

Wong, Wing Hong Tony

Department of Mathematics
Kutztown University of Pennsylvania
Kutztown, PA 19530, USA

wong@kutztown.edu
Tel: 1-610-683-4407
<http://facutly.kutztown.edu/wong/>

Current Position

Aug 2013 – Present Assistant Professor of Mathematics,
Kutztown University of Pennsylvania, Pennsylvania, USA.

Education

Sep 2008 – Jun 2013 Ph.D. in Mathematics,
California Institute of Technology, California, USA.

Sep 2004 – Jun 2008 B.Sc. in Mathematics with First Class Honors,
Chinese University of Hong Kong, Hong Kong.

Awards and Recognition

Aug 2017 The John P. Schellenberg Faculty Award for a Kutztown University faculty member who embodies those qualities most closely associated with the Center for the Enhancement of Teaching.

Feb 2016 Sponsored Programs Recognition for having received a Grant Award from an External Sponsor in Fiscal Year 2015.

Feb 2015 Sponsored Programs Recognition for having submitted a Grant Proposal to an External Sponsor in Fiscal Year 2014.

Jun 2012 Scott Russell Johnson Prize for Excellence in Graduate Teaching.

Jun 2010 Apostol Award for Excellence in Teaching in Mathematics.

Publications in Peer-Reviewed Research Journals

1. (Published in Feb 2017)
“Paired many-to-many disjoint path covers of hypertori,”
Brian Kronenthal and Tony W. H. Wong,
Discrete Applied Mathematics **218** (2017), 14-20.
2. (Published in Jun 2014)
“Integrality of relative BPS state counts of toric del Pezzo surfaces,”
Michel van Garrel, Tony W. H. Wong, and Gjergji Zaimi,
Communications in Number Theory and Physics **7** (2013), 671-687.

3. (Published in May 2014)
 “Diagonal forms and zero-sum (mod 2) bipartite Ramsey numbers,”
 Tony W. H. Wong,
Journal of Combinatorial Theory, Series A **124** (2014), 97-113.
4. (Published in Jan 2014)
 “Diagonal forms of incidence matrices associated with t -uniform hypergraphs,”
 Richard M. Wilson and Tony W. H. Wong,
European Journal of Combinatorics **35** (2014), 490-508.
5. (Published in Jul 2013)
 “Algebraic techniques in designing quantum synchronizable codes,”
 Yuichiro Fujiwara, Vladimir D. Tonchev, and Tony W. H. Wong,
Physical Review A **88** (2013), 012318.
6. (Published in Mar 2007)
 “Intersecting families in the alternating group and direct product of symmetric groups,”
 Cheng Yeaw Ku and Tony W. H. Wong,
Electronic Journal of Combinatorics **14** (2007), #R25.

Other Peer-Reviewed Publications

1. (Published in Aug 2017)
 Integer sequences A291341 and A291342,
 Diego Manzano-Ruiz and Wing Hong Tony Wong,
On-Line Encyclopedia of Integer Sequences (OEIS), URL: <https://oeis.org/A291341>,
<https://oeis.org/A291342>.
2. (Published in Feb 2016)
 “Flow Free on a torus,”
 Brian Kronenthal and Wing Hong Tony Wong,
*Math Horizons** **23.3** (2016), 2.
3. (Published in Dec 2015)
 Integer sequences A265919 and A265920,
 Wing Hong Tony Wong and Jiao Xu,
On-Line Encyclopedia of Integer Sequences (OEIS), URL: <https://oeis.org/A265919>,
<https://oeis.org/A265920>.

Articles Submitted to Peer-Reviewed Research Journals

1. (Submitted in May 2017)
 “A probabilistic single-pile take-away game,”
 Wing Hong Tony Wong and Jiao Xu,
 submitted to the *Journal of Integer Sequences*.

2. (Submitted in Apr 2017)
 "Building matrices with prescribed size and number of invertible submatrices,"
 Sin Tsun Edward Fan and Wing Hong Tony Wong,
 submitted to the Electronic Journal of Combinatorics.

Manuscripts under Preparation

1. "A two-person vertex coloring game,"
 Diego Manzano-Ruiz and Wing Hong Tony Wong.
2. "Edge-distinguishing chromatic numbers,"
 Grant Fickes and Wing Hong Tony Wong.
3. "Hamiltonian-laceability of some faulty grid graphs,"
 Wing Hong Tony Wong.

