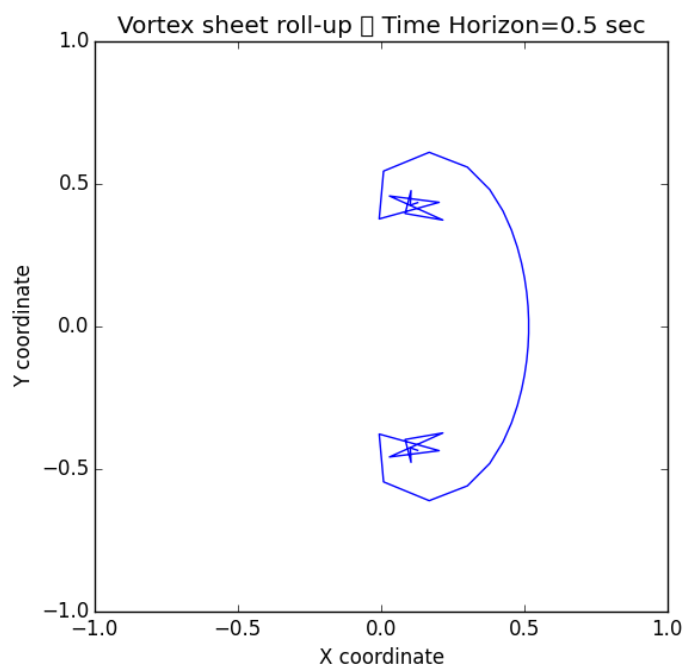# AE625
Assignment - 2
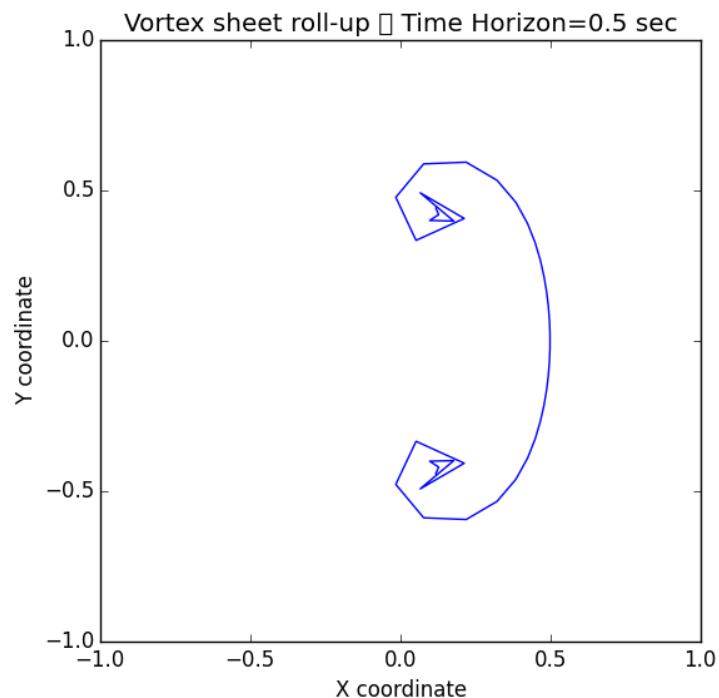## by Naveen Himthani (120010001)

