

# RUME XVII CONFERENCE SCHEDULE

THURSDAY, FEBRUARY 27, 2014

**1:00 – 1:15 pm**  
*Grand Mesa DEF*

## **OPENING SESSION**

**1:25 – 1:55 pm**  
*Chasm Creek A*

## **SESSION 1 – PRELIMINARY REPORTS**

**Characteristics Of Successful Programs In College Calculus At Bachelor's Granting Universities**

*Kathleen Melhuish, Sean Larsen, Erin Glover & Estrella Johnson*

*Grand Mesa A*

**Students' Understanding Of Exponential Functions In The Context Of Financial Mathematics**

*Natalie E. Selinski*

*Chasm Creek B*

**Diagrams In Advanced Mathematics: Affordances and Limitations**

*Kristen Lew, Tim Fukawa-Connelly, Juan Pablo Mejia-Ramos & Keith Weber*

*Grand Mesa B*

**Exploring Students' Questions From Online Video Lectures**

*Fabiana Cardetti, Konstantina Christodouloupoulou & Steven Pon*

*Grand Mesa C*

**Transfer Of Learning: Examining Individuals In Social Settings**

*Jeffrey King, Stephenie Anderson & Gulden Karakok*

**2:05 – 2:35 pm**

## **CONTRIBUTED REPORTS**

*Chasm Creek B*

**Geometric Reasoning On The Complex Plane**

*Hortensia Soto-Johnson & Jonathan Troup*

*Grand Mesa A*

**Preservice Elementary Teachers' Understanding Of Number Theory: Connecting Content Knowledge To Pck**

*Kristin Noblet*

*Grand Mesa B*

**Students' Examples Usage In The Domain Of Functions**

*Muhammed Fatih Dogan*

*Chasm Creek A*

**Perceptions In Abstract Algebra: Identifying Major Concepts and Concept Connections Within Abstract Algebra**

*Ashley Suominen*

**2:35 – 3:05 pm**  
*Atrium*

## **COFFEE BREAK**

**3:05 – 3:35 pm**

**SESSION 3 – PRELIMINARY REPORTS**

*Grand Mesa A*

**Calculus Instructors' Resources, Orientations and Goals In Teaching Low Achieving Students**

*Misun Lee & Sepideh Stewart*

*Chasm Creek A*

**Conceptions Of Inverse Trigonometric Functions In Community College Lectures, Textbooks, and Student Interviews**

*Vilma Mesa & Bradley Goldstein*

*Chasm Creek B*

**An Analysis Of Transition-To-Proof Course Students' Proof Constructions With A View Towards Course Redesign**

*John Selden, Ahmed Benkhalti & Annie Selden*

*Grand Mesa B*

**Graduate Students' Integrated Mathematics and Science Knowledge For Teaching**

*Shahram Shawn Firouzian*

*Wind Star  
(1<sup>st</sup> Floor)*

**Implementing Inquiry-Oriented Instructional Materials In Undergraduate Mathematics**

*Christine Larson, Megan Wawro, Michelle Zandieh, Chris Rasmussen, David Plaxco & Katherine Czeranko*

*Grand Mesa C*

**An Observation Instrument For Assessing The K-16 Mathematics Classroom**

*Jim Gleason*

**3:45 – 4:15 pm**

**SESSION 4 – CONTRIBUTED REPORTS**

*Grand Mesa A*

**Generalizing Calculus Ideas from Two Dimensions to Three: How Multivariable Calculus Students Think About Domain and Range**

*Allison Dorko & Eric Weber*

*Chasm Creek B*

**How To Make Time: The Relationships Between Concerns About Coverage, Material Covered, Instructional Practices, and Student Success In College Calculus**

