

**CURRICULUM VITAE**  
**Dr. William Charles Arlinghaus**  
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**\*\* EDUCATIONAL PHILOSOPHY \*\***

I believe that mathematics is a critical component in becoming an educated person. All too often, students think about academic subjects as they relate to career goals rather than as they relate to becoming a well-rounded, constructive, and productive member of society. Mathematics teaches logic and clear thought patterns. The role of any school is to educate, rather than merely to train, the future leaders of society.

**Vita Highlights**

- Lifelong practicing Roman Catholic
- Ph.D. in Mathematics
- Extensive experience teaching in Catholic (Jesuit) schools at the collegiate and high school levels.
- Extensive administrative experience within the Church context and in various educational and business contexts.

**\*\* EDUCATIONAL HISTORY \*\***

- Ph.D. (Mathematics) 1979. Wayne State University, Major: Algebra, Minor: Topology. Specialties: Graph Theory, Finite Group Theory. Dissertation Adviser: Geert Prins (1925-84). Dissertation Title: "The Structure of Minimal Graphs with Given Abelian Automorphism Group."
- Other graduate study in mathematics at the University of Toronto, specializing in algebraic number theory, and at the University of Chicago, provided a strong background in algebra generally, and in finite group theory specifically, from which to pursue doctoral and post-doctoral research projects in algebraic graph theory. Names of people studied who had the most influence on my mathematical development: John G. Thompson, I. N. Herstein, Jonathan Alperin, Frank Harary. Regular participant in Graph Theory seminar, University of Michigan.
- B.S., Summa cum Laude. First in graduating class. University of Detroit (Jesuit); major, mathematics; minor, physics. Graduate Record 710 Verbal (98<sup>th</sup> percentile); 870 Quantitative (99<sup>th</sup> percentile); 840 Advanced Mathematics (99<sup>th</sup> percentile).
- Diploma, University of Detroit (Jesuit) High School.

**\*\* AWARDS, HONORS, AND CITATIONS \*\***

**Awards and Honors:**

- Michigan Mathematics Prize Competition. Second (alone) in the State of Michigan. Awarded a second place prize.
- Michigan Mathematics Prize Competition. Tied for Second in State of Michigan. Awarded a second place prize.
- Nationwide honors not specific to mathematics.
  - o Honorable mention: National Science Fellowship

- o Honorable mention: Woodrow Wilson Fellowship
- o Honorable mention: Danforth Fellowship.
- o National Merit Finalist.
- Undergraduate honors. First in a class of 2500 leading to Alpha Sigma Nu Scholarship Award (National Jesuit Honor Society);
- Member, Alpha Sigma Nu; Member, Pi Mu Epsilon (mathematics honor society); Member, Sigma Pi Sigma (physics honor society).
- Putnam Examination, 109th, nationwide (out of thousands of competitors). Nationwide mathematics competition for a full fellowship to Harvard in mathematics at the graduate level.
- National Science Foundation Fellowship, the University of Chicago, Mathematics Predoctoral.
- Teaching Assistantships in Mathematics, University of Toronto, Wayne State University.
- National Science Foundation Fellowship to Advanced Science Seminar in Finite Group Theory at Bowdoin College.
- Letter of commendation from the Joint Policy Board on Mathematics, Washington D.C. for the outstanding display used to promote mathematics awareness at Lawrence Technological University (LTU).
- Pirelli INTERNETional Finalist and Semi-Finalist.
- American Contract Bridge League (invited honors): Goodwill Member; National Charity Committee Member.

**Citations (selection):**

- Marquis: *Who's Who in the World, Who's Who in Science and Engineering, Who's Who in the Midwest*
- American Contract Bridge League: *The Official Encyclopedia of Bridge*.
- International Biographical Centre: *Dictionary of International Biography*

**\*\* PUBLICATIONS\*\***

Listing compiled from: AMS MathSciNet, University of Michigan DeepBlue online archive, Institute of Mathematical Geography ([www.imagenet.org](http://www.imagenet.org)). Includes Books (B), Book Chapter (BC); Ph.D. Dissertation (D); Journal articles (J), Reviews (R), Other (O)

- 2020 (B): Pre-collegiate Education in Utopia (with Sandra L. Arlinghaus and William E. Arlinghaus). Ebook, Monograph 25, Institute of Mathematical Geography. <http://www.imagenet.org> leads to persistent archive; direct link to document: <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/163531/IMaGeMonograph25.pdf?sequence=1&isAllowed=y>
- 2020 (B): Calculus 2 Workshops. Ebook, Monograph 24, Institute of Mathematical Geography. <http://www.imagenet.org> leads to persistent archive; direct link to document: <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/163530/IMaGeMonograph24.pdf?sequence=1&isAllowed=y>
- 2020 (J): Coloring Maps: In the Plane and on the Surface of a Sphere. *Solstice: An Electronic Journal of Geography and Mathematics*. Institute of Mathematical Geography. Volume XXXI., Number 2. <http://www.imagenet.org>
- 2015 (J): Mathematics: What's Spatial, What's Not? *Quaestiones Geographicae*, Volume 34, Number 4. Poznan.
- 2015 (J): Topics in Spatial Mathematics: Area, with Sandra L. Arlinghaus and Joseph Kerski.