Time step used = 0.001 seconds
Number of Vortex elements on the span wise axis : 40
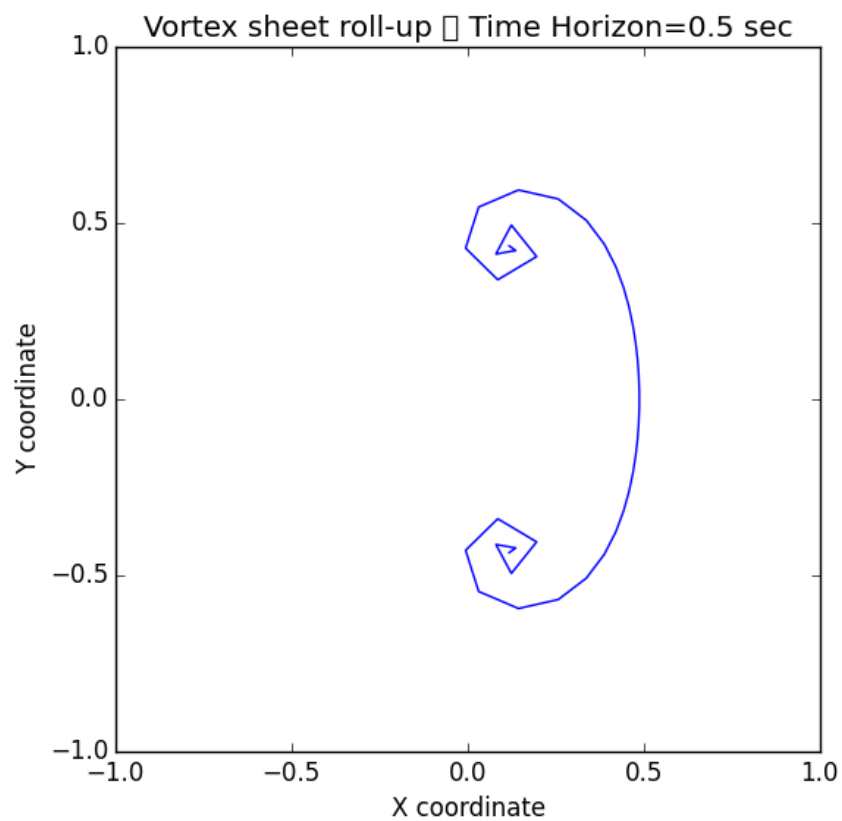
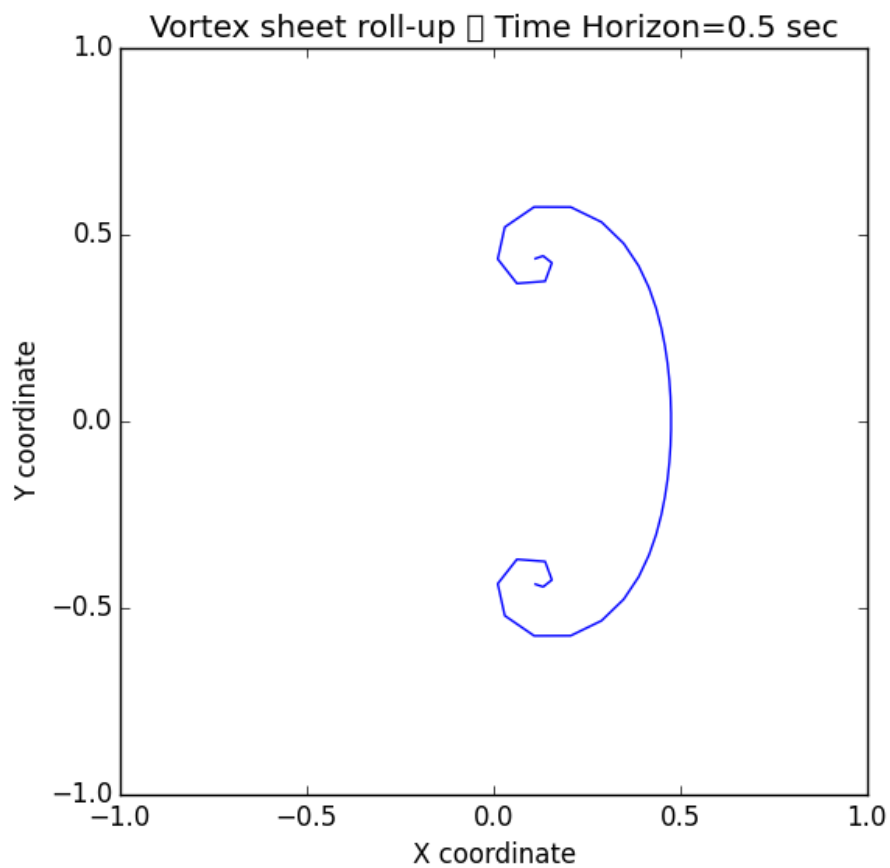**Case 1a: Without any vortex blob, T = 0.5 sec**

