

DANIEL MAXIN
Professor of Mathematics

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• **Education**

- ◇ *Ph.D. Mathematics*, Purdue University, August 2007
- ◇ *M.S. Mathematics*, Purdue University, May 2005
- ◇ *B.S. Mathematics and Computer Science*,
Dunarea de Jos University, Galati, Romania, June 1997

• **Professional Experience**

- ◇ *Professor of Mathematics*, Department of Mathematics and Statistics, Valparaiso University, August 2021-present
- ◇ *Associate Professor of Mathematics*, Department of Mathematics and Statistics, Valparaiso University, August 2014-August 2021
- ◇ *Assistant Professor of Mathematics*, Department of Mathematics and Computer Science, Valparaiso University, August 2008-August 2014
- ◇ *Visiting Associate Professor*, Department of Mathematics, Georgia Regents University, Spring 2015
- ◇ *Visiting Assistant Professor*, Department of Mathematics, University of Nebraska-Lincoln, June-July 2011
- ◇ *Visiting Assistant Professor*, Department of Mathematics and Computer Science, Valparaiso University, August 2007-August 2008
- ◇ *Graduate Teaching Assistant*, Department of Mathematics, Purdue University, August 2001-August 2007
- ◇ *Computer Science Teacher*, “V. Alecsandri” College, Galati, Romania, September 1997-May 2001
- ◇ *Mathematics Instructor*, Romanian Business School-Galati, Romania, September 1998-May 1999

- **Fellowships and Honors**

- ◊ *Mathematics and Computer Science Mentoring Award*, Council of Undergraduate Research, 2014
- ◊ *IMMERSE fellowship*, University of Nebraska-Lincoln, Summer 2011
- ◊ *Project NExT fellowship*, Mathematical Association of America, 2008 – 2009
- ◊ *VIGRE fellowship*, Department of Mathematics, Purdue University, Summer 2007
- ◊ *Graduate Student Award for Outstanding Teaching*, Purdue University, 2007
- ◊ *Excellence in Teaching Award*, Department of Mathematics, Purdue University, 2006 – 2007
- ◊ *Science Scholarship*, Department of Mathematics, Purdue University, Fall 2001

- **Research interests:** Mathematical Biology and Epidemiology, Mathematical Modeling, Applied Mathematics

- **Book chapter:**

Mathematical Modeling of Multispecies Mutualism: From Particular Models Toward a Generalization of the Concept (with P. Georgescu, L. Segal and H. Zhang), Handbook of Statistics (2018)

- **Papers** [(*) indicates an undergraduate co-author]

- (1) *The influence of quarantine before obtaining a partially effective preventive measure* (with L. Segal), Letters in Biomathematics, 9(1)(2022), 57–69
- (2) *An algorithm for indoor SARS-CoV-2 transmission* (with S. Gannon*), Journal of Mind and Medical Sciences, Vol 9 (Issue 2), 2022, 242-248
- (3) *A logistic two-sex model with mate-finding Allee effect* (with E. Anderson*, J. Ott* and G. Terrett*), Involve, 12-8 (2019), 1343-1355, DOI:10.2140/involve.2019.12.1343
- (4) *Threshold boundedness conditions for n-species mutualisms* (with P. Georgescu, D. Maxin and H. Zhang), Nonlinearity, 30(12)(2017):4410-4427
- (5) *Global stability of the coexistence equilibrium for a general class of models of facultative mutualism* (with P. Georgescu, L. Segal and L. Berec), J. Biol. Dynamics, 11:1, 339-364
- (6) *Global stability results for models of commensalism* (with P. Georgescu and H. Zhang), Int. J. Biomath., December 2016, DOI: 10.1142/S1793524517500371
- (7) *The cumulative effect of risk compensation on infection preventive measures* (with L. Segal and L. Eaton), Theor. Popul. Biol, December 2016, DOI:10.1016/j.tpb.2016.08.006

