

PAH CHIN HEE



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ACADEMIC QUALIFICATION

- Doctor of Philosophy in Computational & Theoretical Sciences
- Masters in Maths
- Bachelor in Science in Physcs

TEACHING RESPONSIBILITIES

| | |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| ADVANCED CALCULUS | 2008/2009 2009/2010 2010/2011 2011/2012 2012/2013 2013/2014 2014/2015 2015/2016 2016/2017 2017/2018 2018/2019 2019/2020 2020/2021 |
| ADVANCED MATHEMATICAL METHODS | 2008/2009 2009/2010 2014/2015 2020/2021 |
| ANALYSIS | 2008/2009 2009/2010 |
| FINAL YEAR PROJECT | 2009/2010 |
| GENERAL PEDAGOGY | 2013/2014 |
| HISTORICAL & PHILOSOPHICAL FOUNDATIONS OF MALAYSIA EDUCATION | 2013/2014 |
| MATHEMATICAL ANALYSIS | 2009/2010 2010/2011 2013/2014 2014/2015 2015/2016 2016/2017 2019/2020 |
| NUMBER THEORY | 2009/2010 2010/2011 2011/2012 2012/2013 2013/2014 2014/2015 2015/2016 2016/2017 2017/2018 2019/2020 |
| Number Theory | 2018/2019 |
| THEORY OF PROBABILITY | 2013/2014 2016/2017 2018/2019 2019/2020 |

RESEARCH PROJECTS

In Progress

**2019 -
Present**

Autonomous Quantum Thermal Machine for Quantum Steering

2017 - Present Lambda Model with Competing Interactions on Cayley Tree

2017 - Present The chaos implies the phase transition: p-adic dynamical system approaches to the quest for a new class of p-adic Gibbs measures

2014 - Present Applications of Scrambling Nonlinear Operators in Consensus Problems

2014 - Present Spectral Expansions and Application of Mathematical Principles on Electromagnetic Prospecting Method

2013 - Present DYNAMICAL SYSTEMS AND THEIR APPLICATIONS (DSTA)

Completed

2017 - 2019 Lambda Model with Competing Interactions on Cayley Tree

2014 - 2018 Spectral Expansions and Application of Mathematical Principles on Electromagnetic Prospecting Method

2014 - 2017 Applications of Scrambling Nonlinear Operators in Consensus Problems

2014 - 2018 Quadratic Stochastic Operators with Infinite State Space and Their Applications

2014 - 2018 Hedging Performane of Future Contracts: The Case of FTSE BMKLCI Futures and the CPO Futures Contracts in Malaysia

2014 - 2016 Generalized the Zero-Two Law for Positive Contractions of Lp-Spaces

2014 - 2017 Nonorthogonal Unitaries for Two-way Quantum Key Distribution

2013 - 2015 Quartic Equation over P-Adic Field

2013 - 2016 P-Adic Statistical Models and Dynamics of Localized Excitations of Bose-Einstein Condensates

2011 - 2012 Ising Model with Competing Interactions on Cayley Tree of Order 4: An Anlytic Curve

2011 - 2011 KVC PROJECT 2011 - LATTICE MODELS WITH COMPETING INTERACTIONS

2011 - 2012 Ising Model on A General Cayley Tree with Competing Next-nearest-neighbour Interactions

2011 - -1 KVC PROJECT 2011 - LATTICE MODELS WITH COMPETING INTERACTIONS

2011 - 2015 Quantum Quadratic Operators and Quadratic Processes

2009 - 2012 Generalization of Catalan Number On Cayley Tree Of Order K

2009 - 2011 Dynamics of some class of quadratic stochastic operators and its applications

2009 - 2012 On Generalized Gibbs measures of a countable state p-adic Potts Model and Their Properties

- 2009 - 2013** Nonlinear Waves in Bose-Einstein Condensates & Optical Waveguide Systems with Higher Order Nonlinearity
- 2008 - 2011** Quantum Markov Chains, Quantum Quadratic Stochastic Processes
- 2008 - 2011** Mutually Unbiased Bases for six Dimensional Quantum System
- 2004 - 2006** The Pirogov-Sinai Theory for Lattice Model Cayley Tree

