



Hong Y. Ling

Professor
Physics & Astronomy

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Education:

BS (Physics), Jiaxin Teacher's College (currently known as Huzhou University),
Huzhou, P. R. China.

MS (Optics), Xian Institute of Optics and Fine Mechanics, Academia Sinica, Xian, P. R. China.
PhD (Physics), Drexel University

Research Expertise:

Cold Atom | Condensed Matter | Quantum Optics

My research interests include atomic and molecular physics, condensed matter physics, and quantum optics. The focus of my research is on low-temperature many-body systems which, depending on whether their constituents, are bosons or fermions or mixtures of both, can exhibit different but equally fascinating quantum effects at the macroscopic level. The experimental progress in cold atom physics has enabled such phenomena, which were only accessible to a few isotopes in solid state systems, such as ^3He and ^4He , to be studied in cold atom quantum gases. Of particular relevance are multi-component quantum gases which can exist as Bose-Bose, Fermi-Fermi, and Bose-Fermi binary mixtures, and as Bose-Bose-Bose, Fermi-Fermi-Bose, and Bose-Fermi-Fermi ternary mixtures. The list of possible quantum gases in cold atom systems, thus, seems endless in view of the rich existence of atomic elements and their isotopes in nature. Examples of my current research include exotic phases with unconventional Cooper pairings, nonequilibrium phenomena, polarons, etc., in a strongly interacting quantum gases either in continuous or in lattice models.

Honors and Awards:

Rowan University Research Achievement Award 2011

KITP Scholar 2013-2015, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA

Member of:

American Physical Society

Anacapa Society

Recent Publications:

Kain B, Ling HY (2014) Nonequilibrium states of a quenched Bose gas. *Phys Rev A*. 90:063626.

Kain B, Ling HY (2014) Polarons in a dipolar condensate. *Phys Rev. A* 89:023612.

Kain B, Ling HY (2013) Roton-assisted chiral p-wave super fluid in a quasi-two-dimensional dipolar Bose-Fermi quantum-gas mixture. *Phys Rev A*. 88:033616.

Kain B, Ling HY (2012) Cosmological inhomogeneities with Bose-Einstein condensate dark matter. *Phys Rev D*. 85:023527.