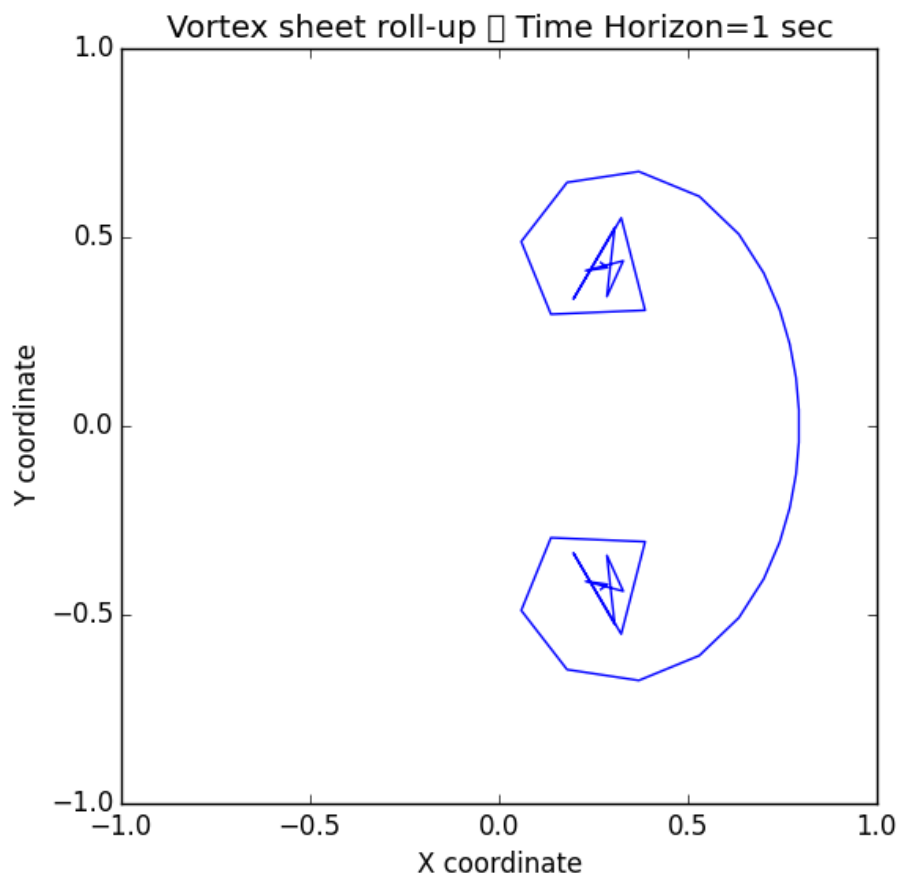**Case 1b: With Krasney vortex blob (blob_scaling= 2), T = 0.5 sec**

