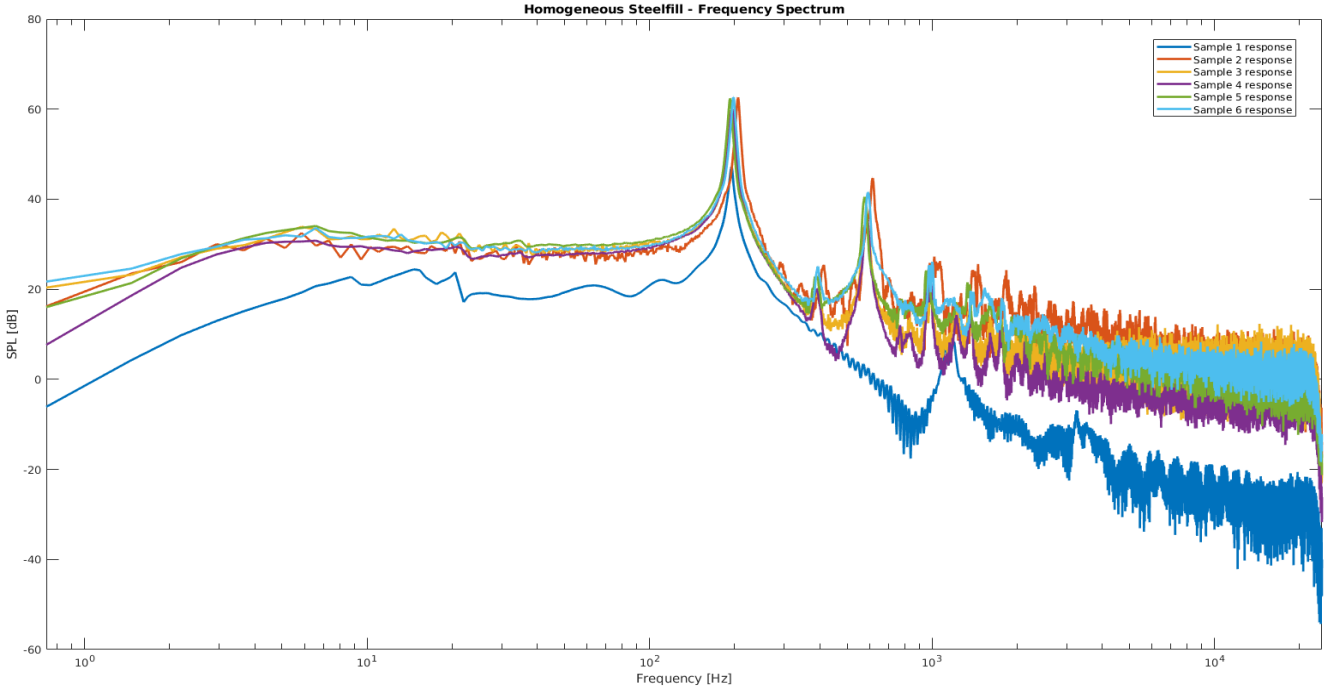
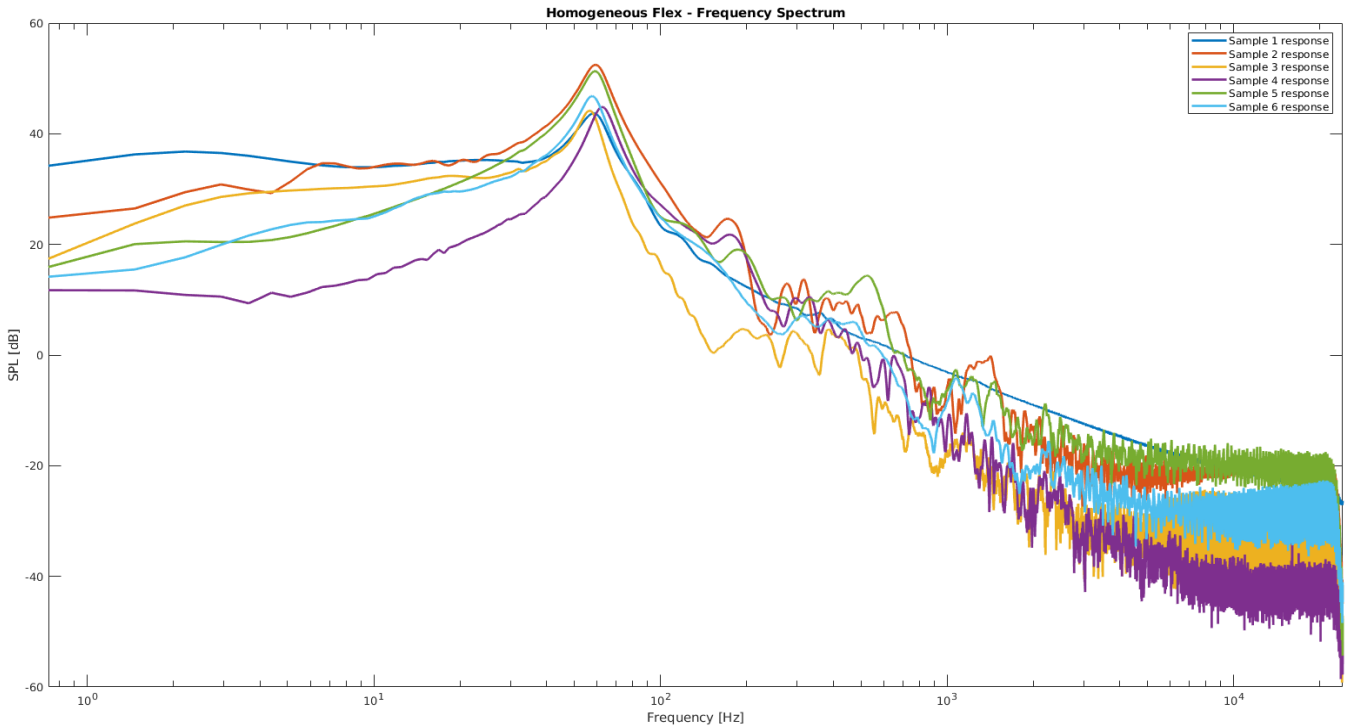