*Estrella Johnson, Jessica Ellis & Chris Rasmussen*

*Grand Mesa B*

**Do Experts and Novices Gesture Differently?**

*Brent Hancock, Marki Dittman & Hortensia Soto-Johnson*

*Chasm Creek A*

**Why Lectures In Advanced Mathematics Often Fail**

*Kristen Lew, Tim Fukawa-Connelly, Juan Pablo Mejia-Ramos & Keith Weber*

**4:25 – 4:55 pm**

**SESSION 5 – CONTRIBUTED REPORTS**

*Grand Mesa B*

**Working Together On Mathematics Homework: A Look At How University Students Spend Their Time Outside The Classroom**

*Gillian Galle*

*Chasm Creek B*

**A Comparison Of Four Pedagogical Strategies In Calculus**

*Spencer Bagley*

*Chasm Creek A*

**Implied and Empirical Readers Of Newton's Method**

*Kristen Murphy, Celeste Glenn & Nicole Engelke Infante*

*Grand Mesa A*

**Differences In Expectations Between Explicit Statements and Actual Practices Using Vectors In A Trigonometry and Physics Course**

*Wendy James*

**5:00 – 6:10 pm**

**POSTER SESSION**

*Centennial Room  
(12<sup>th</sup> Floor)*

**Beyond Plug and Chug: The Nature Of Calculus Homework At Doctoral Institutions**

*Gina Nunez, Kady Hanson & Jessica Ellis*

**Students' and Experts' Ways Of Reasoning About Partial Derivatives Across Stem Contexts**

*Eric Weber, Tevian Dray, Corinne Manogue, Mary Bridget Kustusch & David Roundy*

**Formal Logic In Early Undergraduate Mathematics: A Cycle**

*Morgan Dominy*

**Raising Calculus To The Surface: Discovering Multivariable Calculus Concepts Using Physical Manipulatives**

*Aaron Wangberg, Brian Fisher, Jason Samuels & Eric Weber*

**Visualizing Mathematical Connections In Student Teaching Episodes**

*Danielle Champney*

**Developing Inquiry Oriented Instructional Materials For Linear Algebra (Dioimla): Overview Of The Research Project**

*Megan Wawro, Michelle Zandieh, Chris Rasmussen, Christine Larson, David Plaxco & Katherine Czeranko*