*Solstice: An Electronic Journal of Geography and Mathematics*, Volume XXVI, No. 2.  
<http://www.imagenet.org>

- 2011 (J): Pneumatic Networks as Geographers. With Sandra L. Arlinghaus. *Geographical Analysis*. Vol. 43, Issue 4, pp358-369. October 2011. Invited article.
- 2010 (O): Journal/book covers selected by jury for permanent exhibition in Shapiro Science Library, University of Michigan. o Graph Theory and Geography Book (with Sandra L. Arlinghaus and Frank Harary).
- 2008 (B): With Sandra L. Arlinghaus and other secondary co-authors. *Spatial Synthesis: Scientific, Planning, Humanitarian, and Teaching Applications, from DevInfo to Google Earth*. Ebook, Institute of Mathematical Geography.
- 2006 (J): With Sandra L. Arlinghaus. Maps and Decisions: *Solstice*, Volume XVII, Number 1.
  - o Part II—Ambiguity
  - o Part III—Redistricting
  - o Part IV—Club Data
- 2006 (J): PseudoCoup: *Solstice*, Volume XVII, Number 1.
  - o A Psubtle Puzzle
  - o Solution
- 2005 (B): With Sandra L. Arlinghaus. *Spatial Synthesis: Centrality and Hierarchy*. Ebook: Institute of Mathematical Geography.
- 2005 (J): Beyond the Shadow. *Solstice*, Volume XVI, Number 2.
- 2004 (J): With Sandra L. Arlinghaus. Spatial Synthesis Sampler. Geometric Visualization of Hexagonal Hierarchies: Animation and Virtual Reality. *Solstice*, Volume XV, Number 1. A Semi-Finalist in the (world-wide) Pirelli INTERNETional Competition (top 80 of 1500+ entries).
- 2002 (J): With Sandra L. Arlinghaus. Spatial Synthesis: A Research Program. *Solstice*: Volume XIII, Number 2.
- 2002 (B): With Sandra L. Arlinghaus and Frank Harary. *Graph Theory and Geography: An Interactive View*, John Wiley and Sons, 2002 (Wiley-Interscience Series in Discrete Mathematics and Optimization). Finalist, Pirelli INTERNETional Competition, 2003 (top 20 of over 1500 world-wide entries). 1st e-book published by Wiley.
- 2001 (J): With Sandra L. Arlinghaus. The Neglected Relation. *Solstice*: Volume XII, Number 1.
- 1999 (J): With Sandra L. Arlinghaus. Animaps III: Color Straws, Color Voxels, and Color Ramps. *Solstice*: Volume X, Number 1, 1999.
- 1997 (J): With Sandra L. Arlinghaus. A Graph Theoretic View of the Join-Count Statistic. *Solstice*, Volume VIII, Number 2.
- 1995 (J): With Sandra L. Arlinghaus and John D. Nystuen. "Discrete Mathematics and Counting Derangements in Blind Wine Tastings." *Solstice*, Volume VI, Number 1, 1995.
- 1994 (J): With Sandra L. Arlinghaus, Frank Harary, and John D. Nystuen "Los Angeles--1994: A Spatial Scientific Approach." *Solstice*, Vol. V, No. 1, 1994.
- 1994 (J): With Sandra L. Arlinghaus and Frank Harary. "The Paris Metro: Is its Graph Planar?" *Solstice*: Volume V, Number 2, 1994.
- 1993 (J): With Sandra L Arlinghaus and Frank Harary. "Sum graphs and geographic information." *Solstice*, Vol. IV, No. 1, 1993.
- 1993 (J): With Frank Harary. "The graph, multigraph, and digraph numbers of a finite abelian group." *Vishwa Internat. J. Graph Theory 2(1993)*, pp.101-105.