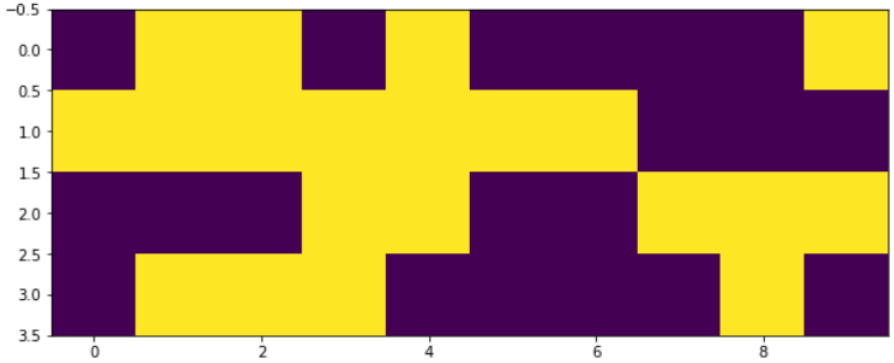
Sample No.	L[mm]	ΔL[mm]	t[mm]	Δt[mm]	w[mm]	Δw[mm]	V[mm3]	ΔV[mm3]	m[grams]	ρ[kg/m3]	Δρ[kg/m3]
1	80.4	0.1	4.0	0.1	20.3	0.1	8152.5	254.1	23.8	2919.4	91.0
2	80.1	0.1	4.0	0.0	19.9	0.1	7968.0	50.0	23.8	2987.0	18.7
3	80.1	0.1	4.1	0.1	20.1	0.1	8209.0	251.3	23.9	2911.4	89.1
4	80.0	0.1	3.9	0.1	20.1	0.1	7879.2	251.1	23.5	2982.5	95.0
5	80.0	0.1	3.9	0.1	20.2	0.2	7918.4	291.3	23.6	2980.4	109.7
6	80.0	0.1	3.8	0.1	20.2	0.1	7756.8	252.2	23.5	3029.6	98.5
Average	**80.1**	**0.1**	**4.0**	**0.1**	**20.1**	**0.1**	**7980.6**	**225.0**	**23.7**	**2968.4**	**83.7**

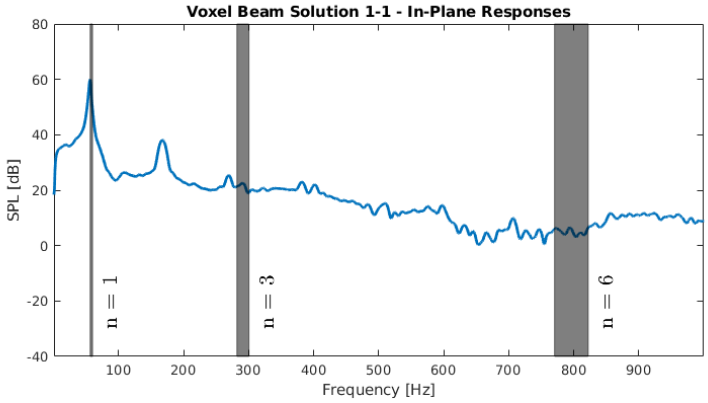
Sample No.	f1 [Hz]	Δf1[Hz]	%f1[Hz]	Measured E[GPa]	ΔE[GPa]	%E
1	194.82	1.95	0.99%	3.83	0.08	2.02%
2	205.81	9.03	4.59%	4.28	0.37	9.34%
3	194.09	2.69	1.36%	3.80	0.11	2.76%
4	195.56	1.22	0.62%	3.86	0.05	1.28%
5	192.63	4.15	2.11%	3.75	0.17	4.22%
6	197.75	0.98	0.50%	3.95	0.04	0.95%
Average	**196.78**	**3.34**	**1.70%**	**3.91**	**0.13**	**3.43%**

