Politecnico di Milano
Master of Science in Civil Engineering for Risk Mitigation
Structural Dynamics- Prof. Giacomo Boffi

Lab_2

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Group 30

Structure of Dynamic

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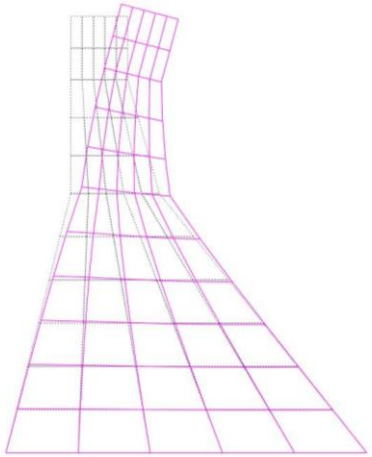
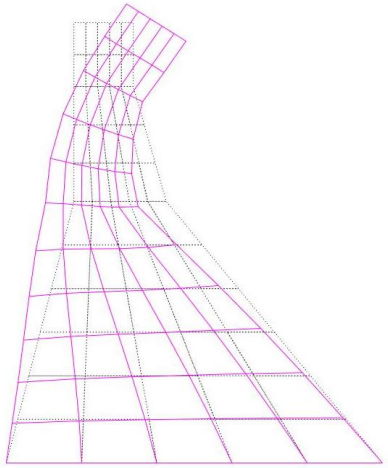
Vibration Modes, Pristine Configuration, Rough Mesh

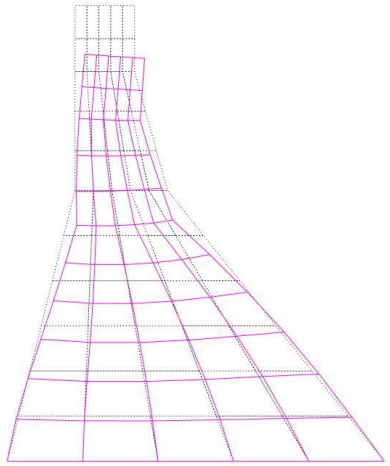
Mode 1, $T_1 = 219.29$ ms, $\omega_1^2 = 821.00$ rad²/s² , $\omega_1 = 28.65$ rad/s, $f_1 = 4.56$ Hz



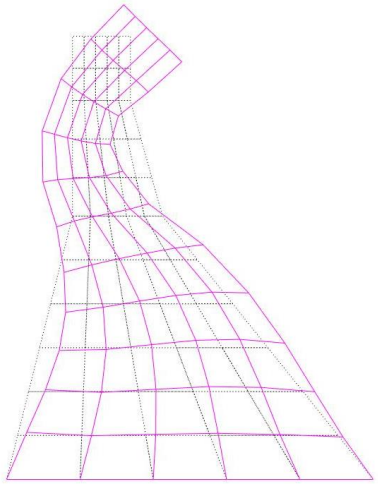
Mode 2, $T_2 = 91.11$ ms, $\omega_2^2 = 4755.78$ rad²/s² , $\omega_2 = 68.96$ rad/s, $f_2 = 10.98$ Hz



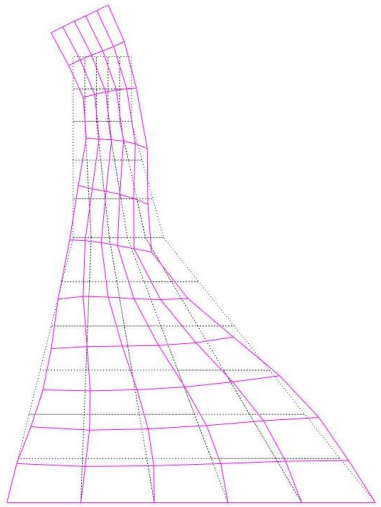
Mode 3, $T_3 = 68.35$ ms, $\omega_3^2 = 8449.66$ rad²/s² , $\omega_3 = 91.92$ rad/s, $f_3 = 14.63$ Hz



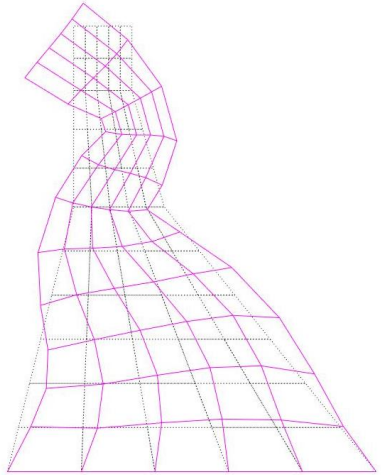
Mode 4, $T_4 = 49.13$ ms, $\omega_4^2 = 16357.75$ rad²/s² , $\omega_4 = 127.90$ rad/s, $f_4 = 20.36$ Hz



Mode 5, $T_5 = 32.61$ ms, $\omega_5^2 = 37117.70$ rad²/s² , $\omega_5 = 192.66$ rad/s, $f_5 = 30.66$ Hz



Mode 6, $T_6 = 31.46$ ms, $\omega_6^2 = 39887.97$ rad²/s² , $\omega_6 = 199.72$ rad/s, $f_6 = 31.79$ Hz