- 1991 (J): "Smallest tournaments with given abelian automorphism group," *Journal of Combinatorics, Information and System Sciences*, Vol. 16(1991), No. 1, pp. 63-66. Invited as part of issue dedicated to Frank Harary on his completing 70 years.
- 1991 (BC): "The Tantalizing Four Cubes," invited chapter in John G. Michaels (SUNY--Brockport) and Kenneth H. Rosen (Bell Labs), *Applications of Discrete Mathematics*, New York: McGraw-Hill, 1991, pp. 288-298.
- 1991 (BC): "Shortest Path Problems," invited chapter in John G. Michaels (SUNY--Brockport) and Kenneth H. Rosen (Bell Labs), *Applications of Discrete Mathematics*, New York: McGraw-Hill, 1991, pp. 322-331.
- 1991 (BC): "Block Designs and Latin Squares," invited chapter in John G. Michaels (SUNY--Brockport) and Kenneth H. Rosen (Bell Labs), *Applications of Discrete Mathematics*, New York: McGraw-Hill, 1991, pp. 174-186.
- 1990 (J): "The Hedetniemi matrix sum: A real-world application." *Solstice*, Winter, 1990. Co-author with Sandra L. Arlinghaus and John D. Nystuen.
- 1990 (J): "Groups, graphs, and God." *Solstice*, Summer, 1990. *Solstice* is one of the world's first electronic journals, as noted in separate articles in *Science* (AAAS) and *Science News* in the early 1990s.
- 1990 (J): With Sandra L. Arlinghaus and John D. Nystuen. "A Shortest Distance Algorithm: the Hedetniemi Matrix Sum." *Geographical Analysis*. October, 1990. Pages 351-360.
- 1989 (J): With Sandra L. Arlinghaus, "The fractal theory of central place hierarchies: a Diophantine analysis of fractal generators for arbitrary Loschian numbers," *Geographical Analysis: an International Journal of Theoretical Geography*. Ohio State University Press. April, 1989. Pages 103-121.
- 1988 (J): With Frank Harary. "El Numero Digrafico de un Grupo Abeliano Finito," invited translation of Number 2 above.. *Scientia* (Chile), Vol. 1 (1988), pp. 1-5, in honor of the 80th birthday of Roberto Frucht.
- 1987 (J): With Frank Harary. "The digraph number of an abelian group", *Wissenschaftliche Zeitschrift der Technischen Hochschule Ilmenau* 33 (1987) Heft 1, 25-31.
- 1985 (B): *The Classification of Minimal Graphs with Given Abelian Automorphism Group*, *Memoirs*, American Mathematical Society, #330, September. Based on 1979 Ph.D. dissertation of the same name.
- 1980 (R): Harary, Frank; McNulty, George The orbital partition of a graph. *J. Combin. Inform. System Sci.* **5** (1980), no. 2, 131–133. (Reviewer: William Arlinghaus)
- 1980 (R): Cameron, P. J. On graphs with given automorphism group. *European J. Combin.* **1** (1980), no. 2, 91–96. (Reviewer: William Arlinghaus)
- 1980 (R): Gross, Jonathan L.; Lomonaco, Samuel J., Jr. A determination of the toroidal K-metacyclic groups. *J. Graph Theory* **4** (1980), no. 2, 165–172. (Reviewer: William Arlinghaus)
- 1979 (D): Arlinghaus, William Charles; The Structure of Minimal Graphs with Given Abelian Automorphism Group. Thesis (Ph.D.)—Wayne State University. 1979. 216 pp, *ProQuest LLC*, Thesis
- 1978 (R): Czerniakiewicz, A. Minimal graphs with cyclic color group. *Discrete Math.* **19** (1977), no. 3, 201–212 (1978). (Reviewer: William Arlinghaus)
- 1976 (R): Haggard, Gary; McCarthy, Donald; Wohlgemuth, Andrew Extremal edge problems for graphs with given hyperoctahedral automorphism group. *Discrete Math.* **14** (1976), no. 2, 139–156. (Reviewer: William Arlinghaus)

**\*\* EDITORIAL WORK \*\***

- 1985: Editorial Board, *Monograph Series*, Institute of Mathematical Geography.
- 1990: Editorial Board, *Solstice: An Electronic Journal of Geography and Mathematics*.
- 1994: Associate Editor, *Practical Handbook of Curve Fitting*, 1994, CRC Press. Sandra L. Arlinghaus, Editor-in-Chief. CRC is perhaps best known as the publisher of the *Handbook of Physics and Chemistry*. Other Associate Editors: William D. Drake, Professor, School of Public Health and School of Natural Resources, University of Michigan; John D. Nystuen, Professor, College of Architecture and Urban Planning, University of Michigan.
- 1994: Associate Editor, *Practical Handbook of Digital Mapping: Terms and Concepts*, 1994, CRC Press. Editors as above; additional Associate Editor: Robert F. Austin (Ph.D.), President Austin Communications Education Systems.
- 1994: Associate Editor, *Practical Handbook of Spatial Statistics*, 1996, CRC Press. Editors as above with added Specialist Associate Editor: Daniel A. Griffith, Professor of Geography, Syracuse University.
- 2011: Invited Guest Co-Editor, Special Issue on Graph Theory and Network Science, *Geographical Analysis*.

