Ting-Wei Chen 陳挺煒

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Computational Photonics Laboratory

Research Field

Computational optoelectronics

Exciton-polariton physics

Education

Ph. D., Department of Photonics, National Cheng Kung University, R.O.C.(Taiwan)

Publications

1.1 Journal Papers

1.1.1 Szu-Cheng Cheng and Ting-Wei Chen* (2024, Feb). Compact gap solitons and compact edge states of exciton-polariton condensates with spin-orbit coupling in a one-dimensional flatband lattice. *Journal of Physics B: Atomic, Molecular and Optical Physics*, 57, 025401.

1.1.2 Shih-Da Jheng, Ting-Wei Chen and Szu-Cheng Cheng* (2022, Jun). Rotating vortex lattices mimicking a time crystal in a trapped exciton-polariton condensate. *Chinese Journal of Physics*, 77, 2576-2581.

1.1.3 Szu-Cheng Cheng, Shih-Da Jheng, and Ting-Wei Chen* (2021, Nov). Half skyrmions with higher topological quantum numbers in homogeneous exciton polariton condensates. *Physical Review E*, 104, 054216.

1.1.4 Szu-Cheng Cheng, Shih-Da Jheng, and Ting-Wei Chen* (2021, Jan). Synchronized full vortices as topological spin-Meissner states in spinor exciton polariton condensates. *Journal of the Optical Society of America B*, Vol. 38, Issue 2, pp. 544-549.

1.1.5 Szu-Cheng Cheng and Ting-Wei Chen* (2020, Mar). Topological spin-Meissner states in nonequilibrium polariton condensates. *Physical Review B*, 101, 125304.

1.1.6 Szu-Cheng Cheng, Shih-Da Jheng and Ting-Wei Chen* (2020, Jan). Ring-vortex solitons and their stabilities in microcavity polariton condensates. *Journal of Physics B: Atomic, Molecular and Optical Physics*, 53, 045401.

1.1.7 Szu-Cheng Cheng, Shih-Da Jheng and Ting-Wei Chen* (2020, Jan). Nonequilibrium localized states at an interface between two mismatched potentials of exciton-polariton condensates. *Physica E: Low-dimensional Systems and Nanostructures*, Volume 115, 113651.

1.1.8 Shih-Da Jheng, Szu-Cheng Cheng and Ting-Wei Chen* (2019, Oct). Ring dark solitons in microcavity polariton condensates. *Solid State Communications*, Volume 300, 113695.

1.1.9 Ting-Wei Chen and Szu-Cheng Cheng (2018, Sep). Surface gap solitons in exciton polariton condensates. *Physical Review E*, 98, 032212.

1.1.10 Szu-Cheng Cheng and Ting-Wei Chen* (2018, Mar). Dark gap solitons in exciton polariton condensates in a periodic potential. *Physical Review E*, 97, 032212.

1.1.11 Ting-Wei Chen, Szu-Cheng Cheng (2018, Jan). Polariton solitons and nonlinear localized states in a one-dimensional semiconductor microcavity. *Physical Review E*, 97, 012218.

1.1.12 Ting-Wei Chen, Shih-Da Jheng, T F Jiang and Szu-Cheng Cheng (2017, Jan). Quantum fluctuations and stability of vortex lattices in a nonresonantly pumped exciton polariton condensate. *Journal of Physics: Condensed Matter*, 29, 1-8.

1.2 Conference Papers

1.2.1 Ting-Wei Chen, Shih-Da Jheng and Szu-Cheng Cheng (2023, Jul). Theoretical realization of half-vortices and skyrmions of exciton-polariton in a magnetic field. PIERS 2023, Prague, Czech Republic.

1.2.2 Ting-Wei Chen, Shih-Da Jheng and Szu-Cheng Cheng (2019, Jul). Realization of ring-type time crystals in a trapped exciton-polariton condensate. PLMCN20, Moscow, Russia.

1.2.3 Ting-Wei Chen and Szu-Cheng Cheng (2018, Aug). Optical Properties of Spinor Exciton-polariton Condensates in a Magnetic Field. Photonics & Electromagnetics Research Symposium (PIERS 2018), Toyama, Japan.

1.2.4 Ting-Wei Chen* and Szu-Cheng Cheng (2017, Jul). Instability of two-dimensional ring dark solitons in microcavity polariton condensates (PLMCN18). 18th International Conference on Physics of Light-Matter Coupling in Nanostructures, Wurzburg, Germany.

Academic Projects

2.1 MOST Projects (In recent years)

2.1.1 Principal investigator – Ting-Wei Chen

General research project:

2.1.1.1 Pumped and dissipative nonlinear phenomena in exciton-polariton condensates. (MOST 105-2112-M-415-009-MY3；Execution duration：2016/10/01 ~ 2019/07/31)

2.1.1.2 Optical manipulation of skyrmions and spatial polarization patterns in spinor polariton microcavities. (MOST 108-2112-M-415-003-；Execution duration：2019/08/01 ~ 2020/07/31)

2.1.1.3 Optical manipulated polarization textures of polariton condensates in semiconductor microcavities (1/2). (MOST 109-2112-M-415-004- ; Execution duration：2020/08/01 ~ 2021/07/31)

2.1.1.4 Optical manipulated polarization textures of polariton condensates in semiconductor microcavities (2/2). (MOST 110-2112-M-415-004- ; Execution duration：2021/08/01 ~ 2023/07/31)

2.1.1.5 Realization of time crystals in nonequilibrium exciton-polariton condensates. (MOST 111-2112-M-415-002- ; Execution duration：2022/08/01 ~ 2024/07/31)

Relevant Experience

3.1 Industrial Experience

3.1.1 Taiwan Semiconductor Manufacturing Company, Principal Engineer; Job duration：1999/06 ~ 2009/02.

3.2 Academic Experience

3.2.1 Department of Photonics, National Cheng Kung University, PhD program; Academic duration：2009/09 ~ 2014/06.

3.2.2 Department of Optoelectric Physics, Chinese Culture University, Postdoctoral Research Fellow; Job duration：2014/08 ~ 2016/07.

3.3 Teaching Experience

3.3.1 Department of Electrophysics, National Chiayi University, Non-tenure-track Assistant Professor; Job duration：2016/08 ~ 2022/07.

3.3.2 Semiconductor Materials Science in Master Program of College of Science, National Pingtung University, Assistant Professor; Job duration：2022/08 ~2023/07.

3.3.3 Semiconductor Materials Science in Master Program of College of Science, National Pingtung University, Associate Professor; Job duration：2023/08 ~.