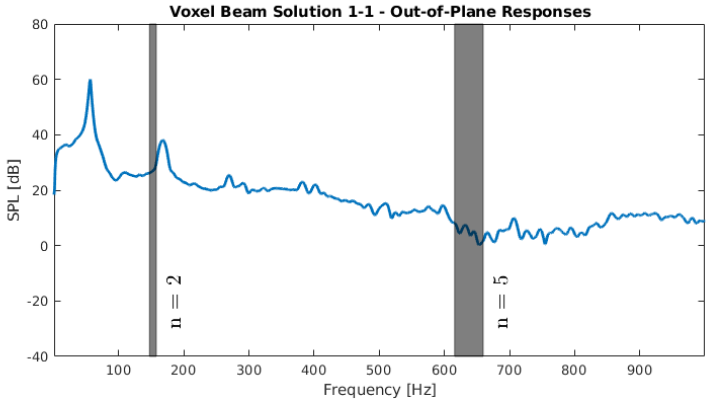


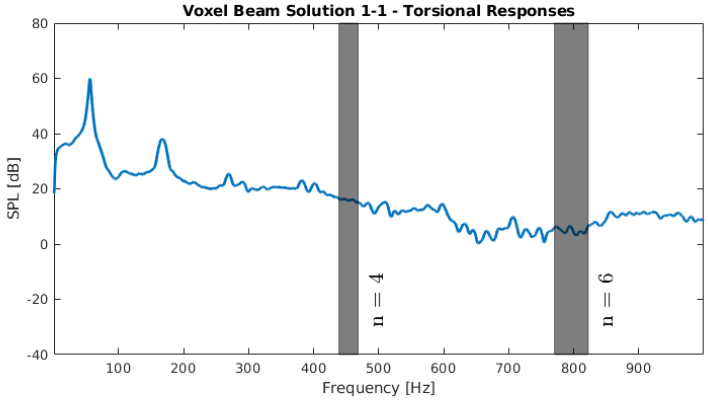
Sample No.	L[mm]	ΔL[mm]	t[mm]	Δt[mm]	w[mm]	Δw[mm]	V[mm3]	ΔV[mm3]	m[grams]	ρ[kg/m3]	Δρ[kg/m3]
1	79.2	0.1	3.8	0.1	19.7	0.0	7504.9	207.0	8.6	1145.9	31.6
2	78.8	0.1	3.8	0.1	19.6	0.1	7437.0	243.1	8.6	1156.4	37.8
3	79.0	0.2	3.9	0.0	19.5	0.2	7568.0	96.8	8.6	1136.4	14.5
4	78.8	0.0	3.8	0.1	19.6	0.0	7437.0	195.7	8.7	1169.8	30.8
5	78.8	0.1	3.9	0.1	19.6	0.1	7591.5	243.0	8.6	1132.9	36.3
6	79.0	0.1	3.8	0.1	19.5	0.1	7413.9	242.5	8.5	1146.5	37.5
Average	**78.9**	**0.1**	**3.8**	**0.1**	**19.6**	**0.1**	**7492.0**	**204.7**	**8.6**	**1148.0**	**31.4**

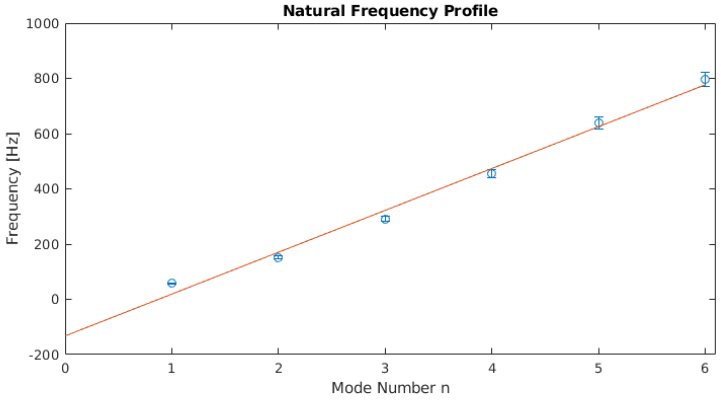
Sample No.	f1 [Hz]	Δf1[Hz]	%f1[Hz]	Measured E[MPa]	ΔE[MPa]	%E
1	58.59	0.37	0.63%	123.50	1.66	1.33%
2	59.33	0.37	0.63%	126.61	1.44	1.15%
3	56.40	2.56	4.43%	114.41	10.75	8.59%
4	62.26	3.30	5.70%	139.42	14.26	11.39%
5	59.33	0.37	0.63%	126.61	1.44	1.15%
6	57.86	1.10	1.90%	120.43	4.73	3.78%
Average	**57.86**	**1.34**	**2.32%**	**125.16**	**5.72**	**4.57%**

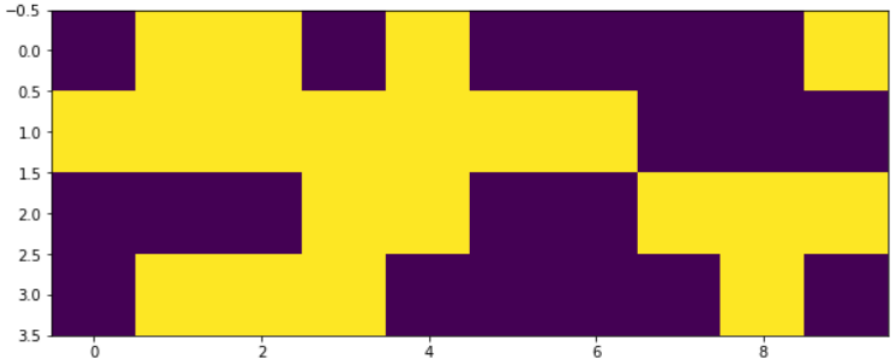


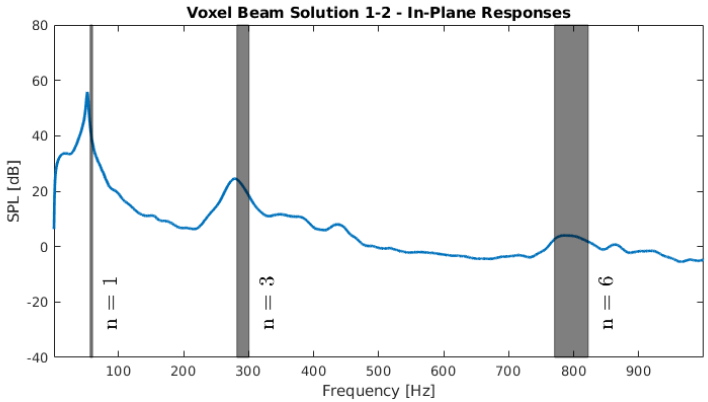

Voxel Beam Solution 1-1 - In-Plane Responses
SPL [dB]
Frequency [Hz]
n = 1
n = 3
n = 6

