

## Curriculum Vitae



### **Dr Chung Ning Ning**

Senior Lecturer

Core Learning

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### **Education Qualifications**

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| 2006 - 2009 | Doctor of Philosophy, Physics, Nanyang Technological University  |
| 2001 – 2005 | Bachelor of Sciences, Physics. Second Class Honours (Lower Division), National University of Singapore |

### **Academic and Professional Experience**

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| 2022 - present | Senior Lecturer, Core Learning, Singapore University of Social Sciences                       |
| 2019 - 2021    | Lecturer, Centre for University Core, Singapore University of Social Sciences                 |
| 2017 - 2019    | Research Fellow, Complexity Institute, Nanyang Technological University                       |
| 2016 - 2017    | Research Fellow, School of Physical & Mathematical Sciences, Nanyang Technological University |
| 2013 - 2016    | Research Fellow, Physics Department, National University of Singapore                         |
| 2011 - 2013    | Research Fellow, Temasek Laboratories, National University of Singapore                       |
| 2009 - 2010    | Research Fellow, School of Physical & Mathematical Sciences, Nanyang Technological University |
| 2009 - 2009    | Associate Lecturer, PSB Academy   |

### **Research Interests**

- Complex network
- Computational social science
- Coupled socio-ecological systems
- Urban complexity
- Intelligent system
- Neural Network

### Selected Publications

- J. S. Lansing, N. N. Chung, L. Y. Chew and G. S. Jacobs, "Averting evolutionary suicide from the tragedy of the commons", *International Journal of the Commons* 15, 414-430 (2021).
- Y. Gandica, J. S. Lansing, N. N. Chung, S. Thurner, and L. Y. Chew, "Bali's Ancient Rice Terraces: A Hamiltonian Approach", *Phys. Rev. Lett.* 127, 168301 (2021).
- N. N. Chung and L. Y. Chew, "Modelling Singapore COVID-19 pandemic with a SEIR multiplex network model", *Scientific Reports*, 11, 10122 (2021).
- W. L. Quek, N. N. Chung, V.-L. Saw and L. Y. Chew, "Analysis and Simulation of Intervention Strategies against Bus Bunching by means of an Empirical Agent-Based Model", *Complexity*, 2606191 (2021).
- N. N. Chung, L. Y. Chew, W. Chen, R. M. D'Souza and C. H. Lai, "Susceptible individuals drive active social contagion", *Physical Review Research*, 1, 033125 (2019).
- N. N. Chung, G. S. Jacobs, H. Sudoyo, S. G. Malik, L. Y. Chew, J. S. Lansing and M. P. Cox "Sex-linked genetic diversity originates from persistent socio-cultural processes at microgeographic scales", *Royal Society Open Science*, 6, 190733 (2019).
- V.-L. Saw, N. N. Chung, W. Quek, Y. E. I. Pang and L. Y. Chew, "Bus bunching as a synchronisation phenomenon", *Scientific Reports* 9, 6887 (2019).
- W. L. Quek, N. N. Chung and L. Y. Chew, "An analysis on the traffic processing efficiency of a combination of serial and parallel bottlenecks", *Physica A*, 503, 491 (2018).
- J. S. Lansing ,C. Abundo, G. S. Jacobs, E.G. Guillot, S. Thurner, S. S. Downey, L. Y. Chew, T. Bhattacharya, N. N. Chung, H. Sudoyo and M. P. Cox, "Kinship structures create persistent channels for language transmission", *Proceedings of the National Academy of Sciences*, 114, 12910-12915 (2017).
- H. S. Sugiarto, N. N. Chung, C. H. Lai and L. Y. Chew, "Emergence of cooperation in a coupled social-ecological system through a direct or an indirect social control mechanism", *Journal of Physics Communications*, 1, 055019 (2017).
- J. S. Lansing, S. Thurner, N. N. Chung, Aurélie Coudurier-Curveur, Çağıl Karakaş, Kurt Fesenmeyer and L. Y. Chew, "Adaptive self-organization of Bali's ancient rice terraces", *Proceedings of the National Academics of Sciences*, 114, 6504 (2017).
- H. S. Sugiarto, J. S. Lansing, N. N. Chung, C. H. Lai, S. A. Cheong and L. Y. Chew, "Social cooperation and disharmony in communities mediated through common pool resource exploitation", *Physical Review Letters*, 118, 208301 (2017).
- H. S. Sugiarto, N. N. Chung, C. H. Lai and L. Y. Chew, "Socio-ecological regime shifts in the setting of complex social interactions", *Physical Review E*, 91, 062804 (2015).

- L. Y. Chew and N. N. Chung, "Dynamical relation between quantum squeezing and entanglement in coupled harmonic oscillator system", *Symmetry*, 6, 295 (2014).
- N. N. Chung, L. Y. Chew and C. H. Lai, "Influence of network structure on cooperative dynamics in coupled socio-ecological systems", *Europhysics Letters*, 104, 28003 (2013).
- N. N. Chung, L. Y. Chew and C. H. Lai, "Spectral analysis on explosive percolation", *Europhysics Letters*, 101, 66003 (2013).
- C. H. Er, N. N. Chung and L. Y. Chew, "Threshold effect and entanglement enhancement through local squeezing of initial separable states in continuous variable systems", *Physica Scripta*, 87, 025001 (2013).
- W. Chen, X. Q. Cheng, Z. M. Zheng, N. N. Chung, R. M. D'Souza and J. Nagler, "Unstable supercritical discontinuous percolation transitions", *Physical Review E*, 88, 042152 (2013).
- L. Y. Chew, N. N. Chung, J. Zhou and C. H. Lai, "Impact of global edge-removal on the average path length", *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, 126, 52 (2013).
- J. Zhou, N. N. Chung, L. Y. Chew and C. H. Lai, "Epidemic spreading induced by diversity of agents' mobility", *Physical Review E*, 86, 026115 (2012).
- L. Y. Chew and N. N. Chung, "Quantum-classical correspondence through entanglement dynamics", *Chaotic Modeling and Simulation*, 3, 451 (2012).
- N. N. Chung, L. Y. Chew, J. Zhou and C. H. Lai, "Impact of edge removal on the centrality betweenness of the best spreaders", *Europhysics Letters*, 98, 58004 (2012).
- N. N. Chung, L. Y. Chew and C. H. Lai, "Network extreme eigenvalue: From multimodal to scale-free networks", *Chaos*, 22, 013139 (2012).
- L. Y. Chew and N. N. Chung, "The quantum signature of chaos through the dynamics of entanglement in classically regular and chaotic systems", *Acta Physica Polonica A*, 120, A95 (2011).
- L. Y. Chew and N. N. Chung, "Quantum entanglement and squeezing in coupled harmonic and anharmonic oscillator systems", *Journal of Russian Laser Research*, 32, 331 (2011).
- N. N. Chung, C. H. Er, Y. S. Teo and L. Y. Chew, "Relation of entanglement entropy and uncertainty product in the ground states of coupled anharmonic oscillators", *Physical Review A*, (2010).
- N. N. Chung and L. Y. Chew, "Dependence of entanglement dynamics on the global classical dynamical regime", *Physical Review E*, 80, 016204 (2009).
- N. N. Chung and L. Y. Chew, "Two-step approach to the dynamics of coupled anharmonic oscillators", *Physical Review A*, 80, 012103 (2009).
- N. N. Chung and L. Y. Chew, "Energy eigenvalues and squeezing properties of general systems of coupled quantum anharmonic oscillators", *Physical Review A*, 76, 032113 (2007).