**Measurement Definitions For Elementary School Teachers: Links To Graduate Level Mathematics**

*Visala Rani Satyam*

**Using a Framing and Resources Framework For Analyzing Student Thinking About Matrix Multiplication**

*Warren Christensen*

**Mathematical Thinking In Engineering and Mathematics Students**

*Jenna Tague*

**Pencasts As Exemplars In Differential Equations**

*Jennifer Czocher, Jenna Tague, Amanda Roble & Gregory Baker*

**Mathematics Beyond Classroom: Students' 'Value Creation' Through Mathematical Modeling Within a Learning Community**

*Joo Young Park*

**A Proposal For a Theoretical Framework On Specialized Knowledge For Teaching Mathematics**

*Thorsten Scheiner*

**6:15 – 9:00 pm**  
*Grand Mesa DEF*

**DINNER & PLENARY SESSION**

**Plenary Speaker: Andrea diSessa**

*Knowledge In Pieces: How To Analyze The Process Of Learning At High Resolution*

**FRIDAY FEBRUARY 28, 2014**

**8:45 – 9:15 am**

**SESSION 6 – CONTRIBUTED REPORTS**

*Grand Mesa A*

**Calculus Students' Early Concept Images Of Tangent Lines**

*Renee Larue, Brittany Vincent, Vicki Sealey & Nicole Engelke*

*Chasm Creek A*

**Lessons Learned From Case Studies Of Successful Calculus Programs At Five Doctoral Degree Granting Institutions**

*Chris Rasmussen, Jessica Ellis & Dov Zazkis*

*Grand Mesa B*

**Mathematics Teacher Models Of Quantitative Reasoning**

*David Glassmeyer, Michael Oehrtman & Jodie Novak*

*Chasm Creek B*

**The Selection and Use Of Examples By Algebraists: An Exploratory Study**

*John Paul Cook & Tim Fukawa-Connelly*

**9:25 – 9:55 am**

**SESSION 7 – PRELIMINARY REPORTS**

*Wind Star  
(1<sup>st</sup> Floor)*

**Student Calculus Reasoning Contexts**  
*Matthew Petersen, Sarah Enoch & Jennifer Noll*

*Grand Mesa B*

**Preservice Teachers' Uses Of The Internet To Investigate The Proof Of The Pythagorean Theorem and Its Converse**  
*Aaron Brakoniecki*

*Grand Mesa C*

**Developing Pre-Service Secondary Math Teachers Capacity With Error Analysis Related To Middle-Grades Mathematics**  
*Diana White*

*Chasm Creek A*

**Investigating Instructors' Concerns About Assessments In Inquiry-Based Learning Methods Courses**  
*Inah Ko & Vilma Mesa*

*Chasm Creek B*

**Teaching Inquiry-Based Mathematics To In-Service Teachers: Results From The Field**  
*Karen Keene & Celethia McNeil*

**9:55 – 10:25 am**

**COFFEE BREAK**

*Atrium*

**10:25 – 10:55 am**

**SESSION 8 – CONTRIBUTED REPORTS**

*Chasm Creek B*

**Graduate Students Teaching Assistants' (GTAs') Beliefs, Instructional Practices, and Student Success**  
*Jessica Ellis*

*Grand Mesa A*

**Undergraduate Students' Stochastic Understanding Of Probability Distribution**  
*Darcy Conant*

*Grand Mesa B*

**Technology and Algebra In Secondary Mathematics Teacher Preparation Programs**  
*Eryn Stehr & Lynette Guzman*

*Chasm Creek A*

**Understanding Students' Conceptualizations Of Logical Tools**  
*Casey Hawthorne*

**11:05 – 11:35 am**

**SESSION 9 – CONTRIBUTED REPORTS**

*Chasm Creek B*

**Comparing Calculus Students' Representation Use Across Different Settings**  
*Dov Zazkis*

- Chasm Creek A*      **An Investigation Of College Students' Statistical Literacy**  
*Erin Glover & Sean Larsen*
- Grand Mesa A*      **What Is Simplifying?: Using Word Clouds As A Research Tool**  
*Benjamin Wescoatt*
- Grand Mesa B*      **Prospective Secondary Teachers' Conceptions Of Proof and Interpretations Of Arguments**  
*Annamarie Conner, Richard Francisco, Carlos Nicolas Gomez, Ashley Suominen & Hyejin Park*
- 11:40 – 12:40 pm**      **LUNCH**  
*Grand Mesa DEF*
- 12:45 – 1:15 pm**      **SESSION 10 – PRELIMINARY REPORTS**
- Grand Mesa C*      **Student Understanding Of The Fundamental Theorem Of Calculus At The Mathematics-Physics Interface**  
*Rabindra Bajracharya & John Thompson*
- Grand Mesa B*      **Transforming Remedial Mathematics Instruction With High-Quality Peer Teaching**  
*Kristen Bieda, Raven Mccrory & Steven Wolf*
- Wind Star*  
*(1<sup>st</sup> floor)*      **Mathematicians' Views On Transition-To-Proof and Advanced Mathematics Courses**  
*Milos Savic, Melissa Mills, & Robert Moore*
- Chasm Creek B*      **Current and Future Faculty Members' Mathematical Knowledge For Teaching Calculus**  
*Natasha Speer & Shahram Shawn Firouzian*
- Chasm Creek A*      **Assessment In Undergraduate Inquiry-Based Learning Mathematics Courses**  
*Timothy Whittemore & Vilma Mesa*
- Grand Mesa A*      **Professional Development and Student Achievement On Standardized State Exams**  
*Melissa Goss, Rebecca Anne Dibbs & Robert Powers*
- 1:25 – 1:55 pm**      **SESSION 11 – THEORETICAL REPORTS**
- Chasm Creek B*      **The Duality Principle and Learning Trajectories In Mathematics Education**  
*Eric Weber & Elise Lockwood*
- Chasm Creek A*      **What Is A Proof? A Linguistic Answer To A Pedagogical Question**