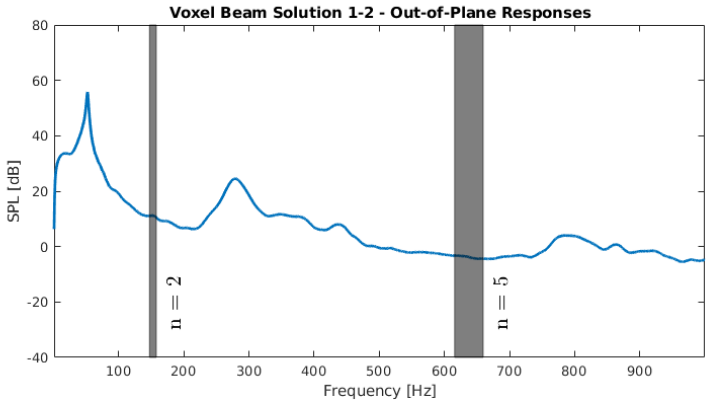

Voxel Beam Solution 1-1 - Out-of-Plane Responses
SPL [dB]
Frequency [Hz]
n = 2
n = 5

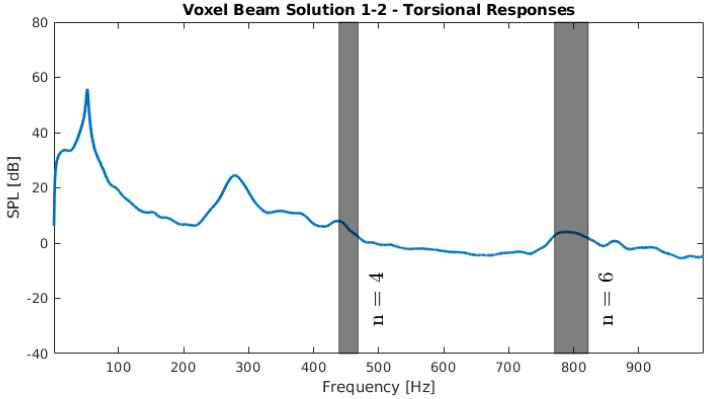

Voxel Beam Solution 1-1 - Torsional Responses
SPL [dB]
Frequency [Hz]
n = 4
n = 6

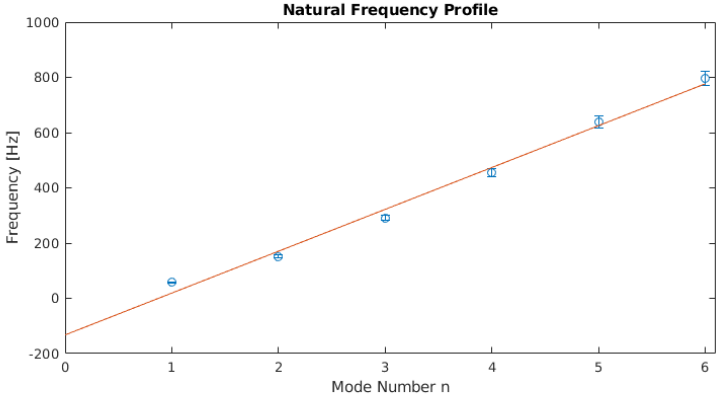

Natural Frequency Profile
Frequency [Hz]
Mode Number n

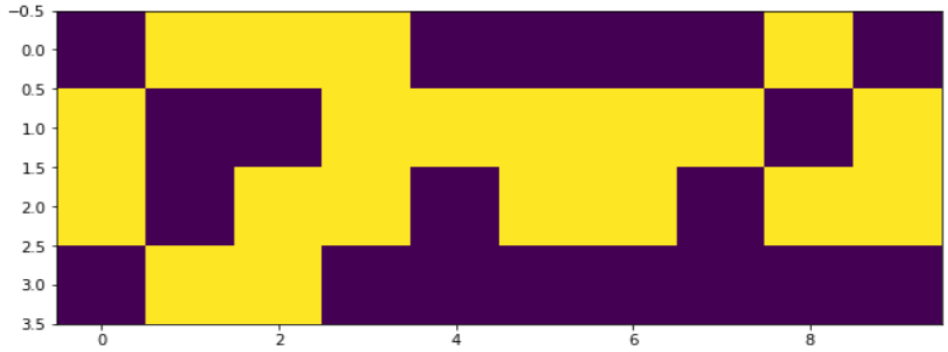

−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
2
4
6
8

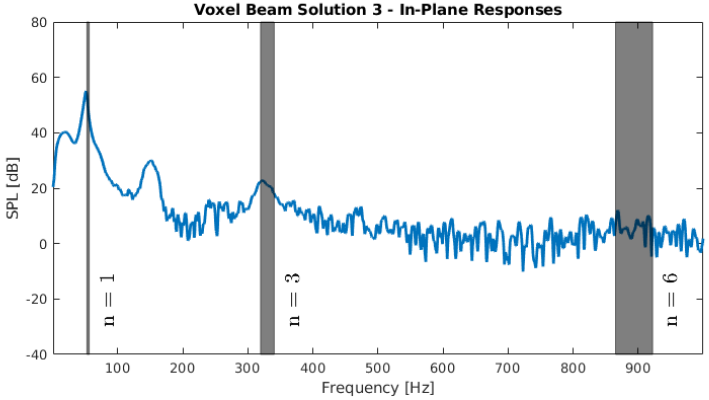

Voxel Beam Solution 1-2 - In-Plane Responses
SPL [dB]
Frequency [Hz]
n = 1
n = 3
n = 6