Case 1b: With Krasney vortex blob (blob_scaling= 3), T = 0.5 sec

Vortex sheet roll-up ☐ Time Horizon=0.5 sec

Y coordinate

X coordinate

Case 1b: With Krasney vortex blob (blob_scaling= 4), T = 0.5 sec

Vortex sheet roll-up ☐ Time Horizon=0.5 sec

Y coordinate

X coordinate

Case 2a: With Krasney vortex blob (blob_scaling= 2), T = 1 sec

Vortex sheet roll-up ⬜ Time Horizon=1 sec

Case 2b: With Krasney vortex blob (blob_scaling= 3), T = 1 sec

Vortex sheet roll-up ⬜ Time Horizon=1 sec
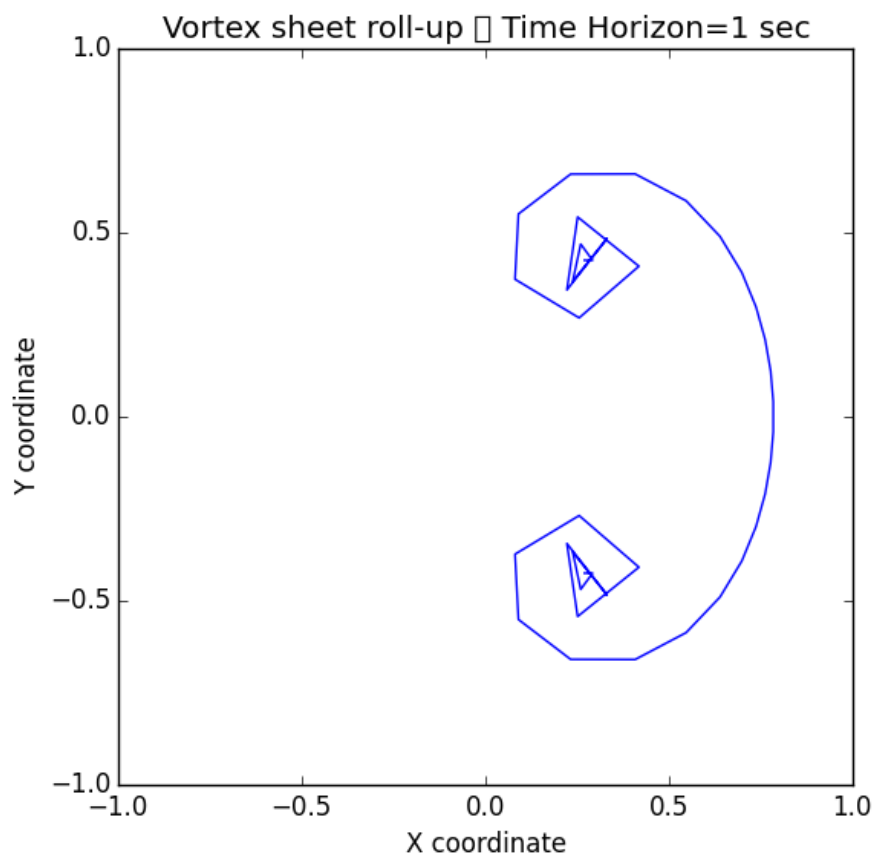
Case 2c: With Krasney vortex blob (blob_scaling= 4), T = 1 sec

Vortex sheet roll-up ☐ Time Horizon=1 sec
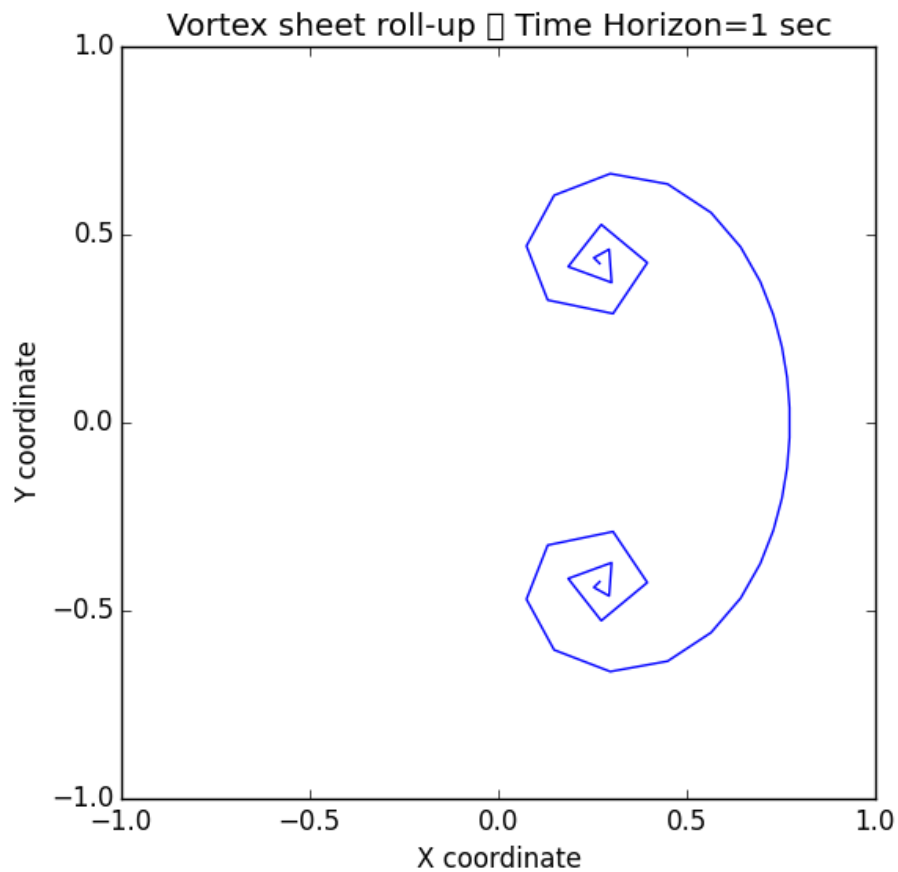
Case 3a: With Krasney vortex blob (blob_scaling= 4, V_elements=60), T = 0.5s