**\*\* ACADEMIC EMPLOYMENT \*\***

- Math Club, Advisor and Lecturer, University of Detroit Jesuit High School, 2013-2015.
- Professor Emeritus, Department of Mathematics and Computer Science, Lawrence Technological University, 21000 West Ten Mile Road, Southfield, MI 48075, (248)204-3565. 1985-2009.
- Full-time employment as an Assistant Professor or Lecturer at:
  - o University of Detroit (Jesuit)
  - o University of Michigan--Dearborn (visiting)
  - o Loyola University of Chicago (Jesuit)
  - o The Ohio State University.

These positions presented opportunities to teach mathematics and computer science at all undergraduate levels, to supervise Masters' degree students, and to supervise teaching assistants.

Mathematics course taught include:

- o Discrete Mathematics
  - o Modern Algebra
  - o Differential Equations
  - o Calculus (all semesters)
  - o Finite Mathematics
  - o Introductory Abstract Mathematics for liberal arts students
  - o Remedial mathematics, beginning with fifth grade arithmetic taught to first year college students.
  - o Computer science courses taught include Fortran, PL-I, Pascal, Assembler, Data Structures, and Data Base Processing.
- Teaching Assistantships: University of Toronto, 1966-67; Wayne State University, 1969-71.
  - Other pre-doctoral academic employment, including teaching high school mathematics at the University of Detroit (Jesuit) High School (ninth grade), and teaching low-level mathematics courses (through calculus) at the University of Illinois (Chicago Circle), the Detroit Institute of Technology, Eastern Michigan University, and Wayne State University (College of Lifelong

Learning), helped to develop a broad perspective on the difficulties encountered by students of diverse talents and ages, as well as to gain an appreciation for the time required to conduct a strong program of research that is afforded to faculty in major universities.

**\*\*INDUSTRIAL EMPLOYMENT\*\***

Mathematician, General Motors Technical Center.

Employed by Manufacturing Development in Departments of Systems Engineering, Systems Development, Manufacturing Operations Systems, and Numerical Systems. Knowledge of Fortran, PL-I, Job Control Language, Statistics, Data Base Concepts, CDC Compass, and Simgrip was acquired. Projects worked on include: simulation of engine test facilities at Cadillac Motor Division, systems analysis of plant operations at Detroit Diesel Division, systems analysis of plant operations at Saginaw Central Foundry, restructuring of data systems at the General Motors Building, and application of spline interpolation for numerical data.

**\*\* TEACHING EXPERIENCE \*\***

Full range of undergraduate curriculum taught, from basic mathematics pre-collegiate through senior level and independent and interdisciplinary projects. Over 45 years of teaching experience in several different universities and high school. Detailed list available on request.

**\*\*CHURCH ADMINISTRATIVE EXPERIENCE\*\***

- St. Thomas Pastoral Council, St. Thomas the Apostle Parish, Ann Arbor, MI; member, 1991-1994, 1998-2001; Chairperson, 1993-1994; Vice-Chairperson, 1991-1992. St. Thomas Parish is the largest and oldest in Ann Arbor; the parish has more than 1800 families as members and is home to Gabriel Richard High School. This fieldstone church is the most dominant element of the Ann Arbor skyline as viewed from the north; it is a landmark as familiar as the bell tower on the University of Michigan campus. The church is a registered historic landmark.
- Member of St. Thomas Renovation Committee (1990-1993); work on this committee involves interviewing people to conduct a complete renovation of this church; field trips to other churches to see what sorts of renovations have been successful; reading material related to church architecture; hiring of architects and contractors; oversight of architectural and liturgical plans. The members of this board include a full range of parishioners, including architects and business people; a \$1.5 million project, completed, December, 1993.

**\*\* ACADEMIC ADMINISTRATIVE EXPERIENCE \*\***

- Chairman, Department of Mathematics and Computer Science, Lawrence Technological University, 1990-1995. During this time, LTU changed from the quarter to the semester system, requiring a complete revamping of the curriculum. Separate mathematics and computer science majors were added to a completely revised joint math/computer science major. Majors increased 40%. I was also heavily involved in constructing the schedule for the semester system, including a major change in the method in which evening courses were offered.
- LTU representative on the \$15 million NSF-funded consortium of Detroit-area universities interacting with Project Hope; an experiment in mathematics and science education designed to upgrade general skills levels in Detroit. 1993.