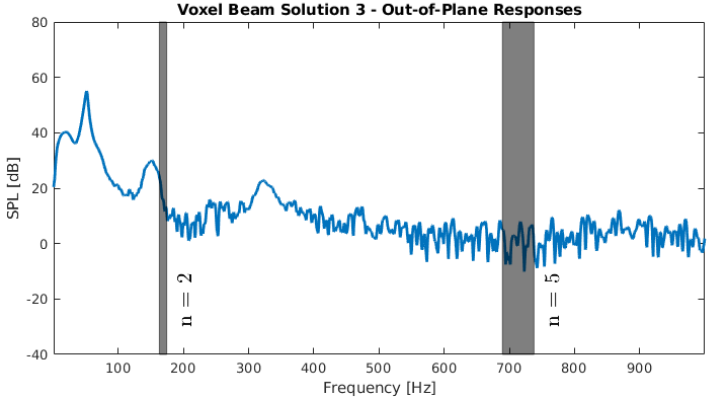

Voxel Beam Solution 1-2 - Out-of-Plane Responses
SPL [dB]
Frequency [Hz]
n = 2
n = 5

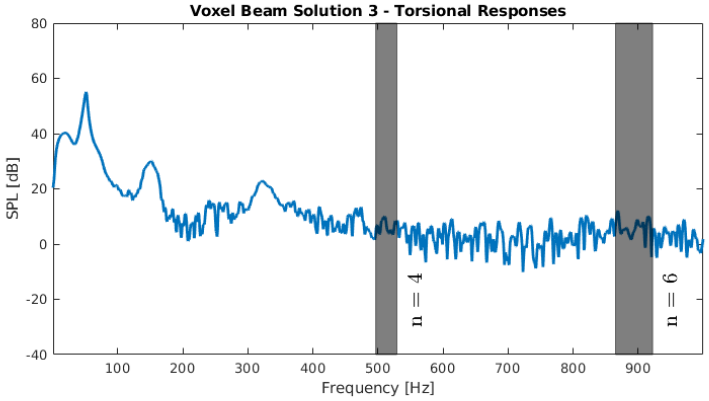

Voxel Beam Solution 1-2 - Torsional Responses
SPL [dB]
Frequency [Hz]
n = 4
n = 6

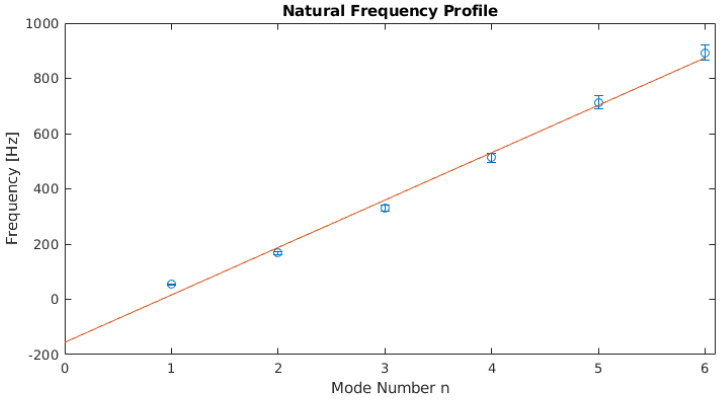

Natural Frequency Profile
Frequency [Hz]
Mode Number n

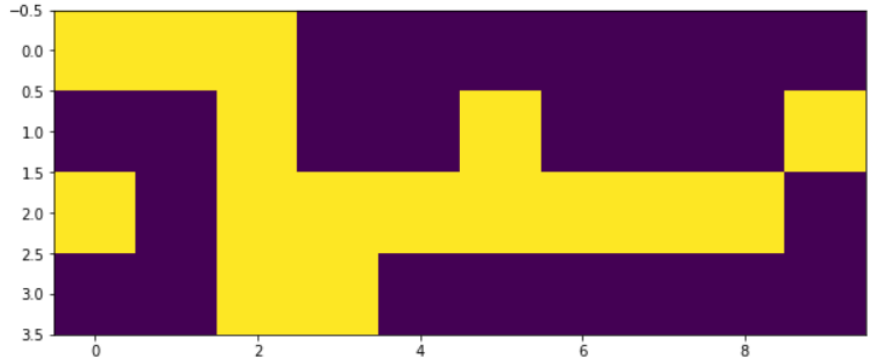


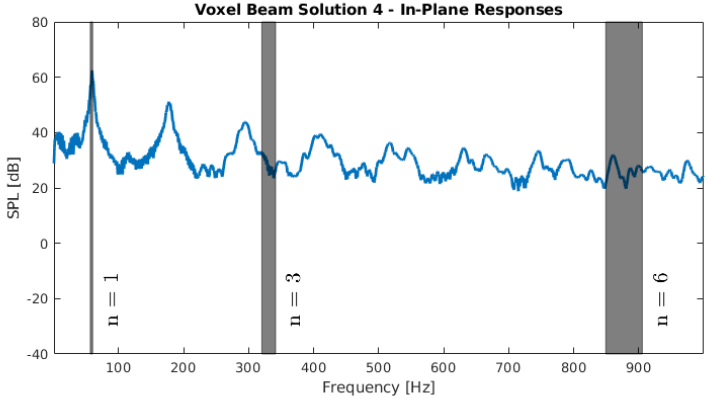

Voxel Beam Solution 3 - In-Plane Responses
SPL [dB]
Frequency [Hz]
n = 1
n = 3
n = 6