*Keith Weber*

*Grand Mesa A*      **The Construction Of Cohomology As Objectified Action**  
*Anderson Norton*

**2:05 – 2:35 pm      SESSION 12 – THEORETICAL REPORTS**

*Grand Mesa A*      **An Origin Of Prescriptions For Our Mathematical Reasoning**  
*Yusuke Uegatani*

*Chasm Creek B*      **Disambiguating Research On Logic As It Pertains To Advanced  
Mathematical Practice**  
*Paul Dawkins*

*Chasm Creek A*      **Two Metaphors For Realistic Mathematics Education Design  
Heuristics: Implications For Documenting Student Learning**  
*Estrella Johnson*

**2:35 – 3:05 pm      COFFEE BREAK**  
*Atrium*

**3:05 – 3:35 pm      SESSION 13 – PRELIMINARY REPORTS**

*Chasm Creek A*      **Characterizing Mathematical Complexity Of Tasks In Calculus I**  
*Nina White, Vilma Mesa & Cameron Blum*

*Chasm Creek B*      **The Value Of Systematic Listing In Correctly Solving Counting  
Problems**  
*Elise Lockwood & Bryan Gibson*

*Grand Mesa A*      **Student Conceptions Of Trigonometric Identities Through Apos  
Theory**  
*Benjamin Wescoatt*

*Grand Mesa B*      **What Constitutes A Well-Written Proof?**  
*Robert Moore*

*Wind Star (1<sup>st</sup>  
Floor)*      **Characteristics Of Successful Programs In College Calculus: How  
Calculus Instructors Talk About Their Students**  
*Sean Larsen, Estrella Johnson & Dov Zazkis*

*Grand Mesa C*      **Student Views About Truth In Axiomatic Mathematics**  
*Brian Katz*

**3:45 – 4:15 pm      SESSION 14 – CONTRIBUTED REPORTS**

*Grand Mesa B*      **Model-Of To Model-For In The Context Of Riemann Sum**  
*Kritika Chhetri & Jason Martin*

*Chasm Creek B*      **Student Understanding Of Mean, Distribution and Standard Deviation**  
*Samuel Cook & Tim Fukawa-Connelly*

*Grand Mesa A*      **Preservice Secondary Teachers' Understanding Of The Cartesian Connection and Equivalence**  
*Kyunghee Moon*

*Chasm Creek A*      **Living It Up In The Formal World: An Abstract Algebraist's Teaching Journey**  
*John Paul Cook, Ameya Pitale, Ralf Schmidt & Sepideh Stewart*

**4:25 – 4:55 pm      SESSION 15 – CONTRIBUTED REPORTS**

*Chasm Creek A*      **Are Students Better At Validation After A Transition-To-Proof Course?**  
*Annie Selden & John Selden*

*Grand Mesa A*      **Considering Mathematical Practices In Engineering Contexts Focusing On Signal Analysis**  
*Reinhard Hochmuth, Rolf Biehler & Stephan Schreiber*

*Chasm Creek B*      **Evaluating Professional Development Workshops Quickly and Effectively**  
*Charles Hayward & Sandra Laursen*

*Grand Mesa B*      **An Eye To The Horizon: The Case Of Delia's Hexagon**  
*Ami Mamolo*

**5:10 – 6:10 pm      PLENARY SESSION**

*Grand Mesa DEF*

**Plenary Speaker: Anna Sfard**

Mathematics Learning: Does Language Make A Difference?