Research with Undergraduate Students

Sep 2016 – Present Grant Fickes

May 2016 – Present Diego Manzano-Ruiz

Jul 2015 – Present Jiao Xu

Grants and Fellowships

May 2017 – Sep 2017 Kutztown University Bringing Experiences About Research in Summer (KU BEARS) – working with Grant Fickes. (\$2000)

Jan 2017 – May 2017 Grant Writing Fellowship at Kutztown University of Pennsylvania. (one course release in the Spring semester)

May 2016 – Sep 2016 Kutztown University Bringing Experiences About Research in Summer (KU BEARS) – working with Diego Manzano-Ruiz. (\$2000)

Jan 2015 – May 2015 Grant for developing an Inquiry-Based Learning (IBL) course, sponsored by the Educational Advancement Foundation (EAF) through the Academy for Inquiry-Based Learning (AIBL). (\$1500)

Oct 2014 Travel Grant to the DIMACS Conference on "Challenges of Identifying Integer Sequences", sponsored by National Science Foundation (NSF) through the Center for Discrete Mathematics and Theoretical Computer Science at Rutgers University (DIMACS). (Approx. \$700)

Sep 2008 – Jun 2011 Sir Edward Youde Memorial Fellowship for Overseas Studies, sponsored by Sir Edward Youde Memorial Fund Council. (Approx. \$36,300 per year)

Conference Organized

Oct 2016 – Apr 2017 **Co-Chief Organizer** (with Dr. Brian Kronenthal) of the Spring Meeting of the Eastern Pennsylvania and Delaware (EPaDel) Section of the Mathematical Association of America (MAA) on Apr 1, 2017 at Kutztown University of Pennsylvania.

Oct 2014 – Apr 2015 **Co-Chief Organizer** (with Dr. Brian Kronenthal) of the Pennsylvania State System of Higher Education – Mathematics Association (PASSHE-MA) Conference on Apr 10–11, 2015 at Kutztown University of Pennsylvania.

Scholarly Presentations at National / International Conferences

Aug 2017 Mathematics of Various Entertaining Subjects (MOVES) Conference, National Museum of Mathematics, New York, NY.
- *Graph coloring games, Col, and nimbbers.*

Jun 2017 The Second Malta Conference in Graph Theory and Combinatorics, Qawra, Malta.
- *Games of vertex coloring.*

Jun 2017 The 6th Biennial Canadian Discrete and Algorithmic Mathematics Conference, Ryerson University, Toronto, Canada.
- *Graph coloring games and “nimbbers”.*

Jan 2017 Joint Mathematics Meetings, Seattle, WA.
- *When “Flow Free” is played on a torus.*

Jun 2016 SIAM Conference on Discrete Mathematics, Atlanta, GA.
- *Diagonal forms of incidence matrices arising from bipartite graphs and applications to zero-sum Ramsey problems.*

Jan 2016 Joint Mathematics Meetings, Seattle, WA.
- *Diagonal forms and zero-sum (mod 2) bipartite Ramsey numbers.*

Aug 2015 Mathematics of Various Entertaining Subjects (MOVES) Conference, National Museum of Mathematics, New York, NY.
- *Paired many-to-many disjoint path covers of cuboids.*

Jan 2015 Joint Mathematics Meetings, San Antonio, TX.
- *Constructing matroids with fixed parameters.*

- Oct 2014 DIMACS Conference on Challenges of Identifying Integer Sequences, DIMACS Center, Rutgers University, New Brunswick, NJ.
- *Diagonal forms of some integer matrices.*
- Jun 2014 SIAM Conference on Discrete Mathematics, Minneapolis, MN.
- *On the number of bases in a matroid.*
- Jan 2013 Joint Mathematics Meetings, San Diego, CA.
- Jun 2012 SIAM Conference on Discrete Mathematics, Halifax, Canada.
- Sep 2011 European Conference on Combinatorics, Graph Theory and Applications, Budapest, Hungary.

Scholarly Presentations at Regional Conferences / Seminars

- Jul 2017 Research Experiences for Undergraduates (REU), Lafayette College, Easton, PA.
- *Games of vertex coloring.*
- Mar 2017 The Pennsylvania State System of Higher Education Mathematics Association (PASSHE-MA) Conference, Indiana University of Pennsylvania, Indiana, PA.
- *A further exploration related to the Game of Col.*
- Nov 2016 Jointly-Organized Fall Meeting of the Eastern Pennsylvania and Delaware (EPaDel) and New Jersey (NJ) Sections of the Mathematical Association of America (MAA), Villanova University, Villanova, PA.
- *A two-person graph coloring game.*
- Jul 2016 Research Experiences for Undergraduates (REU), Muhlenberg College, Allentown, PA.
- *An integer sequence arising from chip collecting.*
- Nov 2015 Fall Meeting of the Eastern Pennsylvania and Delaware (EPaDel) Section of the Mathematical Association of America (MAA), Delaware Valley University, Doylestown, PA.
- *Playing "Flow Free" on different boards.*
- Apr 2015 The Pennsylvania State System of Higher Education Mathematics Association (PASSHE-MA) Conference, Kutztown University of Pennsylvania, Kutztown, PA.
- *Ramsey theory and some variations.*
- Mar 2015 Spring Meeting of the Eastern Pennsylvania and Delaware (EPaDel) Section of the Mathematical Association of America (MAA), Franklin and Marshall College, Lancaster, PA.

