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Enabling quantum optomechanics for phononic crystals and superfluid helium films

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Citation

Wei, X. (2026, September 8). *Enabling quantum optomechanics for phononic crystals and superfluid helium films*. Retrieved from <https://hdl.handle.net/1887/4309245>

Version: Publisher's Version

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Note: To cite this publication please use the final published version (if applicable).

Acknowledgements

First and foremost, my deepest gratitude goes to my supervisor, Dirk Bouwmeester. I am grateful for the freedom he gave me to develop my own ideas, and for his patience, encouragement, and steady support throughout my PhD. What has inspired me most is the curiosity he continues to bring to science. Even after many years in research, his enthusiasm remains remarkably fresh, and it has reminded me of the simple joy of asking questions and trying to understand nature. Whatever path I take after my PhD, I am grateful to carry this curiosity with me.

I am also sincerely grateful to my second supervisor, Wolfgang Löffler, for his thoughtful support throughout my PhD. I deeply appreciate his care for my well-being, his patience in listening during difficult moments, and the encouragement he offered along the way. His support helped me navigate the challenges of this journey with greater confidence.

Of course, the research presented in this thesis has only been possible through a team effort of several technicians, fellow PhD students, and Bachelor and Master students both at the University of California Santa Barbara and at the University of Leiden, the Netherlands.

I would like to thank my group members, Vitaly Fedoseev, Leon Raabe, Enrique Morell, Hidde Kanger, Geert Timmerman, and Kier Heeck, for their help with experiments, discussions, and daily scientific support. I thank our previous students Bas ten Haaf and Rémi Claessen, as well as our collaborators at UCSB, Fernando Luna, Ian Hedgepeth, Eve Bodnia, and Kellan Colburn, for sample fabrication.

Beyond direct supervision and technical support, I have also been fortunate to work alongside many wonderful colleagues. I am grateful to Michiel de Dood and Martin van Exter from the Quantum Optics group for many helpful discussions, and to the PhD students, Petr Steindl, Corné Koks, Kirsten Kannevorff, Xing Chen, Matteo Fisicaro, Mio Poortvliet, for their support, collaboration, and for making the group

such an inspiring and enjoyable place to work.

My thanks also go to Tjerk Oosterkamp for his guidance and support with the dilution refrigerator. I also thank Jaimy Plugge, Koen van Deelen, and Loek van Everdingen for their collaboration in operating the dilution refrigerator.

It has been a pleasure to work with Harmen van der Meer, Hugo van Bohemen, and Kees van Oosten. Their technical expertise in mechanical design and fabrication, as well as their practical advice, were extremely helpful throughout the development of the experimental setup.

Outside the laboratory, I am deeply grateful to my dear friends, Mei Yu, Liu Li, Kirsten Martens, Yuefei Wu, Youyong Zhang, Ying Chen, Shujun Zhang, Lian Liu, for the trips, laughter, and companionship we have shared. Finally, I would like to thank my family and friends in China for their constant love, support, and encouragement, which have always been a source of strength for me.

To everyone else who has supported or encouraged me, in ways both big and small, thank you.

Curriculum Vitae

Xinrui Wei was born on March 14, 1994, in Sichuan, China.

From 2011 to 2015, she studied Optical Information Science and Technology at Southwest University of Science and Technology, where she received her Bachelor's degree.

From 2017 to 2020, she pursued her Master's study in Optics at the State Key Laboratory of Precision Spectroscopy, East China Normal University. Her research focused on precision measurement based on Fabry-Perot cavities, as well as classical dynamics in cavity optomechanical systems.

In 2020, she started her PhD research at the Leiden Institute of Physics, Leiden University under the supervision of Dirk Bouwmeester. Her doctoral research focused on experimental optomechanics, particularly the development and characterization of thin-film mechanical systems, including phononic-bandgap membrane and superfluid helium films, for future studies of macroscopic quantum phenomena.

List of Publications

1. Leon Raabe, Hidde Kanger, Kellan Colburn, **Xinrui Wei**, Kerry Vahala and Dirk Bouwmeester, “Optomechanical mode locking in thin film superfluid helium-4“ (*In preparation*).
2. Cheng Yang, **Xinrui Wei**, Jiteng Sheng, and Haibin Wu, “Phonon heat transport in cavity-mediated optomechanical nanoresonators,” *Nature Communications* **11**, 4656 (2020).
3. Jiteng Sheng, **Xinrui Wei**, Cheng Yang, and Haibin Wu, “Self-organized synchronization of phonon lasers,” *Physical Review Letters* **124**, 053604 (2020).
4. **Xinrui Wei**, Jiteng Sheng, Yuelong Wu, Wuming Liu, and Haibin Wu, “Twin-beam-enhanced displacement measurement of a membrane in a cavity,” *Applied Physics Letters* **115**, 251105 (2019).
5. **Xinrui Wei**, Jiteng Sheng, Cheng Yang, Yuelong Wu, and Haibin Wu, “Controllable two-membrane-in-the-middle cavity optomechanical system,” *Physical Review A* **99**, 023851 (2019).
6. Jiteng Sheng, **Xinrui Wei**, Shuhui Wu, and Haibin Wu, “Quantum measurement of membrane’s vibration,” in *Conference on Lasers and Electro-Optics*, OSA Technical Digest, paper ATh3H.4 (2018).