**DINNER ON YOUR OWN**

**SATURDAY, MARCH 1, 2014**

**9:00 – 9:30 am      SESSION 16 – CONTRIBUTED REPORTS**

*Chasm Creek B*      **Students' Struggle With The Temporal Order Of Delta and Epsilon Within The Formal Definition Of A Limit**  
*Aditya Adiredja & Kendrice James*

*Chasm Creek A*      **The Construction Of A Video Coding Protocol To Analyze Interactive**



**Instruction In Calculus and Connections With Conceptual Gains**

*Matthew Thomas*

*Grand Mesa A*

**Academic and Social Integration Revealed In Characteristics Of Successful Programs In College Calculus Project: The Two-Year College Context**

*Vilma Mesa, Nina White & Helen Burn*

*Grand Mesa B*

**Teaching The Concept Of Mathematical Definition Using Student Construction and Self-Assessment**

*Susanna Molitoris Miller*

**9:40 – 10:10 am**

**SESSION 17 – PRELIMINARY REPORTS**

*Grand Mesa B*

**Differential Participation In Formative Assessment and Achievement In Undergraduate Calculus**

*Rebecca Dibbs & Michael Oehrtman*

*Grand Mesa A*

**Cognitive Processes and Knowledge In Activities In Community College Trigonometry Lessons**

*Linda Leckrone & Vilma Mesa*

*Chasm Creek B*

**Using The Flipped Model To Address Cognitive Obstacles In Differential Equations**

*Jenna Tague, Jennifer Czocher, Amanda Roble & Gregory Baker*

*Chasm Creek A*

**An Exploration Of Mathematics Graduate Teaching Assistants' Teaching Philosophies**

*Kedar Nepal*

*Wind Star  
(1<sup>st</sup> Floor)*

**Approximation: A Connecting Construct Of The First-Year Calculus?**

*Kimberly Sofronas, Thomas Defranco, Hariharan Swaminathan, Charles Vinsonhaler, Nicholas Gorgievski & Brianna Wiseman*

*Grand Mesa C*

**Noticing The Math In Issues Of Social Justice**

*Ami Mamolo*

**10:10 – 10:40 am**

**COFFEE BREAK**

*Atrium*

**10:40 – 11:10 am**

**SESSION 18 – PRELIMINARY REPORTS**

*Chasm Creek A*

**Presentation Of Matrix Multiplication In Introductory Linear Algebra Textbooks**

*John Paul Cook & Sepideh Stewart*

*Grand Mesa A*

**Differentiated Student Thinking While Solving A Distance Vs. Time**

**Graph Problem**

*Eric Pandiscio*

*Grand Mesa B*

**Undergraduate Students' Use Of Intuitive, Informal, and Formal Reasoning To Decide On The Truth Value Of A Mathematical Statement**

*Kelly Bubp*

*Grand Mesa C*

**A Framework and a Study To Characterize a Teacher's Goals For Student Learning**

*Frank Marfai*

*Chasm Creek B*

**Instructors' Beliefs On The Role Of Calculus**

*Kathleen Melhuish & Estrella Johnson*

*Wind Star*

**Mathematical Perceptions and Problem Solving Of First Year Developmental Mathematics Students In A Four-Year Institution**

