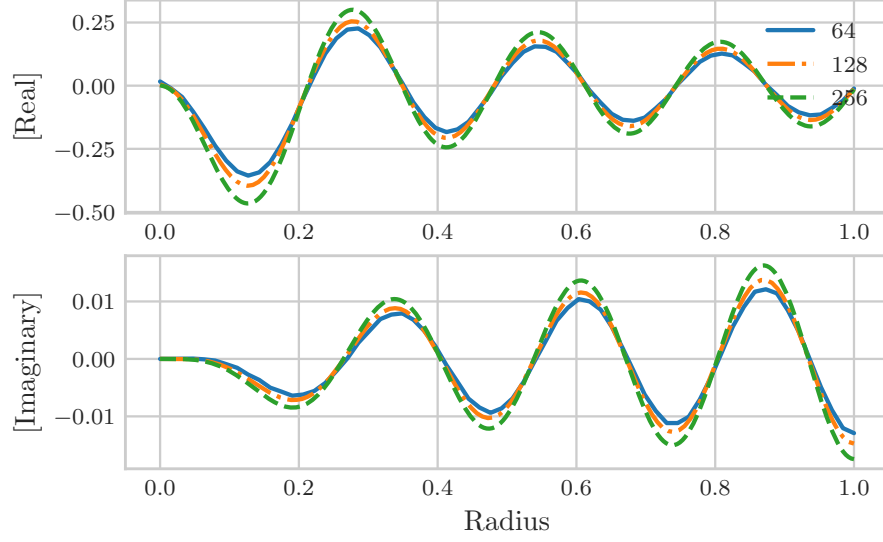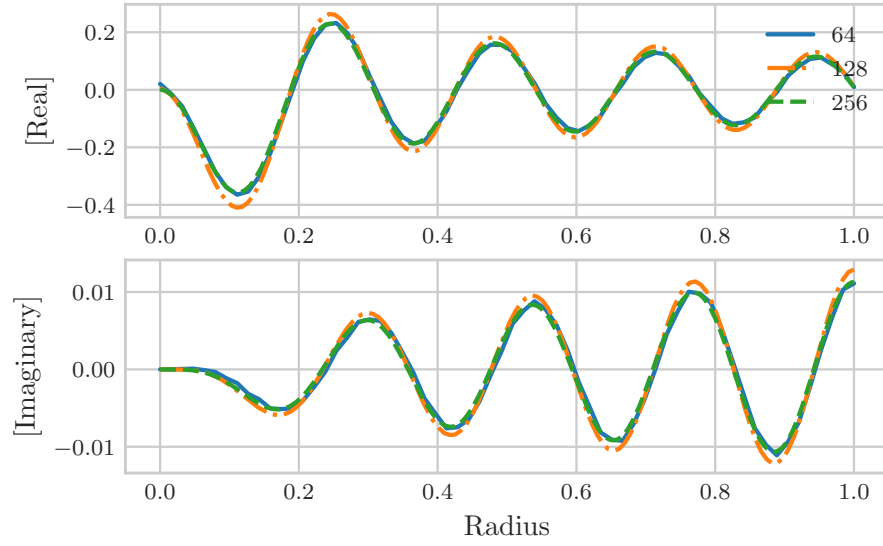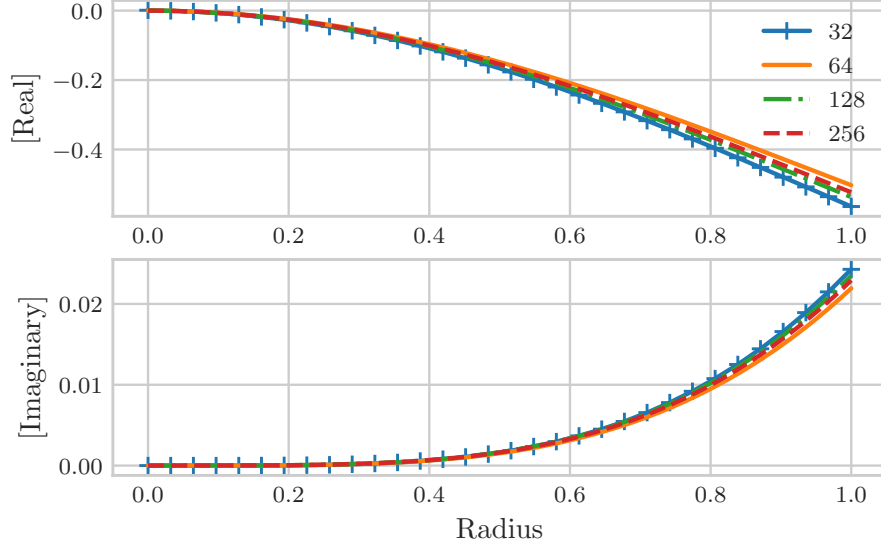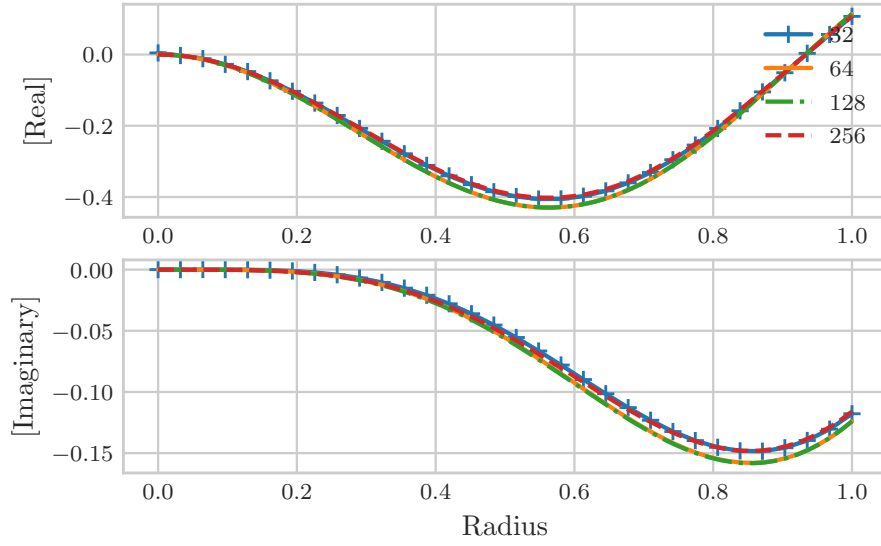