PUBLICATIONS

Article

- 2020** [Rock-Paper-Scissors Lattice Model](#). Malaysian Journal of Fundamental and Applied Sciences
- 2020** [On ground states and phase transition for \$\lambda\$ -model with the competing Potts interactions on Cayley trees](#). Physica A: Statistical Mechanics and its Applications , 549 pp.1-18
- 2020** [The portfolio optimization performance during Malaysia's 2018 General Election by using noncooperative and cooperative game theory approach](#). Modern Applied Science , 14 (4) pp.1-13
- 2019** [On non-ergodic volterra cubic stochastic operators](#). Qualitative Theory of Dynamical Systems
- 2018** [Ground states and phase transition of the \$\lambda\$ model on the Cayley tree](#). Theoretical and Mathematical Physics , 194 (2) pp.260-273
- 2017** [On connected sub-tree with fixed nodes in Cayley tree of Order 2](#). Southeast Asian Bulletin of Mathematics , 41 (3) pp.431-456
- 2016** [Dirichlet's theorem related prime gap statistics](#). Malaysian Journal of Mathematical Sciences , 10 pp.305-310
- 2015** [Combinatorial interpretation of raney numbers and tree enumerations](#). Open Journal of Discrete Mathematics , 5 (1) pp.1-9
- 2013** [Single polygon counting on Cayley tree of order 4 : generalized Catalan numbers](#). Middle-East Journal of Scientific Research , 13 pp.1-5
- 2013** [International Conference on Advancement in Science and Technology 2012 \(iCAST\): Contemporary Mathematics, Mathematical Physics and their Applications](#). Journal of Physics: Conference Series , 435 (conf.1) pp.011001-1
- 2013** [International Conference on Advancement in Science and Technology 2012 \(iCAST\): Contemporary Mathematics, Mathematical Physics and their Applications](#). Journal of Physics: Conference Series , 435 (conf.1) pp.011001-1
- 2013** [On quadratic stochastic processes and related differential equations](#). Journal of Physics: Conference Series , 435 pp.012013
- 2013** [Ising model with competing interactions on Cayley tree of Order 4: an analytic solution](#). Journal of Physics: Conference Series , 435 pp.012032

- 2010 [Single Polygon Counting on Cayley Tree of Order 3.](#) Journal of Statistical Physics , 140 (1) pp.198-207
- 2008 [Application of Catalan Number on Cayley tree: of order 2: single Polygon Counting.](#) Bulletin of the Malaysian Mathematical Sciences Society , 31 (2) pp.175-183
- 2008 [An application of Catalan Numbers on Cayley tree of order 2: Single Polygon Counting.](#) Bulletin of the Malaysian Mathematical Sciences Society , 31 (2) pp.175-183
- 2008 [Phase diagram of the three states Potts model with next nearest neighbour interactions on the Bethe lattice.](#) Physics Letters A , 373 (1) pp.33-38
- 2006 [Phase diagrams of multicomponent lattice models.](#) Theoretical and Mathematical Physics , 149 (2) pp.1512-1518
- 2004 [The effect of finite bandwidth squeezed light on entanglement creation in the Dicke model.](#) Journal of Optics B: Quantum and Semiclassical Optics , 6 (7) pp.289-295
- 2004 [An Ising model with three competing interactions on a Cayley tree.](#) Journal of Mathematical Physics , 45 (9) pp.3645-3658
- 2003 [Exact solution of an Ising model with competing interactions on a Cayley tree.](#) Journal of Physics A: Mathematical and General , 36 (15) pp.4283-4289