- (8) *Male-killing bacteria as agents of insect pest control* (with L. Berec and V. Bernhauerova), J. Appl. Ecol., March 2016, DOI:10.1111/1365-2664.12638
- (9) *Reduced fertility and asymptotics of the logistic model* (with F.A. Milner and L. Segal), Math. Pop. Stud., 23.1(2016), 37-49
- (10) *Evolution of early male-killing in horizontally transmitted parasites* (with V. Bernhauerova and L. Berec), Proc. R. Soc. B, 2015, 282: 20152068
- (11) *The global stability of coexisting equilibria for three models of mutualism* (with P. Georgescu and H. Zhang), Math. Biosci. and Engin., 1(2016), 101-118
- (12) *Risk-taking behavior and its impact in treatment, vaccination and diagnosing*, Journal of Mind and Medical Sciences, Vol II (Issue 2), 2015, 1-11
- (13) *The effect of risk-taking behavior in epidemic models* (with L. Segal, L. Eaton, A. Latham*, A. Moose* and S. Stenslie*), J. Biol. Dynamics, 9(1), 2015, 229-246
- (14) *A note on a generalized two-sex logistic model* (with L. Segal), J. Biol. Dynamics, 9(1), 2015, 102-108
- (15) *Is more better? Higher sterilization of infected hosts need not result in reduced pest population* (with L. Berec, A. Bingham*, D. Molitor* and J. Patten*), J. Math. Biol., 70.6(2015):1381-1409
- (16) *A generalized two-sex logistic model* (with L. Segal), J. Biol. Dynamics, 7(1)(2013), 302-318
- (17) *Why have parasites promoting mating success been observed so rarely?* (with L. Berec), J. Theor. Biol., (342)(2014), 47-61
- (18) *Fatal or harmless: extreme bistability induced by sterilizing, sexually transmitted pathogens* (with L. Berec), Bull. Math. Biol., 75(2)(2013), 258-273
- (19) *The impact of sexually abstaining groups on persistence of sexually transmitted infections in populations with ephemeral pair bonds* (with L. Berec, M. Covello*, J. Jessee* and M. Zimmer*), J. Theor. Biol., 292(2012), 1-10
- (20) *Double impact of sterilizing pathogens: added value of increased life expectancy on pest control effectiveness* (with L. Berec), J. Math. Biol., 64(7)(2012), 1281-1311
- (21) *Vertical transmission in epidemic models of sexually transmitted diseases with isolation from reproduction*, (with T. Olson* and A. Shull*), Involve, 4-1 (2011), 13-26
- (22) *A two-sex demographic model with single-dependent divorce rate*, (with L. Berec), J. Theor. Biol., 265(4) (2010), 647-656
- (23) *Proving that three lines are concurrent*, College Mathematics Journal, (March 2009)

- (24) *The Influence of Sexually Active Non-Reproductive groups on persistent sexually transmitted diseases*, J. Biol. Dynamics, 3(5)(2009) 532-550
- (25) *The role of sexually abstained groups in two-sex demographic and epidemic logistic models with non-linear mortality*, (with F.A. Milner), J. Theor. Biol. 258(3) (2009), 389-402
- (26) *Effects of Non-Reproductive Groups on persistent sexually transmitted diseases*, (with F.A. Milner), Math. Biosc. Engin. 4(2007) 505-522

- **Supervised Undergraduate Research**

- ◇ Jared Erickson, *A new couple removal estimation in gender structured demographic models*, undergraduate research project presented at the 20th Annual Undergraduate Research Conference, Butler University, April 18, 2008
- ◇ Thomas Patrick, Tim Olson and Adam Shull, *Vertical transmission in epidemic models of STD's with isolation from reproduction*, undergraduate research project presented at the 26th Rose-Hulman Undergraduate Mathematics Conference, March 27-28, 2009
- ◇ Krista Schaefer and Adam Shull, *When does quarantine make things worse?*, undergraduate research project presented at the 27th Rose-Hulman Undergraduate Mathematics Conference, March 26-27, 2010
- ◇ Michael Covello, Jill Jessee, Matthew Zimmer, *The impact of non-reproductive groups in two-sex demographic and logistic models without pair-formation*, NSF-REU project, Valparaiso University, Summer 2010
- ◇ Adrienna Bingham, Denali Molitor, Julie Pattyson, *Controlling pest populations with sterilizing pathogens and vertical transmission*, NSF-REU project, Valparaiso University, Summer 2012
- ◇ Chase Ludington and Amanda Riley, *The effect of risk taking behavior induced by treatment efficiency in epidemic models*, the 30th Rose-Hulman Undergraduate Mathematics Conference, April 19-20, 2013
- ◇ Andrew Latham, Aaron Moose and Solvei Stenslie, *The effect of risk taking behavior in epidemic models*, NSF-REU project, Valparaiso University, Summer 2014
- ◇ Elizabeth Anderson, Jared Ott and Gwyneth Terrett, *Asymmetric Two-Sex Models with a Mate-Finding Allee Effect*, NSF-REU project, Valparaiso University, Summer 2018