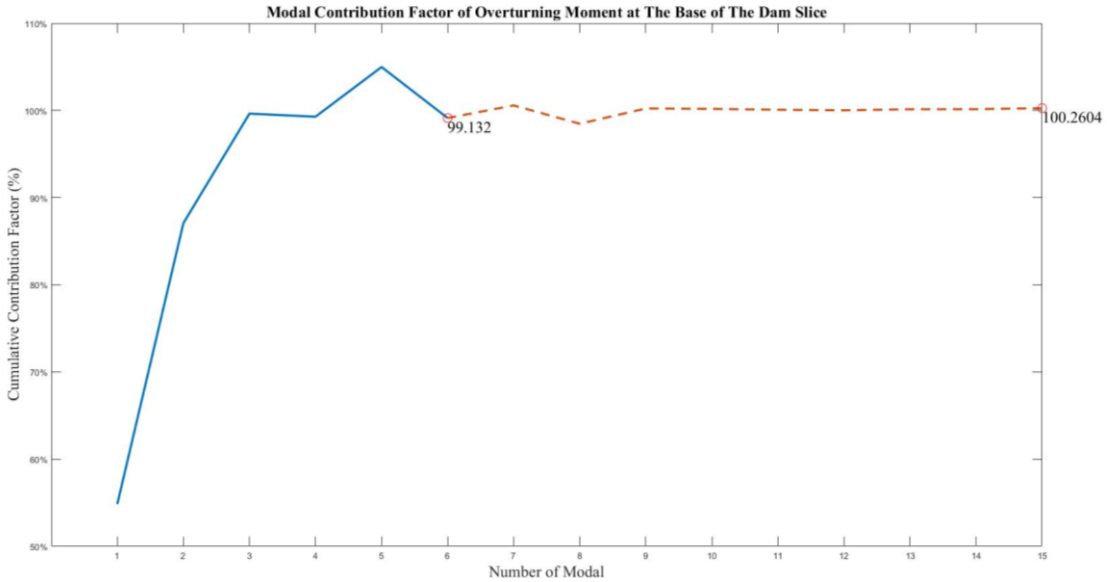
Comparison T (ms)

	T_1	T_2	T_3	T_4	T_5	T_6
Rough Mesh	219.29	91.11	68.35	49.13	32.61	31.46
Refined Mesh	222.72	93.03	68.54	50.92	33.47	32.35

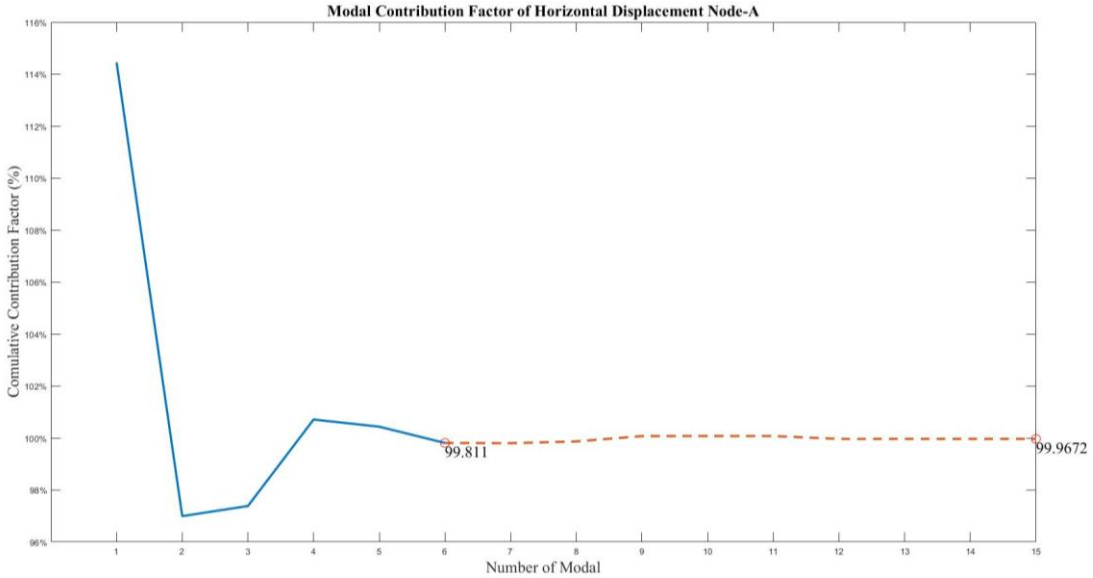
Modal Contribution Factors, Pristine, Rough

Mode	U_A	ΣU_A	M_{Base}	ΣM_{Base}	V_{Base}	ΣV_{Base}
1	1.145	1.145	0.548	0.548	0.260	0.260
2	-0.175	0.970	0.322	0.871	0.349	0.609
3	0.004	0.974	0.126	0.996	0.026	0.635
4	0.033	1.007	-0.004	0.993	0.147	0.782
5	-0.003	1.004	0.057	1.050	0.025	0.807
6	-0.006	0.998	-0.059	0.991	0.040	0.847

ΣM_{Base}



ΣU_A



ΣV_{Base}