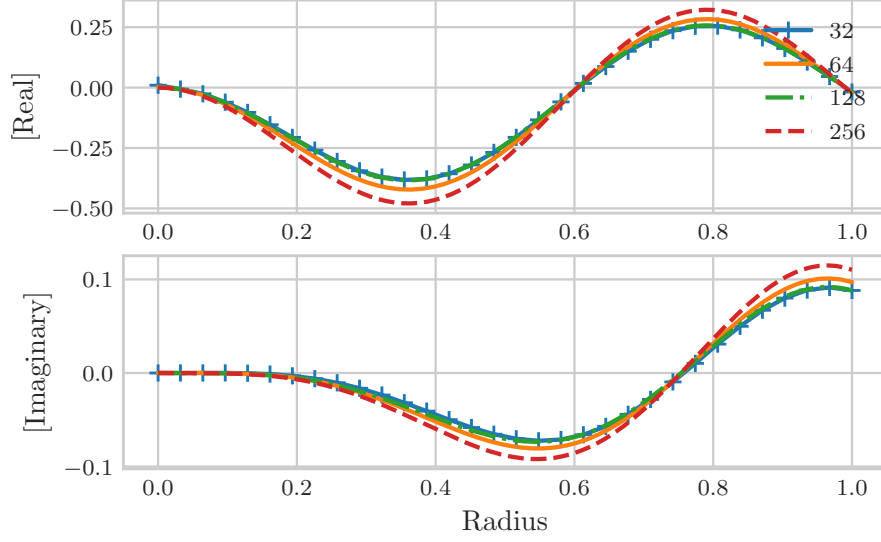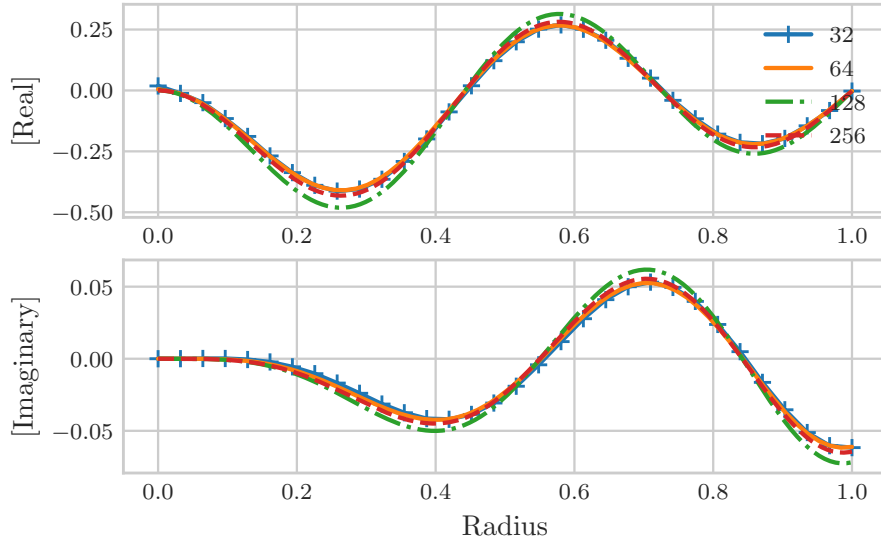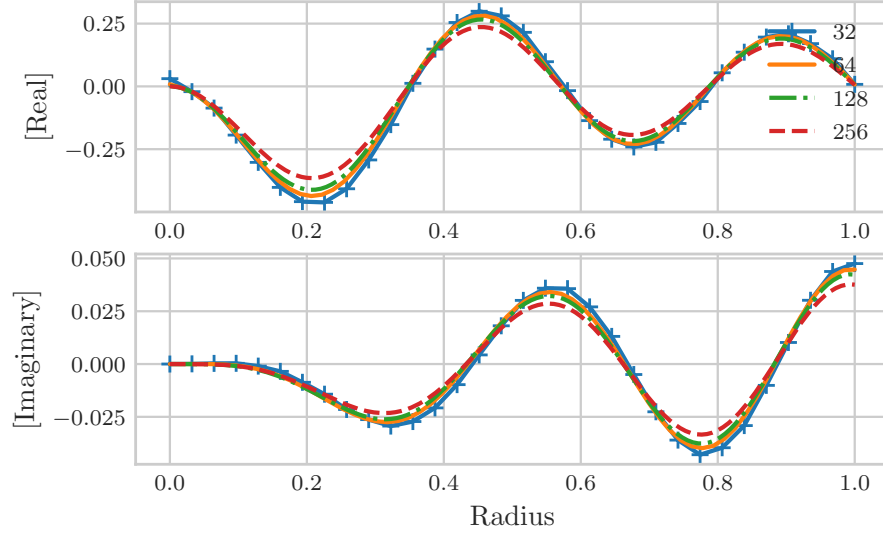Figure 12: Propagating Mode $\gamma_5^+ = 0.503 - 20.531$