- *Existence of matroids with specific size, rank, and number of bases.*

Apr 2014 The Pennsylvania State System of Higher Education Mathematics Association (PASSHE-MA) Conference, Lock Haven University of Pennsylvania, Lock Haven, PA.

- *Building matroids with special constraints.*

Dec 2013 Discrete Mathematics Seminar, University of Delaware, Newark, DE.

- *A problem on matroid theory by Dominic Welsh.*

Feb 2013 Combinatorics Seminar, UCSD, San Diego, CA.

Jul 2012 Toronto Set Theory Seminar, Fields Institute, Toronto, Canada.

Mar 2012 WilsonFest – a Conference in honor of Rick Wilson, Caltech, Pasadena, CA.

Internal Scholarly Presentations

Sep 2014 Discrete Mathematics Seminar.

- *From Flow Free to disjoint path covers.*

Apr 2014 Mathematics Colloquium.

- *Catalan numbers.*

Nov 2013 Discrete Mathematics Seminar.

- *A problem on matroid theory by Dominic Welsh.*

Oct 2013 Discrete Mathematics Seminar.

- *Some interesting problems in combinatorics.*

Apr 2013 Mathematics Colloquium.

- *Zero-sum Ramsey theory.*

May 2011 Combinatorics Seminar, Caltech, Pasadena, CA.

Other Conferences Attended

Nov 2016 PASSHE Undergraduate Research Conference in Science, Technology, Engineering and Mathematics, Millersville University of Pennsylvania, Millersville, PA.

Apr 2016 Spring Meeting of the Eastern Pennsylvania and Delaware (EPaDel) Section of the Mathematical Association of America (MAA), Muhlenberg College, Allentown, PA.

Oct 2014 Fall Meeting of the Eastern Pennsylvania and Delaware (EPaDel) Section of the Mathematical Association of America (MAA), University of the Sciences, Philadelphia, PA.

Papers Refereed

May 2014 Advances and Applications in Discrete Mathematics, "*The distribution of Ramsey numbers*".

Apr 2014 Electronic Journal of Combinatorics, "*More on Wilson $W_{tk}(v)$ Matrices*".

Articles Review for Mathematical Reviews / MathSciNet

May 2017 Linear and Multilinear Algebra, "*On the Smith normal form of skew E-W matrices*".

May 2017 Electronic Journal of Graph Theory and Applications, "*Size multipartite Ramsey numbers for stripes versus small cycles*".

Jul 2016 Linear Algebra and its Applications, "*Relating p-adic eigenvalues and the local Smith normal form*".

Jan 2016 Linear Algebra and its Applications, "*Sinkhorn normal form for unitary matrices*".

Aug 2015 Discrete Applied Mathematics, "*On equienergetic signed graphs*".

Mar 2015 Linear and Multilinear Algebra, "*Trace index of a (0,1)-matrix*".

Dec 2014 Australian Journal of Combinatorics, "*A note on packing spanning trees in graphs and bases in matroids*".

Jul 2014 Discrete Mathematics, "*Ramsey-minimal saturation numbers for matchings*".

Service Highlights

Aug 2013 – Present **Founder and Trainer** of the Mathematics Team at Kutztown University of Pennsylvania.

- Have regular meetings every week (5 hours per week in the Fall, 4 hours per week in the Spring).
- Develop training materials.

Selected Competition results

Lehigh Valley Association of Independent Colleges Mathematics Competition
Nov 2016 Nathaniel Benjamin, David Foley, and Jacob McCann won the Team Champion.

The William Lowell Putnam Mathematics Competition

- Dec 2016 Nathaniel Benjamin, David Foley, and Jacob McCann achieved the 68th percentile.
Jacob Kramer achieved the 64th percentile.
Dec 2015 Kevin Ruppert achieved the 78th percentile.

Virginia Tech Regional Mathematics Contest

- Oct 2015 GuoZhi Zhang achieved the 74th percentile.
Oct 2014 Kevin Ruppert achieved the 75th percentile.