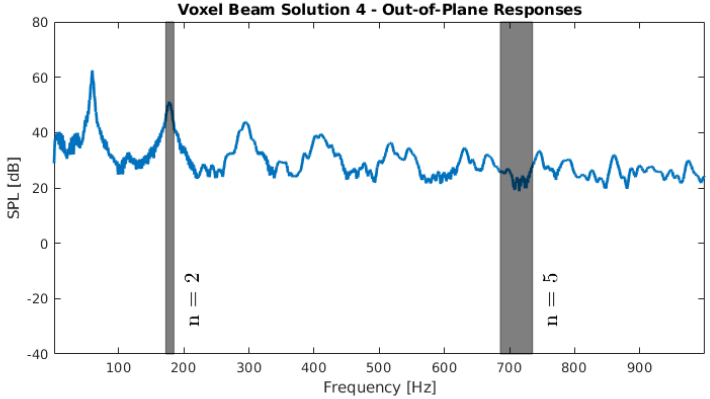

Voxel Beam Solution 3 - Out-of-Plane Responses
SPL [dB]
Frequency [Hz]
n = 2
n = 5

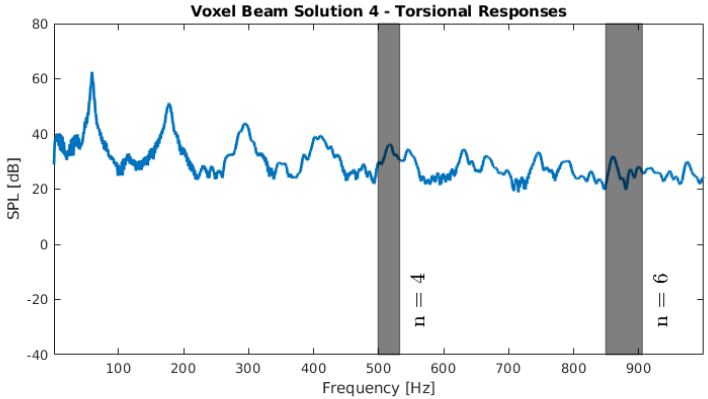

Voxel Beam Solution 3 - Torsional Responses
SPL [dB]
Frequency [Hz]
n = 4
n = 6

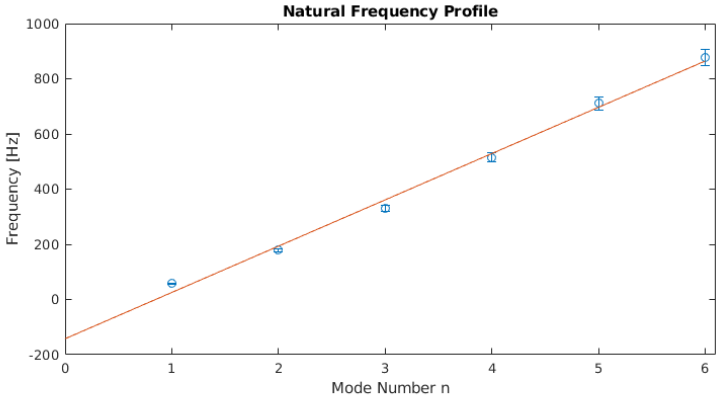

Natural Frequency Profile
Frequency [Hz]
Mode Number n


−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
2
4
6
8

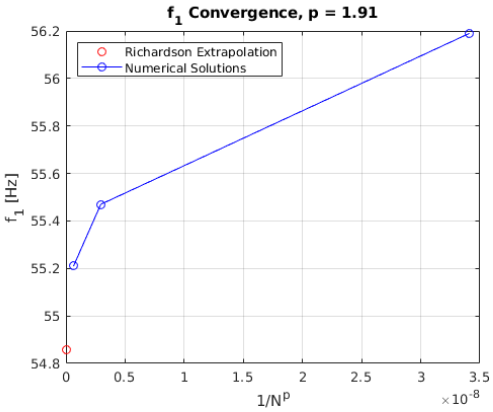

Voxel Beam Solution 4 - In-Plane Responses
SPL [dB]
Frequency [Hz]
n = 1
n = 3
n = 6

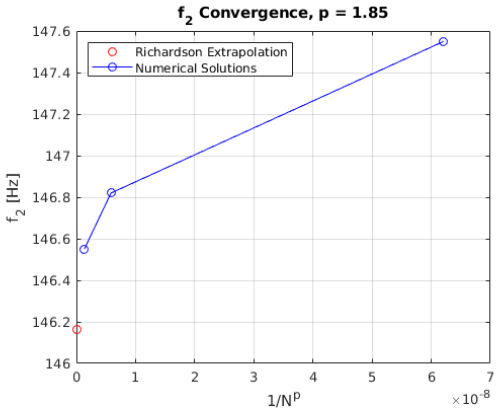

Voxel Beam Solution 4 - Out-of-Plane Responses
SPL [dB]
Frequency [Hz]
n = 2
n = 5