- Head of negotiations to bring the Michigan Mathematics Prize Competition to Lawrence Tech, which coordinated the competition 1991-1994, under the direction of Professor Ruth Favro in the Mathematics Department. The Michigan Mathematics Prize is one of the most prestigious prizes of its sort in the United States; it is one of the oldest and most selective--it is sponsored by the Mathematics Association of America (an organization of college teachers with over 20,000 members). High School students (over 18,000) of them, from about 750 Michigan high schools, compete on the machine-scored Part I of the examination. The top 1000 are then invited to compete on Part II. About 70 college professors of mathematics, from all over Michigan, come to Lawrence to hand grade Part II. The results from both parts are then combined; the top 100 were invited to a set of lectures and a banquet at Lawrence--with their parents and high school teachers. The lecturers included a topologist from Boston University and an algebraic graph theorist from BellCore.. The lectures and the banquet were a great opportunity to show Lawrence off to the top high school students in the state, their parents, teachers, and guidance counselors; I worked hard to get this competition as one way to increase LTU's visibility in high schools (and elsewhere) across the State. (The MAA handles the media coverage for this event.)
- Member, Faculty Advisory Council, College of Arts and Science, LTU, 1989-90. Member, Faculty Search Committee, Department of Mathematics and Computer Science, LTU, 1989-90. Outside Member, Search Committee for Humanities Chair, 1999.
- Member, Graduate Council, LTU, 1997-2001. Chairman, 1997-1998, 1999-2000.
- Member, Assessment Committee, 2002-2004.
- Coordinator, Mathematics Awareness Week, Lawrence Technological University, 1988, 1989, 1990. Duties included arranging for posters depicting interesting mathematics accessible to the public to be displayed, coordinating efforts with the Open House running on campus concurrently, coordinating activities with the LTU cable television coordinator (a series of mathematics videotapes began on Southfield cable during math awareness week), and arranging for suitable publicity (the city of Southfield declared the week of April 23-29, 1988 Mathematics Awareness Week in Southfield). Letters of commendation from the Joint Policy Board for Mathematics (from the American Mathematical Society, the Mathematics Association of America, and the Society for Industrial and Applied Mathematics--with a combined membership total of over 50,000) were awarded.
- Chairman, Comprehensive Examination Committee, Department of Mathematics, University of Detroit. Duties involved reviewing questions submitted for the exam, choosing the questions which would appear, arranging for grading, and determining the final results.
- Coordinator two consecutive years, and Assistant Coordinator a third year, of the Chicago-Area High School Computer Science Fair, at Loyola University. A cooperative venture between pre-college and college level instructors to attract good students to college-level programs suited to their interests.
- Interviewer on university-wide Health Professions Advisory Committee (HPAC), Loyola University. Membership on HPAC was by invitation to faculty who had demonstrated insistence on maintaining high academic standards. About 40 faculty were charged with interviewing all students interested in attending medical school. Interviews were conducted on a one-on-one basis; their purpose was two-fold. First, we were to evaluate the academic and personal potential of students to pursue a career in medicine; second, we were to counsel students as to alternative careers. Written HPAC evaluations served as substitutes for letters of recommendation from individual instructors.

- Committee work and other work at that level. Loyola: Academic Honesty Committee, Graduate Committee, Curriculum Committee, Computer Science Committee. University of Detroit: Computer Science Committee, Co-adviser to a student group forming a chapter of the Association of Computing Machinery.