Vortex sheet roll-up ☐ Time Horizon=0.5 sec
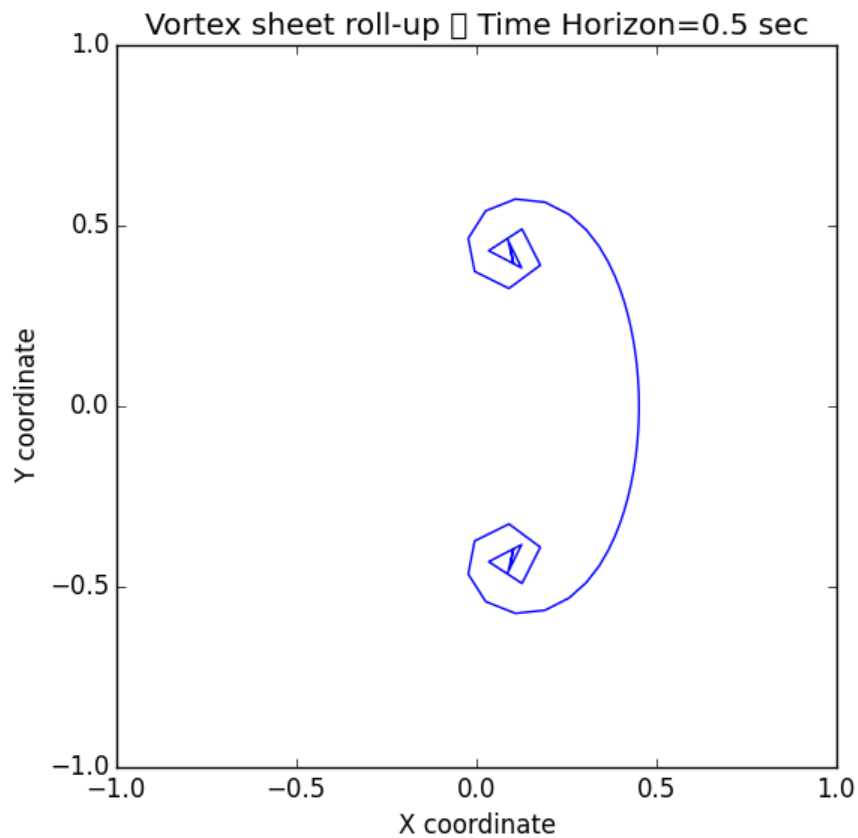
Case 3b: With Krasney vortex blob (blob_scaling= 3, V_elements=60), T = 0.5s

