

Supplementary materials

The specific settings of obstacles in Cases A, B, and C are given in Table SI-A, Table SI-B, and Table SI-C, respectively.

Table SI-A: Specific obstacles settings of Case A

Center	a	b	c
(1.00,2.50,1.00)	0.50	0.50	0.50
(3.00,7.00,0.00)	0.75	0.40	0.50
(5.00,4.50,2.00)	0.86	1.00	0.75
(7.00,2.00,3.00)	0.75	0.99	0.63
(9.00,7.50,1.00)	0.75	0.75	0.75

Table SI-B: Specific obstacles settings of Case B

Center	a	b	c
(0.50,2.50,1.00)	0.5	0.5	0.5
(1.50,1.50,3.00)	0.75	1.00	0.80
(2.50,4.50,1.00)	0.75	0.40	0.50
(3.50,7.50,2.00)	0.60	0.65	0.36
(4.50,4.50,2.00)	0.86	1.00	0.75
(5.50,7.50,1.00)	0.75	0.99	0.63
(6.50,3.50,0.00)	0.75	0.75	1.00
(7.50,5.50,2.00)	0.75	0.75	0.75
(8.50,7.50,1.00)	0.50	0.50	0.75
(9.50,9.50,3.00)	1.05	0.75	0.68

Table SI-C: Specific obstacles settings of Case C

Center	a	b	c
(0.30,2.50,0.15)	0.50	0.50	0.50
(1.00,3.50,1.00)	0.65	0.60	0.90
(1.60,1.90,4.00)	0.75	1.00	0.80

(2.27,2.10,0.14)	0.75	0.80	0.90
(3.00,0.25,1.40)	0.90	0.80	0.80
(3.50,5.00,2.60)	0.60	0.60	0.30
(4.50,8.50,3.50)	0.80	1.00	0.70
(5.20,3.80,3.00)	0.75	1.00	0.60
(5.70,3.30,1.10)	0.75	0.90	0.80
(6.20,2.50,1.80)	0.9	0.86	0.80
(6.80,7.20,1.70)	1.00	0.75	0.68
(7.50,3.60,2.50)	0.75	0.75	0.75
(8.10,0.30,3.20)	0.80	0.70	0.75
(8.70,9.00,1.80)	0.75	0.75	0.50
(9.50,7.70,3.80)	0.80	0.90	1.00

The specific settings of vortex current centers in Cases A, B, and C are given in Table SII-A, Table SII-B, and Table SII-C, respectively.

Table SII-A: Specific vortex current centers settings of Case A

Number	x	y
1	0.50	2.50
2	4.00	1.50
3	8.00	9.00

Table SII-A: Specific vortex current centers settings of Case B

Number	x	y
1	0.50	2.50
2	2.50	7.50
3	4.00	5.00
4	5.00	8.00
5	7.50	4.00
6	9.00	1.00

Table SII-A: Specific vortex current centers settings of Case C

Number	x	y
1	0.50	2.50
2	2.00	9.00
3	3.00	2.50
4	4.00	8.00
5	5.50	9.00
6	6.50	8.00
7	7.00	1.00
8	8.00	9.00
9	9.00	1.00