Development of New Courses

Aug 2013 – May 2014 MAT 123 – Discrete Mathematics

MAT 300 – Problem Solving in Mathematics

Service at University Level

Aug 2017 – Present University Conduct Board

Feb 2017 – Apr 2017 Department Representative at the Multicultural Overnight Recruitment Experience (MORE) Program.

Aug 2016 – Present At-Large Faculty Representative to the University Senate.

Member of the Financial Aid Committee.

Oct 2016 Participated in the Fall 2016 Willingness-to-Serve appointment process.

Jun 2016 Participated in Discussions with Woodrow Wilson Foundation Representatives.

Oct 2015 – Present Member of the International Advisory Council.

Oct 2015 Participated in the Fall 2015 Willingness-to-Serve appointment process.

Aug 2015 – Present Member of the Institutional Climate Committee.

Jan 2015 – Apr 2016 Member of the University Senate Ad Hoc Task Force on Faculty and Staff Retention.

Apr 2014 Participated in the Spring 2014 Willingness-to-Serve appointment process.

Service at College Level

Oct 2016	Science, Technology, and Math Open House organized by the College of Liberal Arts and Sciences.
Apr 2016	Science, Technology, and Math Open House organized by the College of Liberal Arts and Sciences.
Jan 2016 – Present	Member of the College and Liberal Arts and Sciences Assessment Committee.
Oct 2015	Science, Technology, and Math Open House organized by the College of Liberal Arts and Sciences.
Apr 2015	Science, Technology, and Math Open House organized by the College of Liberal Arts and Sciences.
Apr 2014	Science, Technology, and Math Open House organized by the College of Liberal Arts and Sciences.

Service at Department Level

Aug 2016 – May 2017	Department Representative in the Library Books Weeding Project. Supporting Manager of the Math Kangaroo Competition. Co-Chair of the Outreach Committee. Member of the General Education Committee. Member of the Program Review Committee. Member of the Promotion, Evaluation, and Tenure (PET) Committee. Member of the Recruitment Committee. Member of the Tenure-track Search Committee.
Aug 2015 – May 2016	Chair of the Outreach Committee. - <i>Developed the Kutztown Appreciation of Mathematics Program (KAMP) for grade school students.</i> - <i>Visited Fleetwood Area High School for classroom demonstration.</i> Co-Chair of the Communications Committee.

Co-Organizer (with Dr. Padraig McLoughlin) of the Third Annual Larry R. Mugridge Symposium on Undergraduate Mathematics Research.

Developed Mathematics Game Time for undergraduates with Dr. Brian Kronenthal, Dr. Eric Landquist, and Dr. Amy Lu.

Member of the General Education Assessment Committee.

Member of the Math Subgroup.

Member of the Placement Committee.

Member of the Promotion, Evaluation, and Tenure (PET) Committee.
- *Provide peer evaluations for two temporary faculty members.*

Member of the Recruitment Committee.

Member of the Retention Committee.

Aug 2014 – May 2016 Co-Organizer (with Dr. Brian Kronenthal) of the Problem of the Week Competition.

Aug 2014 – May 2015 Chair of the Colloquium Organizing Committee.

Member of the Contests Committee.

Member of the Master's Program Committee.

Member of the Math Subgroup.

Member of the Placement Committee.

Member of the Recruitment Committee.

Member of the Retention Initiatives Committee.

Member of the Sequencing, Offerings, and Program Review Committee.

Aug 2013 – May 2014 New Course Development:
MAT 300 – Problem Solving in Mathematics (approved by UCC).

New Course Development:
MAT 123 – Discrete Mathematics (approved by UCC, and is offered as a course in the Honors program).

Co-Organizer (with Dr. Padraig McLoughlin) of the First Annual Larry R. Mugridge Symposium on Undergraduate Mathematics Research.

Member of the Math Subgroup.

Member of the Master's Program Committee.

Substitutes for Department Members in Committees at the University and College Level

Sep 2016 Substituted for Dr. Eric Landquist in the College of Liberal Arts and Sciences Curriculum Committee.

Dec 2015 Substituted for Dr. Padraig McLoughlin in the University Senate.

Student Organization

Aug 2014 – Present Faculty Advisor of Math Club.

Service in External Professional Organizations

Aug 2016 – Present Faculty Liaison for the Berks County Interscholastic Mathematics Championship.

Oct 2014 – Present Treasurer of the Pennsylvania State System of Higher Education – Mathematics Association (PASSHE-MA).

Aug 2015 Potential Collaboration with Lafayette College REU Site Program.

Jun 2014 – Present Reviewer for Mathematical Reviews.