Vortex sheet roll-up ⬚ Time Horizon=0.5 sec
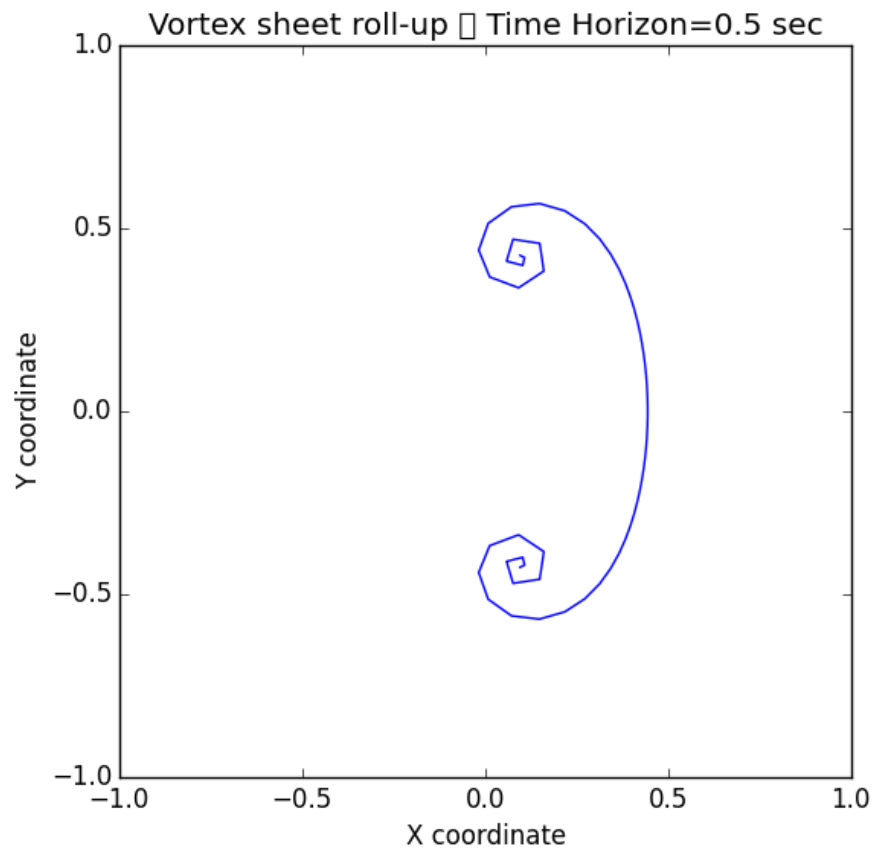
Case 4a: With Krasney vortex blob (blob_scaling= 3, V_elements=60), T = 0.3s

Vortex sheet roll-up ⬚ Time Horizon=0.3 sec
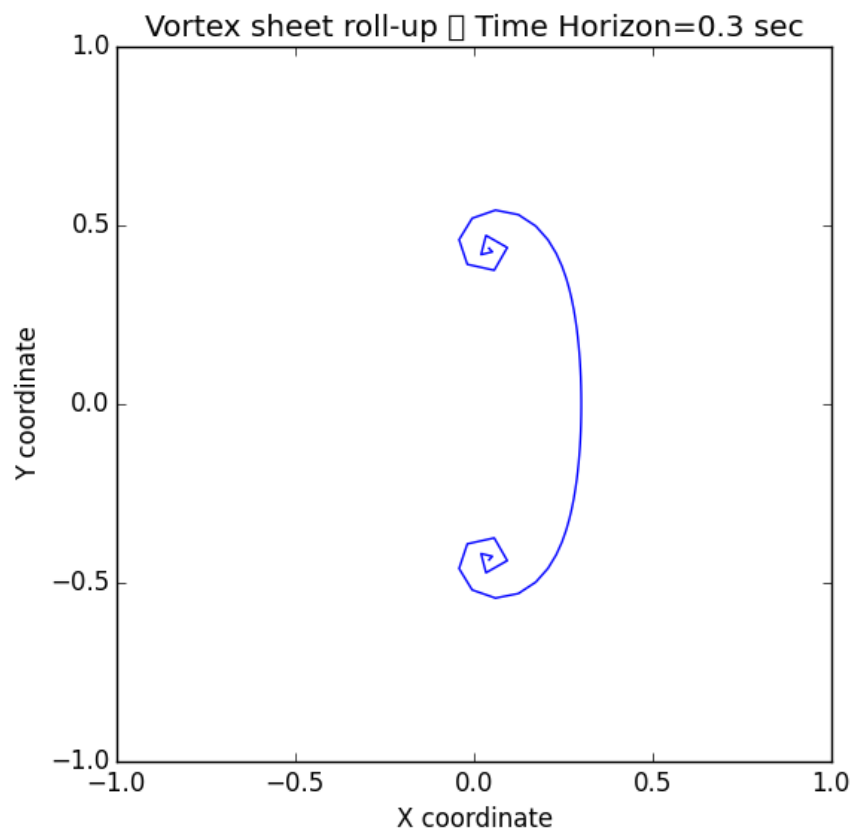
Case 4b: With Krasney vortex blob (blob_scaling= 3, V_elements=30), T = 0.3s

