Session 7A: Simons Auditorium

10:50 – 11:30 Mathematics learning with teachers

- **Emina Alibegovic** – University of Utah
- **Maggie Cummings** – University of Utah
- **Hugo Rossi** – University of Utah

Abstract: The University of Utah mathematics department has always had a commitment to teacher training, providing the content part of teacher preparation, in a way that includes pedagogical considerations. Since the '70's the department has always had a contract appointment held by someone from public education who plays a role in the design and implementation of the program. Over the past six years, we have been developing the undergraduate program and graduate-level programs, as well as expanding outreach to local schools and districts based on authentic collaboration between mathematicians and educators. This is a work in progress, with much yet to learn and improve.

11:35 – 12:15 Combining policy and practice: new directions for the institute for mathematics & education at the University of Arizona

- **William McCallum –** University of Arizona

Abstract: Founded in 2006, the Institute for Mathematics & Education at the University of Arizona has been involved in the mathematical education of teachers in two threads, holding national workshops and carrying out local initiatives. The Institute is in the process of revising its mission to combine these two threads to become a resource for policy makers looking for policy recommendations grounded in practice.

Session 7B: Baker Boardroom

10:50 – 11:30 Slugs on STEM: Preparing competent and diverse teachers

- **Gretchen Andreasen –** UC-Santa Cruz
- **Nandini Bhattacharya –** UC-Santa Cruz
- **Debra Lewis –** UC-Santa Cruz

Abstract: UC Santa Cruz programs supporting the academic success and professional development of prospective mathematics teachers offer diverse teaching experiences, a solid foundation in mathematics, and an introduction to the principles and practices of mathematics education. The mathematics education pathway to a BA in mathematics prepares students for direct entry into a credential program; many graduates enter UCSC's 12 month MA/Mathematics Credential program. Multi-disciplinary STEM programs provide crucial financial and logistical support; the UCSC Cal Teach program offers undergraduates classroom experience in middle and high schools serving socio-economically and ethnically diverse Monterey Bay communities. Peer tutoring programs provide much-needed support for entering students with limited mathematics preparation, while offering advanced students experience in intensive instruction of small groups. Teaching experiences within UCSC are enhanced and supported by guidance and oversight by mathematics lecturers and Cal Teach faculty and staff. The Education Department's Cal Teach courses provide undergraduates working in classroom placements with supervision by and opportunities for reflection with experienced secondary teachers. A mathematics-specific course offered by the Education Department and taught by UCSC faculty introduces undergraduates to current research on learning and teaching mathematics and to the national and state standards for teaching mathematics.

11:35 – 12:15 Teacher Preparation and the Common Core

- **Eric Hsu –** San Francisco State University
- **Judy Kysh –** San Francisco State University

Abstract: We share features of the coursework program for pre-service math teachers at SF State and discuss the changes required by the introduction of the Common Core Math Standards. We will comment on both elementary and secondary teacher preparation and share details of our capstone course for math majors who are future teachers.

Session 7C: Space Sciences Lab Addition Conference Room

10:50 – 11:30 Mathematics department involvement in K-12 mathematics education at Louisiana State University: A half century of growth

- **Scott Baldridge –** LSU
- **Jim Madden –** LSU
- **Robert Perlis –** LSU

Abstract: The Department of Mathematics at Louisiana State University has been deeply involved in training, supporting and creating opportunities for K-12 mathematics teachers for the past half century or more, and the magnitude and impact of its work has been increasing exponentially in the past two decades. Within the last decade, external grant support for K-12 related initiatives has been over $30 million. The Department has created and supported new courses for elementary teachers, led the redesign of certification programs for secondary math teachers (in a program called "GeauxTeach") and has designed and implemented new masters-level professional degree programs for STEM teachers that are now are among the largest and most diverse graduate programs at LSU. The department is also involved in a variety of partnerships with districts, and with the state, to support practicing mathematics teachers. It is undertaking entrepreneurial initiatives to create new job opportunities for teachers and a self-sustaining financial platform for its operations.

In this presentation, Mathematics Department Chairman Robert Perlis will describe the history of the department's K-12-related work, starting from the Karnes Institute in 1958 and continuing with the role of Richard D. Anderson, who in the 1990s set the example for subsequent projects of Robert Perlis, Ron Retherford, Lynne Tullos, Nell McAnelly, Jim Madden, Frank Neubrander and Scott Baldridge. Professor James Madden will describe the work of the Gordon A. Cain Center at LSU. Led by a group of mathematicians and math educators, the Cain Center is dedicated to supporting STEM teachers by improving the quality and depth of academic programs, by cooperating with districts in teacher induction and residency programs and by creating opportunities for accomplished STEM teachers to make important, influential and lucrative contributions to the profession. Professor Scott Baldridge will describe his work on Eureka Math, a complete, freely available, PK-12 mathematics curriculum hosted on EngageNY.org that is aligned to the Common Core State Standards. Resulting from 20 years of thought and research and informed by work with preservice teachers at LSU, the curriculum is designed to help practicing teachers develop their own knowledge of mathematics.

11:35 – 12:15 Adventures of mathematicians in school mathematics

- **Davida Fischman –** CSU San Bernardino

Abstract: Reports such as the *Mathematical Education of Teachers II* (2012) advocate strenuously for the involvement of higher education faculty in school mathematics to improve teachers' content knowledge and pedagogy. Precisely what these higher education faculty members should do in this context is little understood; research mathematicians typically have little professional training in teaching and in wider educational issues. To contribute in meaningful ways to the improvement of school mathematics, mathematicians are acquiring new skills, dispositions, and knowledge. In the example of my home department, all but one faculty member in the CSUSB Mathematics Department are mathematicians by training, but over a

third of us have become increasingly involved in mathematics education over the past 15 years. Our mathematics education efforts include work with preservice students learning to teach, in-service teachers of grades K-12, and K-12 site and district-level administrators. We have engaged in short- and long-term grant-funded projects; these are typically designed and implemented in partnerships with school districts in the region. Along the way we have also partnered actively with colleagues in the College of Education to learn a new professional stance, language, and skills to become more effective educators in school contexts. We have also become familiar with some of the scholarship in education, which has shaped the design of our work with teachers

In this talk I will offer an analysis of the involvement of mathematicians in my department in school settings. I will describe some of the unique and important contributions that mathematicians have to make in education, and also describe what my colleagues have had to learn to be able to participate productively in the world of school mathematics. I will describe some of our work in different school contexts, and also suggest ways that mathematicians can expand their impact in education.