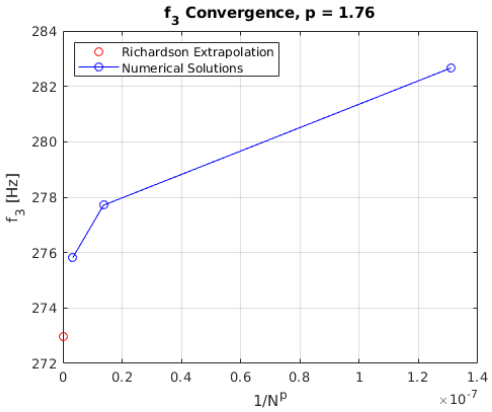

Voxel Beam Solution 4 - Torsional Responses
SPL [dB]
Frequency [Hz]
n = 4
n = 6

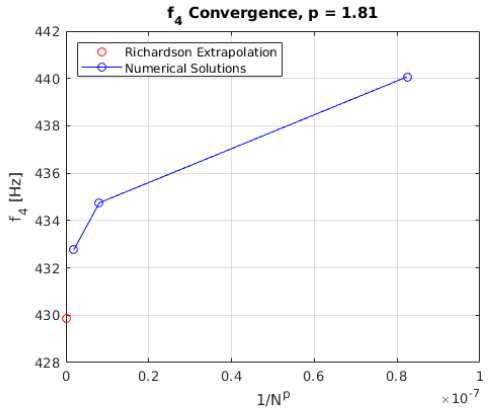

Natural Frequency Profile
Frequency [Hz]
Mode Number n

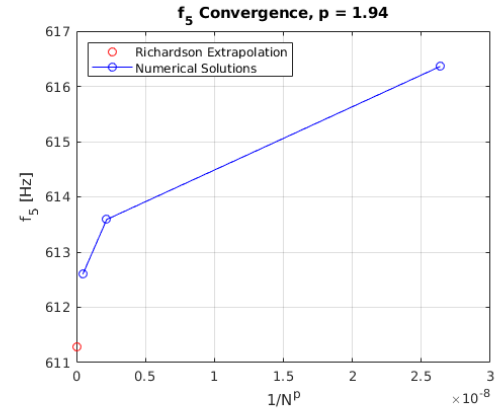
Voxel Beam Solution Number 1 - Mesh Convergence Plots

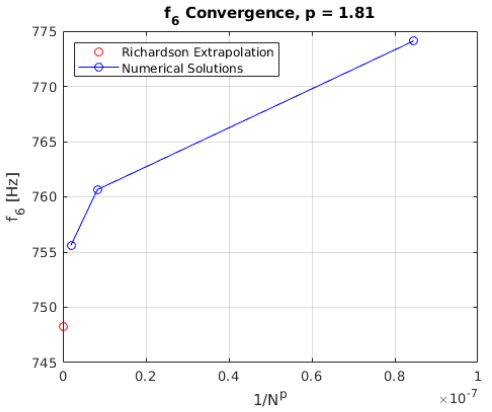




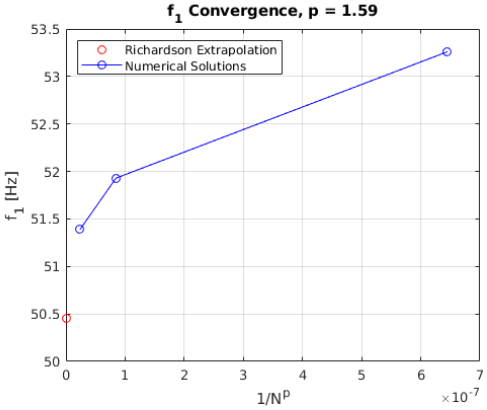


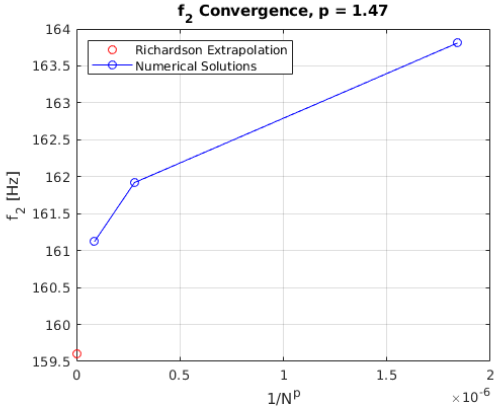


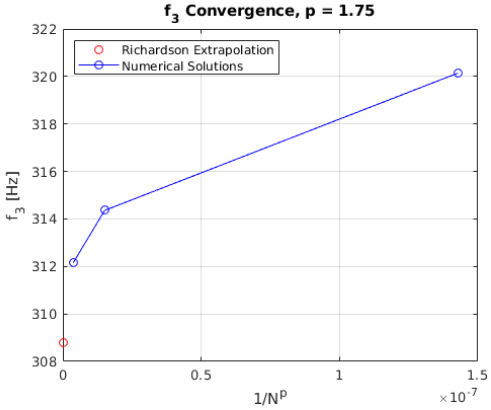


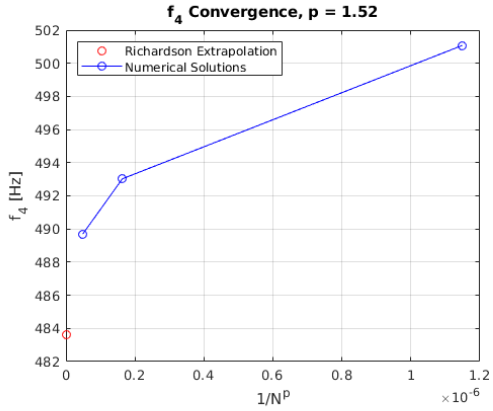


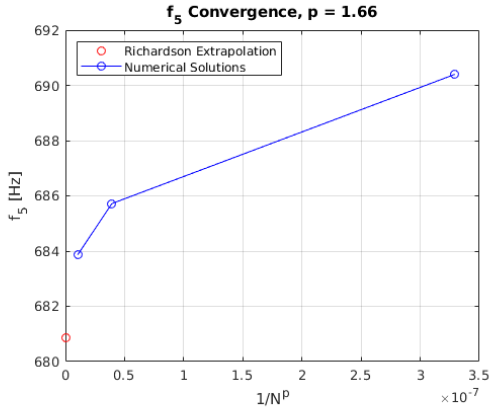
Voxel Beam Solution Number 3 - Mesh Convergence Plots