Vortex sheet roll-up □ Time Horizon=0.3 sec
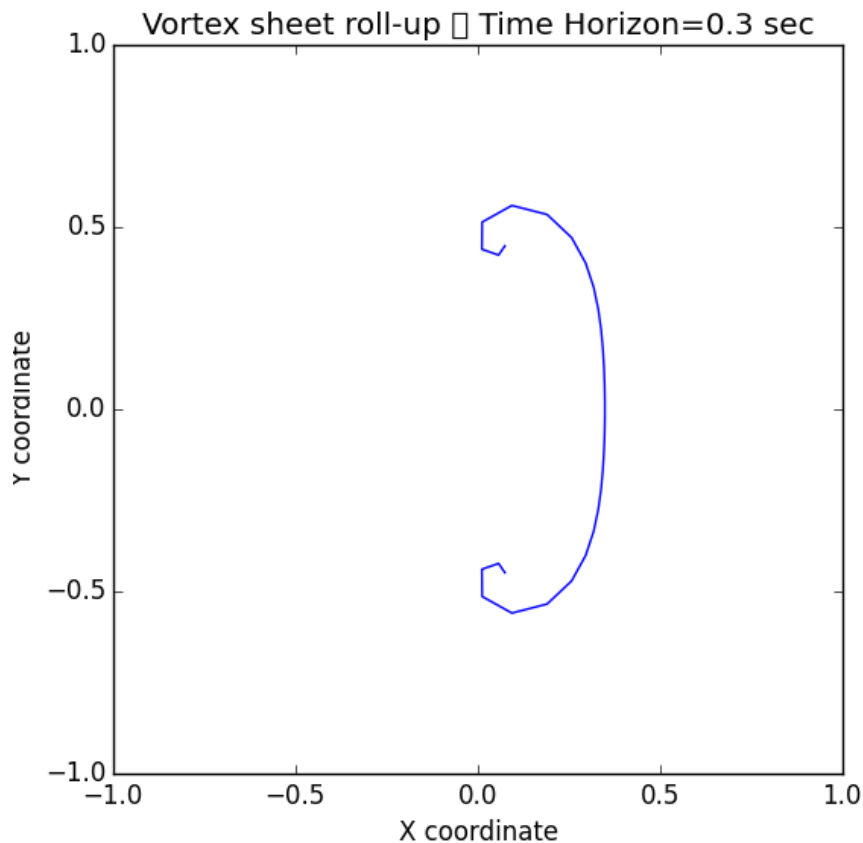
Conclusions:

- On increasing the blob scaling factor, the vortex sheet rolls up more slowly and in a given time the sheet does not intersect itself (after that time, it intersects itself, because the scaling factor is kept constant)
- On increasing the number of vortex elements, the sheet evolves faster in time
- Obviously, increasing the number of vortex elements and adaptively changing the blob scaling factor will be beneficial for the simulation
- The vortex sheet also moves to the right, because the vortex strength in the upper half is opposite in sign to the lower half and is symmetric.