**\*\* BRIDGE ADMINISTRATIVE EXPERIENCE \*\***

- Link to a webpage showing more detail: <http://www-personal.umich.edu/~copyright/wca/indexACBL.html>
- American Contract Bridge League (ACBL) is an international organization of more than 160,000 members in the United States, Canada, and Mexico. I served for a number of years as the National Board of Directors Member elected from District 12 (Michigan and northwestern Ohio, including Toledo). The National Board of 25 members from 25 regions of North America oversees the hiring of the CEO and policy decisions of this 501(c)4 business in the entertainment industry. Headquarters are in Horn Lake, Mississippi, a suburb of Memphis.
  - o 2009. President, ACBL Educational Foundation
  - o 2011--ACBL National Board Committees: Chair, Bridge, includes Tournaments and Conditions of Contest; Vice-Chair: Ranking; Member: By-Laws; Member: Internet Bridge; Member: Masterpoints; Member: Strength of Field; Member: Technology; Chair, ACBLscore Steering Committee charged with overseeing the re-development of ACBLscore (not a Board committee).
  - o 2010--ACBL National Board Committees: Chair: Bridge, includes Tournaments (Chair), Conditions of Contest, Special Events; Vice-Chair: Technology; Member: Internet Bridge; Member: Special Games at Clubs.
  - o 2009—ACBL National Board Committees: Chair: International / Federations Committee; Chair: Conditions of Contest Committee; Vice-Chair: Internet Bridge Committee; Member: Board Operations Committee; Member: Bridge Committee; Member: Technology Committee; Member: Tournament Committee. Also, ACBL Board Representative to Competitions and Conventions Committee
  - o 2008—ACBL National Board Committees: Chair: Tournament Committee; Chair: International/Federations Committee; Vice-Chair: Bridge Committee; Member: Conditions of Contest Committee; Member: Minutes Committee. Also, ACBL Board Representative to the ACBL Educational Foundation; Tournament Committee Chair representative to Competitions and Conventions Committee
  - o 2007—ACBL National Board Committees: Chair: Federations Committee--newly-established committee charged with forging strong liaisons among the ACBL, the U.S. Bridge Federation, the Canadian Bridge Federation, and the World Bridge Federation. Chair: Conditions of Contest Committee; Member: Bridge Committee; Member: Masterpoint Committee; Member: Minutes Committee; Member: Tournament Committee. Also, Non-member contributor to Competitions and Conventions.
  - o 2006—ACBL National Board Committees: Vice-Chair: Board Operations Committee; Member: Appeals and Charges Committee; Member: Bridge Committee; Member: Juniors Committee; Member: Masterpoint Committee; Member: NAP/GNT Credentials Committee; Member: Tournament Regulations (Bridge) Committee; Member: Honorary Member Committee. Also, Non-member contributor to Competitions and Conventions.
  - o 2005—ACBL National Board Committees: Vice-Chair: Governance Committee; Member: Bridge Committee; Member: Juniors Committee; Member: Election



- Regulation Committee; Member: Redistricting Committee; Member: ABA Coordination Committee. Also, non-member contributor to Competitions and Conventions.
- United States Bridge Federation, service to committees, 2014-2015, including to the International Team Trials Technical Committee.
  - United States Bridge Federation, Co-chair of Seniors and Women's team trials to the World Bridge Federation competition, June 2011. Held at RenCen in Detroit.
  - ACBL, North American Bridge Championships, Detroit, 2008. Co-chair of tournament held in RenCen over the course of 10 days serving somewhat under 10,000 tables.
  - Board of Directors, Michigan Bridge Association (MBA), American Contract Bridge League (ACBL), 1974-76; 1987-89; 1994-present. Tournament Chairman 1976, 1987, 1994, 2002, 2008. President 1975, 1988, 1995, 2003, 2009. Chairman of the Board 1976, 1989, 1996, 2004, 2010. Only 5-time President. Conduct and Ethics Committee, 1993-. 2004. An elected position within a local unit of 1200 members of a national organization of 160,000 members. Duties included administering the affairs internal to the MBA in such a way that they meshed with the broader concerns, at the national level, of the ACBL. This included running and administering tournaments, coordinating activities with local clubs, and dealing with disciplinary matters involving members of the MBA. It also involved meeting with presidents of other units and with the power structure of the ACBL at the national level. (National bridge tournaments typically run for ten days drawing, in good years, around 20,000 tables of players from all over the world; ACBL national bridge tournaments are the second largest generators of hotel room rentals, second only to national meetings of the American Medical Association.) Experience with budgeting from these positions.
  - First Alternate District Director, District 12, American Contract Bridge League, 2003-2005. District Director 2005-present.
  - Certified Director, American Contract Bridge League. Bridge directors serve as "umpires" to see that the somewhat complicated laws of duplicate bridge are adhered to. Currently I am not active in this capacity, but I am currently licensed (as a result of passing (at a high level) a nationally administered test on the laws of contract bridge) to do so. I have directed on two cruises recently. Tournament, duplicate bridge is a game of skill (as defined by a court of law); professionals and amateurs compete alike in tournaments. The play is for ranking, much as it is in chess.
  - Member of six-person local arrangements committee for the 1991 World Junior Bridge Olympiad--our bid to obtain this for Ann Arbor was successful (other committee members: Gary Hann, Beverly Riordan, Sandy Arlinghaus, Don Rumelhart, and Jim O'Neil). We hosted these young people (25 years of age and under) from Argentina, Australia, Brazil, Canada, China, Chinese Taipei, Central America, Israel, Norway, Denmark, and the United States at the competition during the summer of 1991. This is a biennial event, sponsored by the World Bridge Federation (over 12 million members). This year was the first time the event had ever been held in the United States.
  - Chief Scorer, World Junior Bridge Championships.
  - Served on the negotiating teams which brought national bridge tournaments to the Renaissance Center, in downtown Detroit, in 1981 and 2008.