- **Invited Talks**

- ◇ Valparaiso Experience for Research by Undergraduates in Mathematics, July 2007, Valparaiso University
- ◇ MAA Session on Using Computer Algebra Systems in the Calculus Sequence, Joint AMS-MAA meeting, San Francisco, January 14th, 2010
- ◇ Department of Mathematics, Computer Science and Statistics, Purdue University-Calumet, February 11th, 2010

- ◇ Department of Mathematics and Computer Science, Wabash College, October 5th, 2010
- ◇ Department of Mathematics, University of Nebraska-Lincoln, July 22nd, 2011
- ◇ School of Mathematical and Statistical Sciences, Arizona State University, October 14th, 2011
- ◇ Department of Mathematics, Augusta State University, October 19th, 2012
- ◇ Joint International Meeting of the AMS and Romanian Mathematical Society, Alba Iulia, Romania, June 30th, 2013
- ◇ The 12th World Congress on Computational Mechanics, Seoul, Korea, July 2016

- **Conference Talks**

- ◇ Fall 2015 Indiana MAA Section Meeting, Purdue University North Central, October 2015
- ◇ MAA General Contributed Paper Session: Research in Applied Mathematics, I, Joint AMS-MAA meeting, Boston, MA, January 6th, 2012
- ◇ Fall 2009 Indiana MAA Section Meeting, Purdue University-Calumet, October 2009
- ◇ AMS Session on Biology, II, Joint AMS-MAA meeting, Washington D.C., January 6th 2009
- ◇ Spring 2008 Indiana MAA Section meeting, St. Mary's College, March 28-29, 2008
- ◇ AMS Session on Applications of Mathematics, I, Joint AMS-MAA meeting, San Diego, January 7th 2008
- ◇ 2nd Conference on Computational and Mathematical Population Dynamics, July 16-20, 2007, Campinas, Brazil
- ◇ Spring 2007 Indiana MAA Section meeting, University of Indianapolis, March 24th 2007
- ◇ 2007 Workshop for Young Researchers in Mathematical Biology, Mathematical Biosciences Institute, Columbus, OH, March 12-15, 2007
- ◇ AMS Session on Applications of Mathematics, IV, Joint AMS-MAA meeting, New Orleans, January 8th, 2007
- ◇ Joint SIAM-SMB Conference on the Life Sciences, July 31-August 4, 2006, Raleigh, North Carolina,
- ◇ European Conference for Mathematical and Theoretical Biology, July 18-22, 2005, Dresden, Germany

- **Grants**

- ◇ CELT travel grant, Valparaiso University, 2016
- ◇ Wheat Ridge Ministries-O.P. Kretzmann Grant, 2014-2015
- ◇ Wheat Ridge Ministries-O.P. Kretzmann Grant, 2012-2013
- ◇ Short-term visitor support to NIMBioS (National Institute for Mathematical and Biological Synthesis), April 2011
- ◇ Travel grant from Society of Mathematical Biology, 2006
- ◇ Travel grant from Society of Mathematical Biology and Purdue University, 2007
- ◇ Expense grant to develop an online course in Mathematical Biology, Valparaiso University, 2008
- ◇ CELT travel grant, Valparaiso University, 2009

- **Professional Membership:** Mathematical Association of America, Society of Mathematical Biology