Yink Loong LEN
PhD student,
Centre for Quantum Technologies (CQT), National University of Singapore (NUS)

Email : yinkloong@quantumlah.org
yinkloong@u.nus.edu

PERSONAL INFORMATION

Born 1988; male; citizen of Malaysia; fluent in Chinese, English, Malay.

RESEARCH INTEREST (INTRODUCTORY)

My research interests span across various topics in quantum physics, both theoretical and experimental aspects. They include: quantum error correction and fault-tolerant quantum computing [1] , foundation of quantum mechanics [2, 3] , many-body physics and density functionals [4 , 5] , quantum optics, open systems, quantum state tomography, and entanglement [6, 7, 8].

My current PhD project includes, part (I): a theoretical and experimental work that studies the path taken by a photon inside an interferometer [2, 3], and part (II): a theoretical work that studies quantum error correction for noise that are described by CPTP maps on the joint system and environment composite [1].

WORKING EXPERIENCE

- 19 Aug 2011— 31 Aug 2014: Research Assistant, theoretical group of Professor Berthold-Georg Englert, CQT, NUS.

EDUCATION

- Sep 2014— present: Doctor of Philosophy, CQT, NUS.
- Aug 2012— May 2014: Master of Science by Research (part-time), NUS.

  Thesis: *Entanglement Detection With Minimal Tomography Using Witness Bases Measurement*
- Aug 2007— Jun 2011: Bachelor of Science (Hons.), 2nd-lower class, NUS.

  Thesis: *Gradient corrections to density functionals in 2D*

ACADEMIC PUBLICATION

1. Y. L. Len and H. K. Ng
   Open-system quantum error correction
   Phys. Rev. A **98**, 022307 (2018); arXiv:1804.09486

2. Y. L. Len, J. Dai, B.-G. Englert, L. A. Krivitsky
   Unambiguous path discrimination in a two-path interferometer
   Phys. Rev. A **98**, 022110 (2018); arXiv:1708.01408

3. B.-G. Englert, K. Horia, J. Dai, Y. L. Len, H. K. Ng
   Past of a quantum particle revisited
   Phys. Rev. A **96**, 022126 (2017); arXiv:1704.03722

4. M.-I. Trappe, Y. L. Len, H. K. Ng, B.-G. Englert
   Airy-averaged gradient corrections for two-dimensional fermion gases
   Anns. Phys. **385**, 136 (2017); arXiv:1612.04048

5. M.-I. Trappe, Y. L. Len, H. K. Ng, C.A. Müller, B.-G. Englert
   Leading gradient correction to the kinetic energy for two-dimensional fermion gases
   Phys. Rev. A **93**, 042510 (2016) ; arXiv:1512.07367

6. J. Dai, Y. L. Len, H. K. Ng
   Initial system-bath state via the maximum-entropy principle
   Phys. Rev. A **94**, 052112 (2016) ; arxiv preprint 1508.06736

7. J. Dai, Y. L. Len, Y. S. Teo, B.-G. Englert, L. A. Krivitsky
   Experimental detection of entanglement with optimal-witness families
   Phys. Rev. Lett. **113**, 170402 (2014) ; arXiv:1402.5710

8. J. Dai, Y. L. Len, Y. S. Teo, L. A. Krivitsky, B.-G. Englert
   Controllable generation of mixed two-photon states
   New. J. Phys. **15**, 063011 (2013) ; arXiv:1304.2101

OTHER EXPERIENCES

- *Coordinator* (2016-2017): PC4241 *Statistical Mechanics*, Department of Physics, NUS.
- *Tutor* (2015-2016): PC4241 *Statistical Mechanics*, Department of Physics, NUS.
- *Tutor* (2011-2014): PC2132 *Classical Mechanics*, Department of Physics, NUS.
- *Librarian* (2011-present): CQT Library, CQT, NUS.