**\*\* SEMINARS \*\***

- Organizer of an interdisciplinary "Seminar on Groups, Graphs and Surfaces" at Loyola; this group met weekly and its members published results of research discussed in response to these meetings. Members included: Neal Brand (algebraic topologist), W.Cary Huffman (group theorist), Terry Dannehold (theoretical physics), Sandra Arlinghaus (theoretical geography). Specifically thanked by Brand and Huffman in "Topological invariants of 2-designs arising from difference families" for contributions to their research.
- Founding director of a "Putnam Study Group," Loyola. A set of undergraduate students interested in participating in the Putnam competition met with me, and with colleague Neal Brand, on a weekly basis to work Putnam problems.
- Participant in graph theory and combinatorics seminars at the University of Michigan. I have reported on my research in each.
- Participant in graph theory seminar at the Ohio State University. I gave a sequence of lectures on my research.

**\*\* INVITED LECTURES \*\***

- Invited as a Mathematics Association of America speaker, state of Michigan list, to speak at Almont High School, Almont, Michigan, February 26, 1992. Title of talk: "Measuring symmetry."
- Invited to speak at the National Meetings of the North American Regional Science Association in the special session on mathematical geography. Title of talk: "Sum graphs and geographic information," November 8, 1991, New Orleans, LA.
- "Sum graphs and geographic information." Mathematics and Geography Departments, Syracuse University, April 5, 1991.
- "Mathematics and mathematics education: Issues and opportunities." Department of Mathematics and Computer Science, University of Northern Iowa, March 29, 1991.
- Invited to spend 1-2 months at the University of Valparaiso, Chile, 1986. All expenses to have been paid by Valparaiso--unable to accept.
- "Bridge sort." University of Michigan-Dearborn, December, 1984.
- "Minimal graphs with given Abelian automorphism group." Oakland University, February 21, 1984.
- "Minimal graphs with given group." First Michigan Graph Theory Symposium, University of Michigan, March 11, 1978.

**\*\* CONTRIBUTED PAPERS \*\***

- "Sum graph compression." Midwest Graph Theory Conference XVII, Grand Valley State University, Grand Rapids, MI, March 23, 1991.
- "Smallest tournaments with given Abelian automorphism group." National Summer Meetings of the American Mathematical Society, Columbus, Ohio, August 10, 1990.
- "Sum graphs and geographic information." North American Meetings of the Association of American Geographers, Toronto, Ontario, April, 1990.
- "Small graphical structures with given automorphism group." National Meetings of the American Mathematical Society, Louisville, Kentucky, January 17, 1990.
- "Automorphisms of Latin square graphs." Midwest Graph Theory Conference XIV, Western Michigan University, September 23, 1989.

- "On smallest Latin square graphs with given automorphism group." Special Session on Designs, American Mathematical Society Regional meeting. Loyola University of Chicago, May 19-20, 1989.
- "Groups, graphs, and God." Michigan Graph Theory Symposium, XII, October, 1988.
- "Smallest digraphs with given group." Ninth Midwest Graph Theory Conference, Ann Arbor, Michigan, March, 1985.
- "Bridge sort." 90th Annual AMS meeting, Louisville, Kentucky, January 27, 1984. *Abstracts of the American Mathematical Society*
- "Minimal graphs with given Abelian groups." Seventh Midwest Graph Theory Conference, Bowling Green, Ohio, March 12, 1983.
- "Non-standard minimal graphs with given Abelian 3-group." 88th Annual AMS meeting, Cincinnati, Ohio, January 13, 1982.
- "Non-graphical Klein and Klein-like groups." 86th Annual AMS meeting, San Antonio, Texas, January 3, 1980.
- "Minimal graphs with group  $Z(p^i) \times Z(p^j)$ ." 753rd AMS meeting, Columbus, Ohio, March 20, 1978.

