CHEW LOCK YUE
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Lock Yue Chew is a theoretical physicist with research interest in the physics of complex systems. The main theme of his research centers on uncovering the organizing principles of complex systems based on the approach of statistical and nonlinear physics. The interdisciplinary research of his group investigates into the self-organization, pattern formation, synchronization, co-operation, competition, phase transition, chaos, and fractal properties of diverse biological, physical and social complex systems. The elucidation of the emergent properties and underlying mechanisms of these systems, which is typically far from thermodynamic equilibrium, is of interest. For example, the emergence of vortices in Bose-Einstein condensates and the formation of self-organized patterns in dusty plasmas have been explored. Specific research interests include: (1) protein secondary-structure phase transition and the phenomenon of protein aggregation with cell membrane invagination, which are currently believed to be part of the mechanisms leading to the prion and Alzheimer's disease; (2) the dynamics of the collective behavior of composite quantum systems as exhibited through their entanglement and their relation to the topic of quantum chaos, and (3) the universal scaling behavior of self-organized criticality in fractal lattices. Recently, he has also embarked active research on the problem of regimes shift in coupled socio-ecological systems.

He received his B.Eng. and M.Sc. in Electrical Engineering from the National University of Singapore and University of Southern California, USA, respectively. He received his PhD in Physics from the National University of Singapore. He is an assistant professor in the School of Physical and Mathematical Sciences (Division of Physics and Applied Physics) at the Nanyang Technological University.