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Teacher: Professor Grace
Class: ME425 – Compressible Flow
Topic: Double Wedge Lab

Class Example:

Input Information

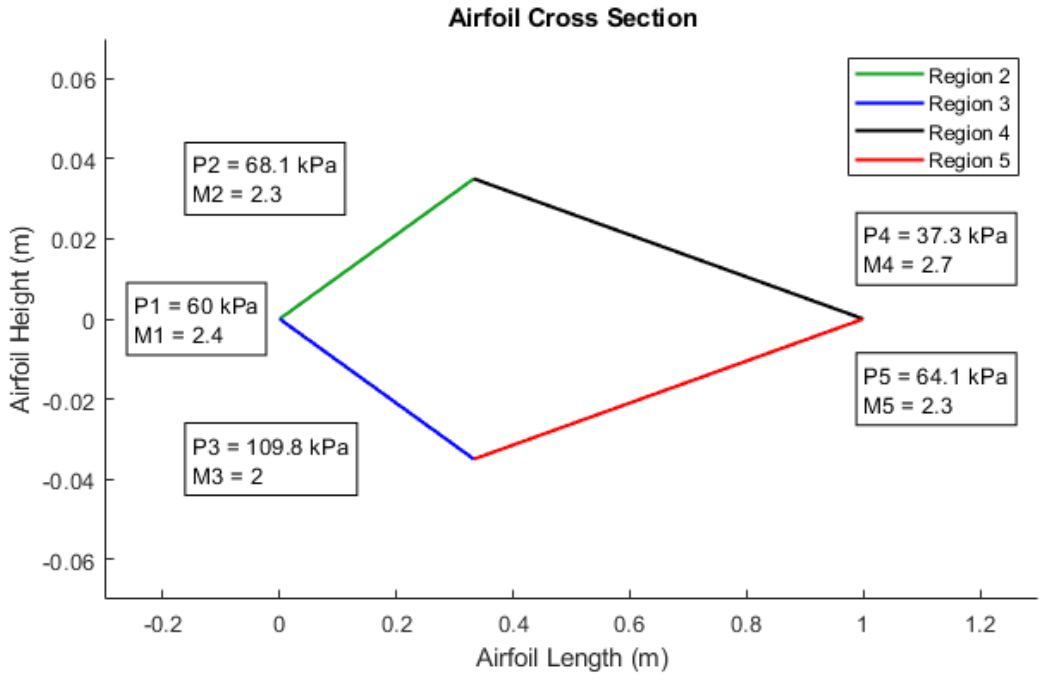
M1	P1 (kPa)	α (deg)	α_f (deg)	α_a (deg)
2.4	60	4	6	3

Region Information

Region	Mach #	Pressure (kPa)	Fx (kN)	Fy (kN)
1	2.4	60	0	0
2	2.3184	68.145	2.3831	-22.673
3	1.9994	109.75	3.838	36.517
4	2.7056	37.343	-1.3059	-24.918
5	2.3434	64.107	-2.2419	42.777

Output Information

Total Fx (N)	Total Fy (N)	Lift Force (N)	Drag Force (N)	Cl	Cd
2673.3	31702	31438	4878.2	0.12995	0.020165



Scenario 1:

Input Information

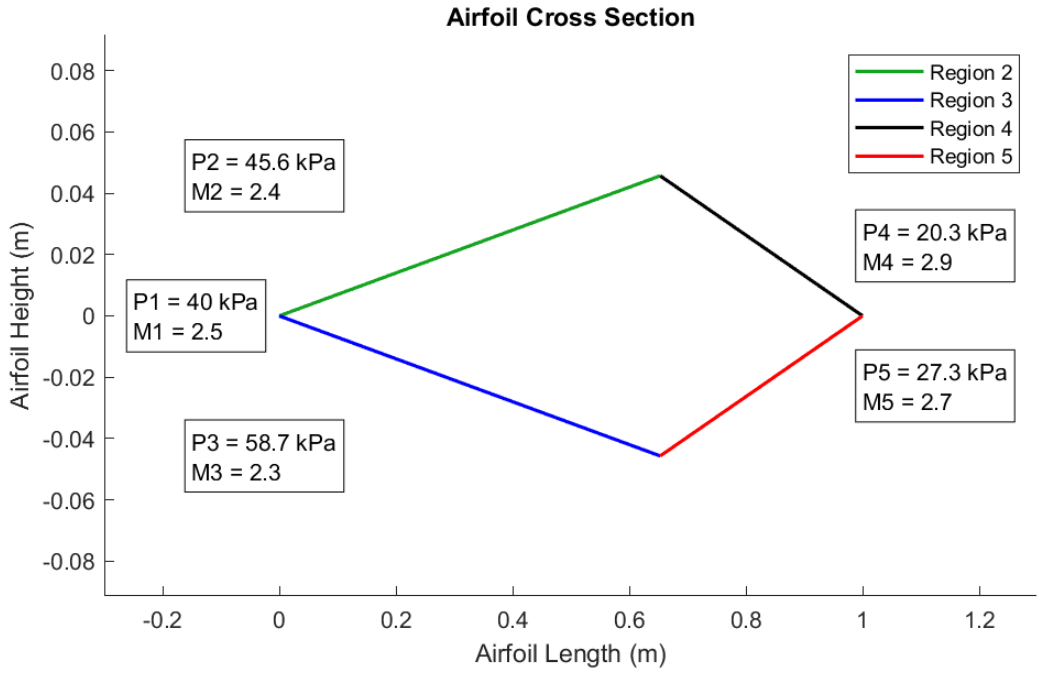
M1	P1 (kPa)	α (deg)	α_f (deg)	α_a (deg)
2.5	40	2	4	7.5

Region Information

Region	Mach #	Pressure (kPa)	Fx (kN)	Fy (kN)
1	2.5	40	0	0
2	2.4155	45.621	2.0835	-29.795
3	2.2505	58.717	2.6816	38.348
4	2.9417	20.306	-0.92736	-7.044
5	2.7424	27.346	-1.2489	9.4861

Output Information

Total Fx (N)	Total Fy (N)	Lift Force (N)	Drag Force (N)	Cl	Cd
2588.8	10995	10898	2970.9	0.062275	0.016977



Scenario 2:

Input Information

M1	P1 (kPa)	α (deg)	α_f (deg)	α_a (deg)
2	101	3	2	4

Region Information

Region	Mach #	Pressure (kPa)	Fx (kN)	Fy (kN)
1	2	101	0	0
2	2.0365	95.426	2.2225	-63.643
3	1.8213	132.86	3.0942	88.607
4	2.2642	66.841	-1.5567	-22.262
5	2.0349	95.452	-2.2231	31.791

Output Information

Total Fx (N)	Total Fy (N)	Lift Force (N)	Drag Force (N)	Cl	Cd
1536.9	34493	34365	3340	0.12152	0.01181