*Anne Cawley*

**11:20 – 11:50 am**

**SESSION 19 – CONTRIBUTED REPORTS**

*Grand Mesa B*

**Teaching Methods and Student Performance In Calculus I**

*Barbara Trigalet, Lisa Mantini & R. Evan Davis*

*Chasm Creek A*

**Exploring Students' Ways Of Thinking About Sampling Distributions**

*Aaron Weinberg*

*Grand Mesa A*

**Supporting Students To Construct Proofs: An Argument Assessment Tool**

*Martha Byrne & Justin Boyle*

*Chasm Creek B*

**Students' Use Of Parameters and Variables To Reason About Multivariable Functions**

*Eric Weber*

**11:50am–1:50 pm**

*Grand Mesa DEF*

**LUNCH**

**1:50 – 2:20 pm**

**SESSION 20 – PRELIMINARY REPORTS**

*Chasm Creek A*

**Slope and Derivative: Calculus Students' Understanding Of Rates Of Change**

*Jen Tyne*

*Chasm Creek B*

**Student Understanding Of Linear Independence Of Functions**

*David Plaxco, Megan Wawro & Lizette Zietsman*

- Grand Mesa B*      **Proof Conceptions Of College Calculus Students**  
*Jon Janelle*
- Wind Star  
(1<sup>st</sup> Floor)*      **An Investigation Into Students' Use Of Given Hypotheses When Proving**  
*Kathleen Melhuish*
- Grand Mesa A*      **The Effect Of 5 Minute Preview Video Lectures Using Smart Board, Camtasia Studio, and Podcasting On Mathematical Achievement and Mathematics Self-Efficacy**  
*Minsu Kim*
- Grand Mesa C*      **Characteristics Of Successful Programs In College Calculus: Instructors' Perceptions Of The Usefulness and Role Of Instructional Technology**  
*Erin Glover & Sean Larsen*
- 2:30 – 3:00 pm**      **SESSION 21 – CONTRIBUTED REPORTS**
- Grand Mesa A*      **Reinventing Permutations and Combinations**  
*Elise Lockwood, Craig Swinyard & John Caughman*
- Chasm Creek B*      **Calculus Students' Understanding Of Units**  
*Allison Dorko & Natasha Speer*
- Chasm Creek A*      **Proof Scripts As a Lens For Exploring Proof Comprehension**  
*Rina Zazkis & Dov Zazkis*
- Grand Mesa B*      **A Typology Of Validating Activity In Mathematical Modeling**  
*Jennifer Czocher*
- 3:00 – 3:30 pm**      **COFFEE BREAK**  
*Atrium*
- 3:30 – 4:00 pm**      **SESSION 22 – CONTRIBUTED REPORTS**
- Grand Mesa A*      **On The Sensitivity Of Problem Phrasing - Exploring The Reliance Of Student Responses On Particular Representations Of Infinite Series**  
*Danielle Champney*
- Grand Mesa B*      **How Does Undergraduates' Understanding of the Function Concept Evolve During The Course of a Semester?**  
*Eyob Demeke, Vincent Mateescu & Anek Janjaroon*
- Chasm Creek B*      **Naive Brouwerian Visions: A Study Of Students' Interpretations Of Non-Constructive Existence Proofs**  
*Stacy A. Brown*

*Chasm Creek A*      **Three Conceptualizations Of The Definite Integral In Mathematics and Physics Contexts**  
*Steven Jones*

**4:10 – 4:40 pm**      **SESSION 23 – CONTRIBUTED REPORTS**

*Chasm Creek B*      **The Ability To Reject Invalid Logical Inferences Predicts Proof Comprehension and Mathematics Performance**  
*Lara Alcock, Toby Bailey, Matthew Inglis & Pamela Docherty*

*Grand Mesa C*      **Factors Associated With The Success Of Female Mathematics Doctoral Students**  
*Emily Miller*

*Grand Mesa B*      **Deploying Problems Assessing Mathematical Knowledge For Teaching As Tasks For Professional *Preparation***  
*Yvonne Lai & Heather Howell*

*Chasm Creek A*      **Exploring Differences In Teaching Practice When Two Mathematics Instructors Enact The Same Lesson**  
*Joseph Wagner & Karen Keene*

**4:45 – 5:15 pm**      **BREAK (CASH BAR)**  
*Atrium*

**5:15 – 8:30 pm**      **AWARDS BANQUET & PLENARY SESSION**  
*Grand Mesa DEF*      **Plenary Speaker: Ron Tzur**

*Promoting Teachers' and Students' Learning To Reason Multiplicatively: A Units-and-Operations Developmental Approach*