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A Thesis Submitted to
The Hong Kong University of Science and Technology
in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy
in the Department of Physics

March 2024, Hong Kong

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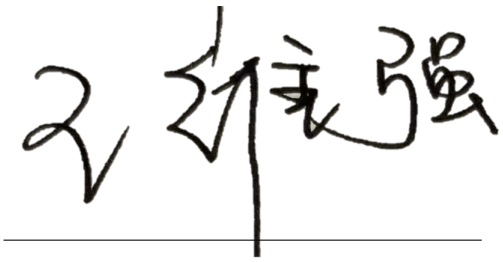

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This is to certify that I have examined the above PhD thesis and have found that it is complete and satisfactory in all respects, and that any and all revisions required by the thesis examination committee have been made.

Professor XoX (Physics), Thesis Supervisor

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The Hong Kong University of Science and Technology
March 2024, Hong Kong

Acknowledgment

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Simulation Investigation of Active and Driven Flows in Achiral and Chiral Nematics

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Department of Physics

The Hong Kong University of Science and Technology

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Chapter 2

Theory and Methods

2.1 ‘1st section’

2.1.1 ’1st Subsection’

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Chapter 3

First Project

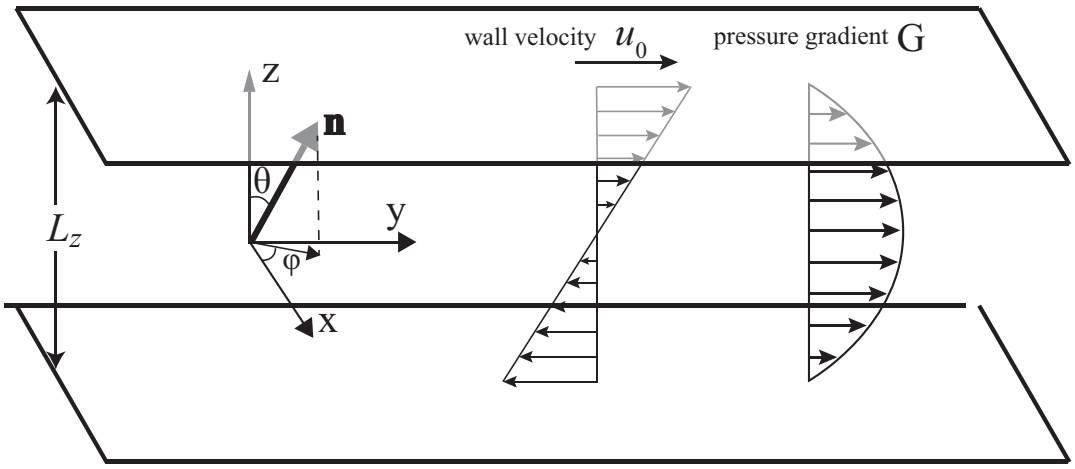

Figure 3.1: **Simulation setup.** Two walls are in z-direction separated by a distance of L_z. Easy axis is in the y-direction. Couette flow is imposed by moving top and bottom wall in y-direction with speed u_0 and $-u_0$, respectively. Poiseuille flow is imposed by applying a pressure gradient G along y-direction. Director field $\mathbf{n}$ is represented by a polar angle θ and an azimuthal angle ϕ.

In this study, we conduct all the simulation in this flat channel Fig. 3.1.

3.1 Results-1st section

3.2 Results-2nd section

3.3 Conclusion

- *Your conclusion of 1st project goes here*

3.4 Appendix

3.4.1 1st part of Appendix

Chapter 4

2nd Project

- *Your table goes as following example*

Table 4.1: Handedness of the periodic double-twist configuration, obtained in 21 independent simulations.

	left-handed twist in x-direction	right-handed twist in x-direction
left-handed twist in z-direction	10	0
right-handed twist in z-direction	0	11

Chapter 5

3rd Project

-The 3rd Project goes here

Chapter 6

Conclusion and Future Work

-A biref summary goes here

6.1 Conculsion

6.1.1 1st Project

In the Chapter. 3

6.1.2 2nd Project

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6.2 Future Work and Challenges

References

List of Publications

Jounrnal

• **Wang, W.**, Ren, H. and Zhang, R. (2024). Symmetry breaking of self-propelled topological defects in thin-film active chiral nematics, *Physical Review Letters*, vol. 132(3). doi:10.1103/physrevlett.132.038301.

Conference

• (Oral) **Wang, W.**, Ren, H., Zhang, R.. Symmetry breaking of self-propelled topological defects in thin-film active chiral nematics. *American Physical Society March Meeting*, Las Vegas, 2023.