Conference or Workshop Item

- 2019 [On orthogonality preserving cubic stochastic operator defined on 1-dimensional simplex.](#) In: **1st International Conference on Mathematical Sciences and Technology 2018: Innovative Technologies for Mathematics and Mathematics for Technological Innovation, MathTech 2018**
- 2019 [Dynamics of potts-bethe mapping of degree four on \$\mathbb{Q}_5\$.](#) In: "1st International Conference on Mathematical Sciences and Technology 2018: Innovative Technologies for Mathematics and Mathematics for Technological Innovation, MathTech 2018"
- 2019 [On orthogonality preserving cubic stochastic operator defined on 1-dimensional simplex.](#) In: **The International Conference on Mathematical Sciences and Technology 2018**
- 2018 [Periodic and weakly periodic ground states for the \$\lambda\$ -Model on Cayley tree.](#) In: **4th International Conference on Mathematical Applications in Engineering 2017 (ICMAE'17)**
- 2018 [\$\lambda\$ -model with competing Potts interactions on Cayley tree of order 2.](#) In: **International Conference on Mathematics, Engineering and Industrial Applications (ICoMEIA 2018)**
- 2017 [Pitchfork bifurcation of a class of discrete dynamical systems.](#) In: **2nd International Conference And Workshop On Mathematical Analysis 2016 (ICWOMA2016)**
- 2017 [The quadriceps muscle of knee joint modelling using Hybrid Particle Swarm Optimization-Neural Network \(PSO-NN\).](#) In: **37th International Conference on Quantum Probability and Related Topics (QP37) 2016**

- 2017 [Orthogonal preserving quadratic stochastic operators: Infinite dimensional case.](#) In: **37th International Conference on Quantum Probability and Related Topics (QP37)**
- 2016 [On ground states of \$\lambda\$ -model on the cayley tree of order two.](#) In: **37th International Conference on Quantum Probability and Related Topics (QP37)**
- 2016 [Exact solution for an Ising model on the Cayley tree of order.](#) In: **2015 National Symposium of Mathematical Sciences**
- 2015 [Exact solution for an Ising model on the Cayley tree of order 5.](#) In: **Simposium Kebangsaan Sains Matematik Ke-23 (SKSM23)**
- 2013 [On connected sub-tree of Cayley tree of order 2 with fixed nodes.](#) In: **International Conference On Mathematical Sciences And Statistics 2013 (ICMSS2013)**

- 2011 [Ising model with competing interactions on Cayley tree of order 4: an analytic solution.](#) In: **10th International Annual Symposium (UMTAS 2011)**

Book

- 2011 [Investigations on Pure Mathematics, Finance Mathematics and Optics.](#) IUM Press . ISBN 9789674181987
- 2011 [Lattice models with competing interactions.](#) IUM Press . ISBN 9789674180065

Book Section

- 2011 [Geometric Brownian motion and calculation of option premium in black scholes model.](#) In: **Investigations on Pure Mathematics, Finance Mathematics and Optics** IUM Press . ISBN 9789674181987 , pp.50-56
- 2011 [Investigation of stability of fixed points of nonlinear discrete dynamical systems .](#) In: **Investigations on Pure Mathematics, Finance Mathematics and Optics** IUM Press . ISBN 9789674181987 , pp.82-89
- 2011 [Phase transition for Ising model with two competing interaction on Cayley tree of order.](#) In: **Investigations on Pure Mathematics, Finance Mathematics and Optics** IUM Press . ISBN 9789674181987 , pp.96-100
- 2011 [Ising model with competing interactions on Cayley tree of order four.](#) In: **Recent achievements in dynamical systems: proceedings of Department of Computational and Theoretical Sciences, Faculty of Science, IUM IUM Press . ISBN 9789674182014 , pp.118-124**
- 2011 [Single polygon counting for two fixed nodes on a Cayley tree of order 2.](#) In: **Recent achievements in dynamical systems: proceedings of Department of Computational and Theoretical Sciences, Faculty of Science, IUM IUM Press . ISBN 9789674182014 , pp.214-218**
- 2011 [Dirichlet's theorem and prime gap statistics.](#) In: **Recent achievements in dynamical systems: proceedings of Department of Computational and Theoretical Sciences, Faculty of Science, IUM IUM Press . ISBN 9789674182014 , pp.256-260**