

Department of Mathematics

2019 LONSETH LECTURE

Department of Mathematics
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Arvid T. Lonseth



Schedule of Events

Welcome and Introductions

UNDERGRADUATE AWARDS

Joel Davis Student Award
Botond Gabor Eross Math Memorial Scholarships
Edward H. Stockwell Awards
Harry and Molly Goheen Memorial Scholarship
Actuarial Science Awards
Gary L. Musser Award

WIC Culture of Writing Award

GRADUATE AWARDS

William F. Burger Graduate Teaching Award
Award for Outstanding Performance in Coursework
Award for Excellence in Qualifying Exams
Graduate Student Excellence Award

FACULTY AWARDS

Graduate Faculty Award
Joel Davis Faculty Awards
Mathematics Student Success Award

Mathematics Majors Award for Teaching

Bill Bogley

Presenter

Enrique Thomann
Enrique Thomann
Enrique Thomann
Enrique Thomann
Manny Hur
Charisse Hake and
Tom Dick
Nathan Gibson

Holly Swisher
Malgo Peszynska
Malgo Peszynska
Malgo Peszynska

Branwen Purdy
Robert Higdon
Katie Pacosa and
Sara Tro
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Sara Tro

The Lonseth Lecture Series was established in 1985 to honor Arvid T. Lonseth, Professor Emeritus and former chair of the Mathematics Department at Oregon State University. Dr. Lonseth was a superb and devoted scholar and teacher of mathematics. The lecture series is a testimony to his deep commitment to the mathematical education of students, especially undergraduates.

Dr. Lonseth earned his B.A. in mathematics at Stanford University and his Ph.D. at the University of California, Berkeley, in 1939. His research was focused on integral equations, the calculus of variations, and computational methods. He joined OSU's Mathematics Department in 1948 and served as department chair from 1954-68.

Undergraduate Awards

Joel Davis Student Award

Established in memory of former faculty member, Joel Davis, this award celebrates excellence in mathematics by an undergraduate.

Botond Gabor Eross Math Memorial Scholarship

This fund was established from proceeds of the life estate of Jolan Eross, mother of Botond Gabor Eross. The award provides scholarships for outstanding mathematics students.

Edward H. Stockwell Award

The family of Edward H. Stockwell established this scholarship in 1997 in his memory to benefit an undergraduate mathematics major.

Harry and Molly Goheen Memorial Scholarship

To a junior or senior majoring in mathematics or computer science who expresses the desire to work in the field of mathematics or computer science following graduation.

Actuarial Science Award

Initiated in 1984 by members of the Portland Actuarial Club to support students in mathematics with interests in actuarial science and financial mathematics.

Gary L. Musser Award

Established in 1997 to award an outstanding prospective elementary or middle school teacher. The recipient will have completed MTH 211- 212 and a junior-level problem-solving course.

WIC Culture of Writing Award

This award recognizes outstanding mathematical writing in a writing intensive mathematics course.

Graduate & Faculty Awards

William F. Burger Award Graduate Teaching Award

Established in memory of former faculty member William F. Burger, this award recognizes superior teaching by graduate students.

Award for Outstanding Performance in Coursework

This award acknowledges exceptional academic success achieved by a graduate student.

Graduate Student Award for Excellence in Qualifying Exams

Acknowledges exceptional performance in Qualifying Exams by Graduate Student.

Graduate Student Excellence Award

This award acknowledges students for overall excellence in scholarship, including academic performance, research and leadership.

Graduate Faculty Award

Given by current graduate students to a faculty member in recognition of their impact through teaching and research.

Mathematics Majors Award for Teaching

Nominated and selected by undergraduates to recognize inspirational teaching in upper division mathematics courses.

Mathematics Student Success Award

Nominated and selected by undergraduates to recognize inspirational teaching in lower division mathematics courses.

34th Annual Lonseth Lecture



Dr. Mai Gehrke

“Using Abstract Mathematical Structures to Study Algorithmic Complexity Questions”

Abstract: Automata are very simple computational models. They are important in applications of computer science but also serve as a laboratory for studying the complexity of algorithms. In this talk we introduce automata and show how finite monoids, certain very abstract algebraic structures, may be assigned as invariants of automata. We illustrate how these invariants are powerful enough to make deep computational questions decidable. Finally we give a glimpse of an idea how this can be generalized to provide sophisticated mathematical tools for the study of computational complexity classes.

Biography: Mai Gehrke is a Senior Research Director in Theoretical Computer Science at the Centre National de la Recherche Scientifique (CNRS), currently affiliated with the Institut Jean Alexandre Dieudonné in Nice where she moved from the Institut de Recherche en Informatique Fondamentale of Université Paris Diderot. Previously she held the chair in Algebra and Logic at Radboud Universiteit Nijmegen in the Netherlands and a Full Professorship in mathematics at New Mexico State University in the United States.

Professor Gehrke holds an MS and a PhD in mathematics from the University of Houston. She is an editor of *Mathematical Logic Quarterly* and of the *Houston Journal of Mathematics*. She is co-founder of the *Topology, Algebra and Categories in Logic (TACL)* conference series and has served on numerous scientific committees in Europe and the United States. Professor Gehrke was awarded an ERC Advanced grant on *Duality in Formal Languages and Logic* in 2015. Her main contributions are in Stone duality, a theory which links algebraic and spatial mathematics in the realm of logic. More recently, Professor Gehrke has been working on duality theoretic extensions of the profinite algebraic tools of automata theory and their application in complexity theory.