Figure 13: Propagating Mode $\gamma_6^+ = 0.522 - 24.213i$

Figure 14: Propagating Mode $\gamma_7^+ = 0.538 - 27.880i$

Figure 15: Propagating Mode $\gamma_8^+ = 0.550 - 31.537$

Figure 16: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

Figure 17: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

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Figure 18: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

Figure 19: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

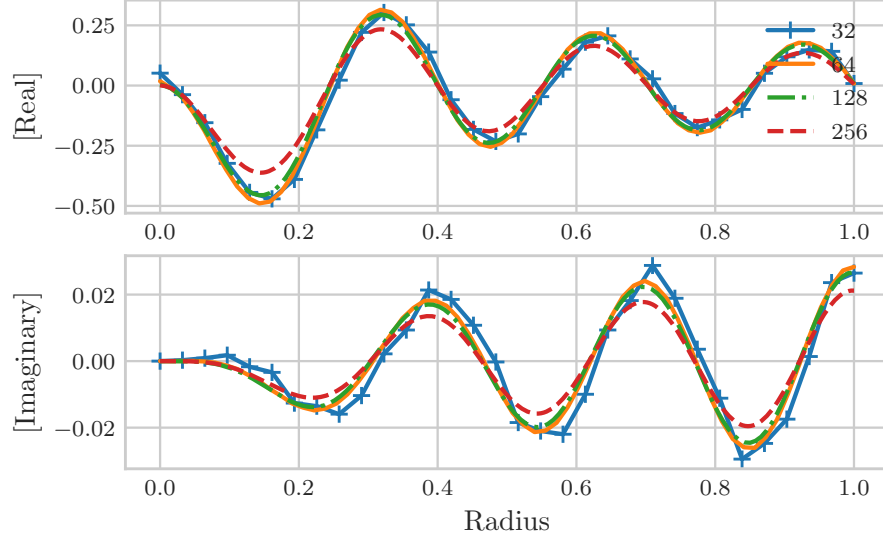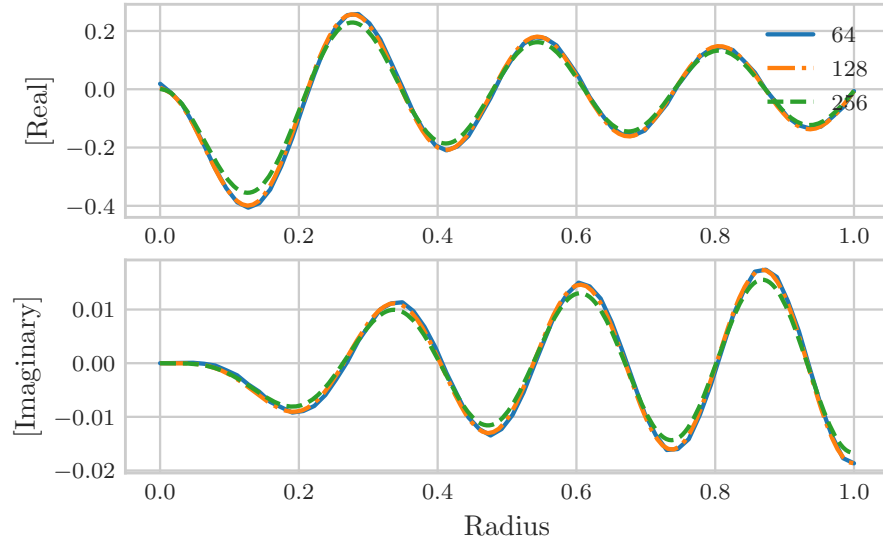Figure 20: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$
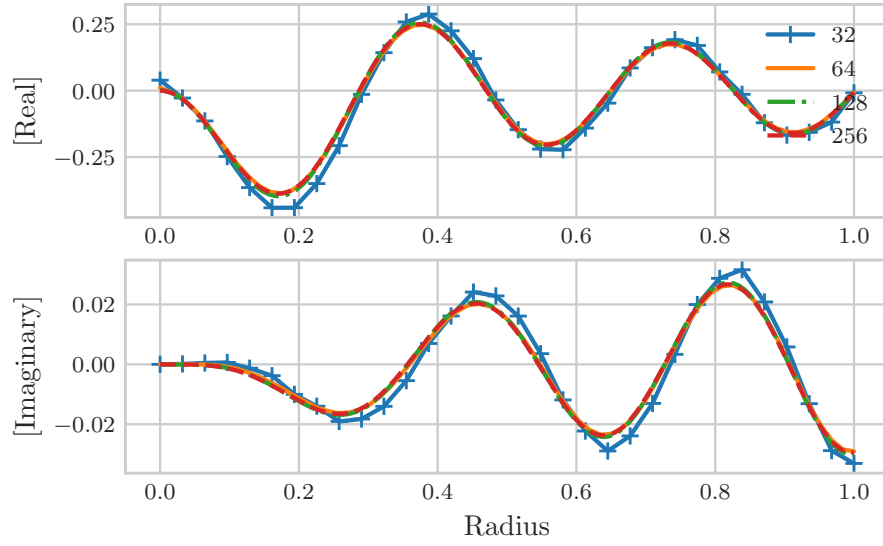
Figure 21: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

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Figure 22: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$
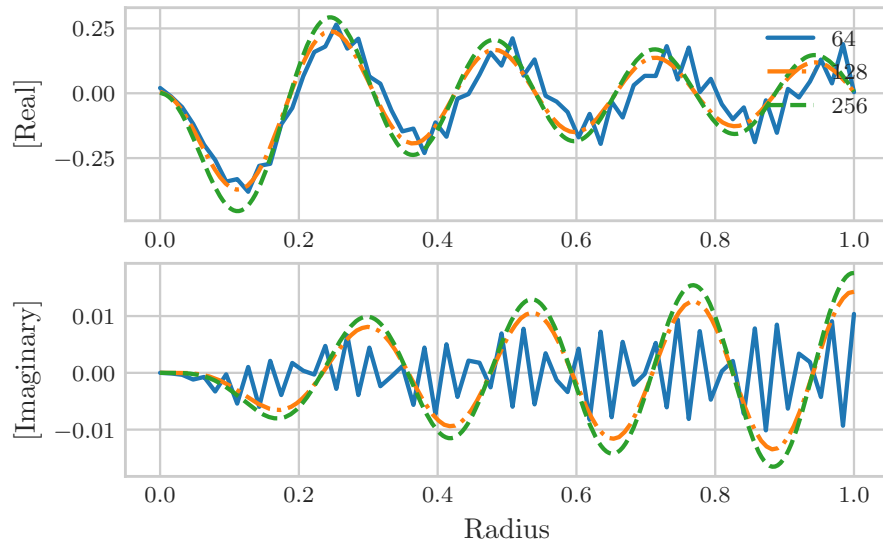

Figure 23: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$

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Figure 24: Propagating Mode $\gamma_0^- = 0.410 - 1.290i$