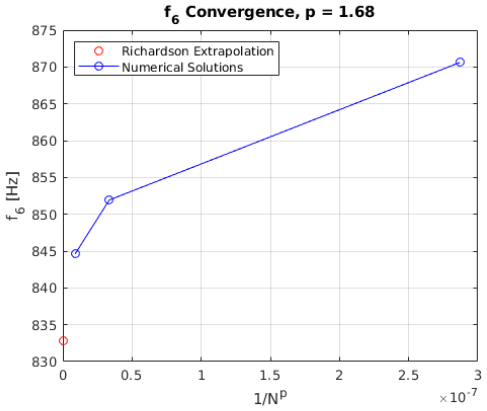
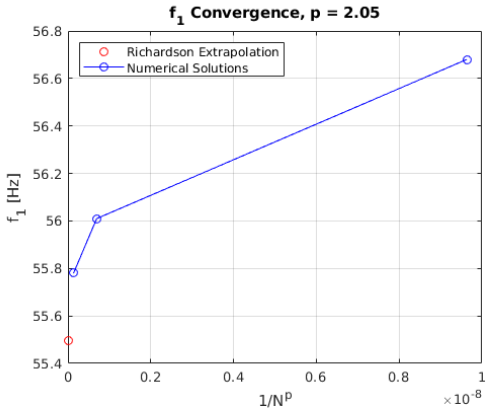
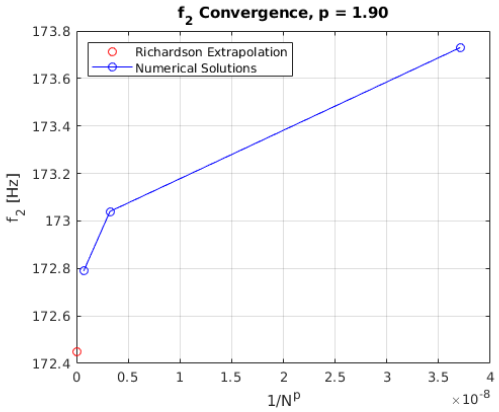
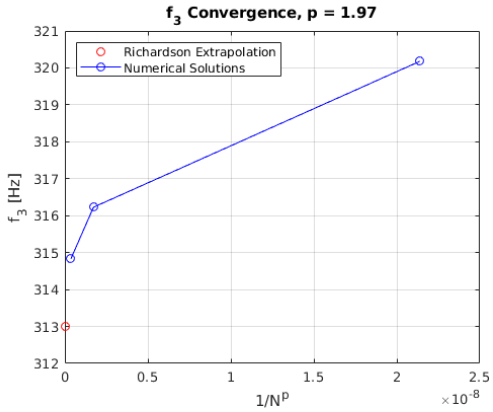
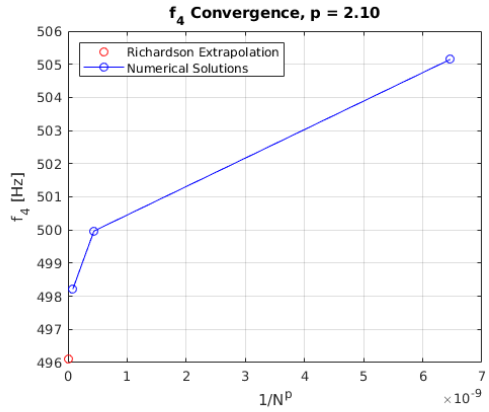
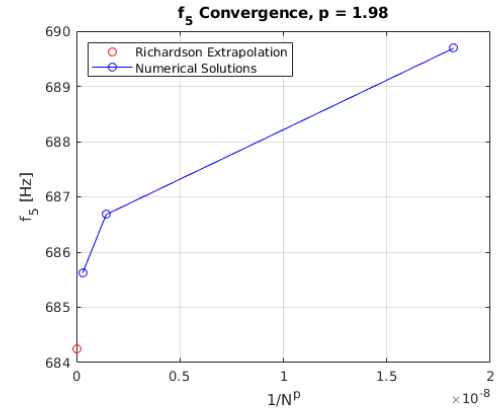
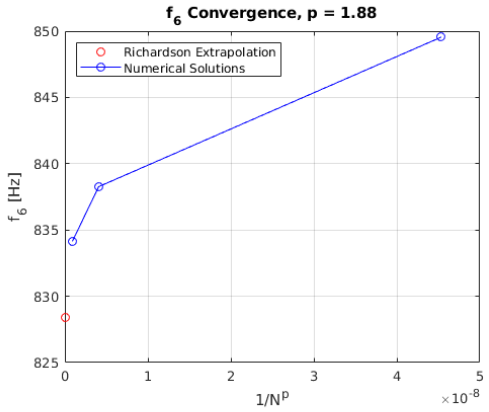












Voxel Beam Solution Number 4 - Mesh Convergence Plots