**\*\* PROFESSIONAL SERVICE \*\***

- Chair of host department for the Michigan Mathematics Prize Competition, 1991-1994.
- Grader, Michigan Mathematics Prize Competition, 1991-present. Member, Examination Committee to create the exam, 1998-1999.
- Discussant, invited to critique two papers in public North American Regional Science Association meetings, New Orleans, November, 1991.
- Referee for the proceedings of the Second International Conference in Graph Theory, Combinatorics, Algorithms and Applications (1989), San Francisco State University. September, 1990.
- Referee, *Solstice*, 1990-present.
- Invited Co-chair, Session on Graph Theory, National Summer Meetings, American Mathematical Society, August 10, 1990, Columbus, Ohio.
- Interviewer, Employment Register for Mathematicians, National Meeting of the American Mathematical Society, Louisville, 1990 (January 17). New faculty member found in August, 1990.
- Referee for the proceedings of the Sixth International Conference on the Theory and Applications of Graphs (1988), Western Michigan University. December, 1989.
- Referee, *Geographical Analysis*, August, 1989.
- Referee, *Journal of Graph Theory*, July, 1989.
- Referee, Institute of Mathematical Geography, *Monograph Series*, 1986-present.
- Reviewer of grant proposal for Chilean National Research Council, 1986.
- Co-chair, Session on Combinatorics and Graph Theory, 90th Annual AMS meeting, Louisville, Kentucky, January 27, 1984.
- Referee, *Transactions of the American Mathematical Society*, 1981-82.
- Referee, *Discrete Mathematics*, 1977.
- Reviewer, *Mathematical Reviews*, 1977.

**\*\* ADDITIONAL PROFESSIONAL EXPOSURE \*\***

- Attended 100th national annual meeting of the American Mathematical Society, Cincinnati, January, 1994.
- Attended Mathematical Association of America, short course on calculus teaching reform, January, 1992, Baltimore, MD
- Attended Mathematical Association of America, short course on mathematics placement examination procedures, January, 1992, Baltimore, MD.
- Attended American Mathematical Society Short Course, Combinatorial Games, August 6-7, 1990. Added professional development.
- Association of American Geographers, National Meeting, Baltimore, Maryland, March 19-22, 1989.
- Mathematics Association of America, Holland, Michigan, May, 12-13, 1989.
- 250th Anniversary Conference on Graph Theory, Indiana-Purdue University at Fort Wayne, March 13-15, 1986.
- Fourth International Conference on the Theory and Applications of Graphs, Western Michigan University, Kalamazoo, MI, May 6-9, 1980.
- Second International Conference on Combinatorial Mathematics, New York Academy of Sciences, New York, NY, April 4-7, 1978.
- 84th Annual Meeting, American Mathematical Society, Atlanta, Georgia, January 3-7, 1978.
- Third International Conference on the Theory and Applications of Graphs, Western Michigan University, Kalamazoo, MI, May 1976.

**\*\* GRANT PROPOSALS \*\***

- Co-principal investigator, "An Atlas of Steiner Networks." With S. Arlinghaus and N. Brand, NSF, not funded.
- Faculty associate, "Summer math program" NSF, not funded.
- National Science Foundation Fellowship to Advanced Science Seminar in Finite Group Theory at Bowdoin College.
- National Science Foundation Fellowship, the University of Chicago, Mathematics Predoctoral.

**\*\* PROFESSIONAL MEMBERSHIPS \*\***

- American Mathematical Society
- Mathematical Association of America
- American Contract Bridge League (Life Master 1971, Gold Life Master 1994, Diamond Life Master 2000, Emerald Life Master 2006, Platinum Life Master 2011 (new gradations of highest rank)). Ranked in top 500 players, all-time, in North America. Ranked number 1 in Mississippi.

**\*\* PERSONAL \*\***

- Home: 3401 23<sup>rd</sup> Avenue, Meridian, MS (from 2018 to present).
- Immediate past residence: 1964 Boulder Drive, Ann Arbor, MI 48104. Service for 15+ years, President, Huron Chase Condominium Association, Ann Arbor, Michigan.
- Married: to Sandra Lach, A.B. (Mathematics) Vassar College; Ph.D. (Theoretical Geography), University of Michigan, 1977. Adjunct Professor, School of Natural Resources and Environment, University of Michigan.
- Children: One, William E., {B.A. Linguistics, University of Michigan; one grandchild, David E.; two great grandchildren, Edwin and Adeline (born in Meridian, MS)}.

Arlinghaus, CV

- Parents: Francis A. Arlinghaus (Ph.D., Harvard), Professor of History Emeritus, and Vice-President Emeritus, University of Detroit [deceased, 1993]; Blanche S. Arlinghaus (M.A., Wayne Univ.), Retired Teacher and Assistant Principal, Detroit Public Schools [deceased, 1995].
- Religion: Roman Catholic. Parish Member, St. Patrick, Meridian, MS. Previous parish member, St. Thomas the Apostle, Roman Catholic Church, Ann Arbor, MI.

**\*\* REFERENCES \*\***

Available on request.