Moderators in Conferences

Jun 2016 Session Chair at the SIAM Conference on Discrete Mathematics, Atlanta, GA.

Jan 2016 Moderator at the Joint Mathematics Meetings, Seattle, WA.

Aug 2015 Moderator at the Mathematics of Various Entertaining Subjects (MOVES) Conference, New York, NY.

Jan 2015 Moderator at the Joint Mathematics Meetings, San Antonio, TX.

Participations in Assessments and Studies

Dec 2015 General Education Assessment at Kutztown University.

Sep 2015 – Dec 2015 Research Study conducted by the University of Colorado Boulder.

Service at Community Level

- Mar 2017 Supervisor of an event at the CE Pennsylvania Science Olympiad Tournament.
- Feb 2017 Judge at the 83rd Pennsylvania Junior Academy of Science Region #3 Meeting.
- Feb 2017 Faculty Volunteer in “The Walking in the Shoes Of” (W.I.T.S.O) Program, organized by the Kutztown University Frederick Douglass Institute.
- Dec 2016 Usher at the Commencement of Kutztown University of Pennsylvania.
- Oct 2016 Referee for the Hang Lung Mathematics Award 2016 in Hong Kong.
- Aug 2016 Move In Volunteer at Kutztown University of Pennsylvania.
- Apr 2016 Faculty Volunteer in “The Walking in the Shoes Of” (W.I.T.S.O) Program, organized by the Kutztown University Frederick Douglass Institute.
- Mar 2016 Judge at the CE Pennsylvania Science Olympiad Tournament.
- Feb 2016 Judge at the 82nd Pennsylvania Junior Academy of Science Region #3 Meeting.
- Apr 2015 Faculty Volunteer in “The Walking in the Shoes Of” (W.I.T.S.O) Program, organized by the Kutztown University Frederick Douglass Institute.
- Feb 2015 Judge at the 81st Pennsylvania Junior Academy of Science Region #3 Meeting.
- Nov 2014 Referee for the Hang Lung Mathematics Award 2014 in Hong Kong.
- Mar 2014 Judge at the CE Pennsylvania Science Olympiad Tournament.
- Feb 2014 Judge at the 80th Pennsylvania Junior Academy of Science Region #3 Meeting.
- Sep 2008 – Jun 2013 Volunteer at the Rise Program at California Institute of Technology (a low-cost afterschool math and science-focused tutoring program).

Academic Improvement

- 2014 – 2015 Member of the Project NExT (New Experiences in Teaching) in the Eastern Pennsylvania and Delaware Section of the Mathematical Association of America.
- College of Liberal Arts and Sciences Faculty Advising Workshop (Fall 2014).
- 2013 – 2014 Inquiry-Based Learning Workshop, organized by Academy of Inquiry Based Learning (4-day workshop in Summer 2014)
- DO-IT *Prof* Online Course on Accommodating Students with Disabilities (12-week online course in Spring 2014).
- College of Liberal Arts and Sciences Faculty Advising Workshop (Fall 2013).

Courses Taught

- Kutztown MAT 106 (Trigonometry),
 MAT 115 (Precalculus Mathematics),
 MAT 121 (Mathematics for Business and Information Science),
 MAT 123 (Discrete Mathematics),
 MAT 260 (Linear Algebra),
 MAT 300 (Problem Solving in Mathematics) – Individualized Instruction,
 MAT 372 (Algebraic Coding Theory) – Independent Study,
 MAT 431 (Topology) – Individualized Instruction,
 MAT 460 (Linear Algebra II) – Individualized Instruction.
- Johns Hopkins
Center for Talented
Youth Paradoxes and Infinities.
- Chinese University
of Hong Kong MATH 2010 (Advanced Calculus I).
- Caltech Instructor:
 Ma 1d (Calculus – Sequences and Series),
 Ma 17 (How to Solve It).
- Lead Teaching Assistant:
 Ma 1b (Linear Algebra – Analytical Track),
 Ma 1c (Calculus of Several Variables – Analytical Track).

Teaching Assistant:
Ma 1a (Calculus),
Ma 1b (Linear Algebra – Practical Track),
Ma 6a (Introduction to Discrete Mathematics – Combinatorics),
Ma 6b (Introduction to Discrete Mathematics – Graph Theory),
Ma 6c (Introduction to Discrete Mathematics – Logic),
Ma 121a,b (Combinatorial Analysis I & II).

Memberships of Professional Societies

Jul 2014 – Present Society for Industrial and Applied Mathematics (SIAM).

Sep 2008 – Present American Mathematical Society (AMS).