

MatRIC Calculus Conference 2019 Program

TUESDAY

09:00 – 10:30 Welcome, Conference Opening and Plenary I (room: B2 003) David Tall (video)			
<i>10:30 – 11:00 Coffee break</i>			
11:00 – 12:30 Brainstorming discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair, Scribe (*)</i>	<i>Pat Thompson, Elena Nardi</i>	<i>Ivy Kidron, John Monaghan</i>	<i>Rolf Biehler, Tommy Dreyfus</i>
<i>12:30 – 13:30 Lunch (The Canteen - Lilletunstova)</i>			
13:30 – 15:00 Paper presentations			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Charlotte Derouet</i>	<i>Sepideh Stewart</i>	<i>Laurent Vivier</i>
	<u>Herbst, Patricio;</u> Shultz, Mollee How professional obligations can help understand decisions in the teaching of calculus across institutional contexts	Biza, Irene Calculus as a discursive bridge for Algebra, Geometry and Analysis: The case of tangent line	Clark, Kathleen M. Examining students' secondary-tertiary transition: Influences of history, disposition, and disciplinary engagement
	<u>Jennings, Michael;</u> Goos, Merrilyn; Adams, Peter Teacher and lecturer perspectives on secondary school students' understanding of the limit definition of the derivative	<u>Kontorovich, Igor';</u> Herbert, Rowan; Yoon, Caroline Students resolve a commognitive conflict between colloquial and calculus discourses on steepness	Hagman, Jessica Ellis A vision for the future of college calculus
	Pinto, Alon Towards transition-oriented pedagogies in university calculus courses	Swidan, Osama Construction of the mathematical meaning of the function-derivative relationship using dynamic digital artifacts	Törner, Günter The 'Signature' of a Teaching Unit – 'Calculus' as the 'Heart' within Standard Introductory Mathematical Courses
<i>15:00 – 15:30 Coffee break</i>			
15:30 – 17:00 Paper discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Charlotte Derouet</i>	<i>Sepideh Stewart</i>	<i>Laurent Vivier</i>
<i>Reactor</i>	<i>Rogier Bos</i>	<i>Alejandro González-Martín</i>	<i>Tommy Dreyfus</i>
<i>Scribe</i>	<i>Courtney Simmons</i>	<i>Niels Grønþæk</i>	<i>Olov Viirman</i>

(*)

- The **Chair** will ensure things run to time and that all participants have an opportunity to contribute.
- The **Reactor** will:
 - read the relevant papers before the conference
 - attend the relevant paper presentation and take notes about each paper
 - present an opening summary of the 3 papers, note similarities and differences and suggest areas for discussion in the Paper discussion groups session (about 5 minutes).
- The **Scribe** will make an electronic record of the main contributions in the discussion group (approximately 500 words), name the file according to the naming convention below and send it, as soon as possible after the meeting, to Ninni Marie Hogstad (ninni.m.hogstad@uia.no) to put on the conference website. The record should include the name of the discussion group but does not need to include the names of the participants. The scribes will also give a short (about 15 minute) report on the session they scribed for during the report sessions on Friday.

Naming convention:

Please name the file “DayCol yourname”, where

DayCol is the three letter code for the weekday + column in the program, for example
TuB, WeA or ThC

Yourname is either your first or your family name

WEDNESDAY

09:00 – 10:30 Plenary II (room: B2 003)			
Patrick W. Thompson			
Making the Fundamental Theorem of Calculus fundamental to students' calculus			
<i>10:30 – 11:00 Coffee break</i>			
11:00 – 12:30 Topic discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Elena Nardi</i>	<i>John Monaghan</i>	<i>Tommy Dreyfus</i>
	Transitions and navigations in Calculus to / across university, and into the workplace	Networking ATD and ToC in conference papers	Notions of convergence and limit for different groups of learners
<i>12:30 – 13:30 Lunch (The Canteen - Lilletunstova)</i>			
13:30 – 15:00 Paper presentations			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Michael Jennings</i>	<i>Igor' Kontorovich</i>	<i>Patricio Herbst</i>
	<u>Bos, Rogier;</u> Doorman, Michiel; Drijvers, Paul Supporting the reinvention of slope	Bang, Henrik; Grønbaek, Niels; Larsen Claus Teachers' choices of digital approaches to upper secondary calculus	Derouet, Charlotte Introducing the integral concept with probability tasks
	<u>Kouropatov, Anatoli;</u> Ovodenko, Regina Construction (and reconstruction) and consolidation of knowledge about the inflection point: Students confront errors using digital tools	<u>Mesa, Vilma; Liakos, Yannis; Boelkins, Matt</u> Designing textbooks with enhanced features to increase student interaction and promote instructional change	Ely, Robert Teaching calculus with (informal) infinitesimals
	<u>Stewart, Sepideh;</u> Reeder, Stacy Examining unresolved difficulties with school algebra in calculus	Sangwin, Christopher J. The mathematical apprentice: an organising principle for teaching calculus in the 21st century	Nilsen, Hans Kristian First-year engineering students' reflections on the Fundamental Theorem of Calculus
<i>15:00 – 15:30 Coffee break</i>			
15:30 – 17:00 Paper discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Michael Jennings</i>	<i>Igor' Kontorovich</i>	<i>Patricio Herbst</i>
<i>Reactor</i>	<i>Aaron Wangberg</i>	<i>Frank Feudel</i>	<i>Osama Swidan</i>
<i>Scribe</i>	<i>Irene Biza</i>	<i>Jessica Hagman</i>	<i>Athina Thoma</i>

THURSDAY

09:00 – 10:30 Plenary III (room: B2 003)			
Rolf Biehler			
The transition from Calculus and to Analysis – Conceptual analyses and supporting steps for students			
<i>10:30 – 11:00 Coffee break</i>			
11:00 – 12:30 Paper presentations			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Günter Törner</i>	<i>Kathleen Clark</i>	<i>Anatoli Kouropatov</i>
	<u>Simmons, Courtney;</u> <u>Oehrtman, Michael</u> Quantitatively Based Summation: A framework for student conception of definite integrals	<u>Durand-Guerrier,</u> <u>Viviane;</u> <u>Montoya</u> <u>Delgadillo, Elizabeth;</u> <u>Vivier, Laurent</u> Real exponential in discreteness-density- completeness contexts	<u>Feudel, Frank</u> Required knowledge of the derivative in economics – Results from a textbook analysis
	<u>Thoma, Athina;</u> <u>Nardi, Elena</u> Linear stability or graphical analysis? Routines and visual mediation in students’ responses to a stability of dynamical systems exam task	<u>Kidron, Ivy</u> The dual nature of reasoning in Calculus	<u>González-Martín,</u> <u>Alejandro S.;</u> <u>Hernandes-Gomes,</u> <u>Gisela</u> What happens after Calculus? Examples of the use of integrals in engineering: the case of Electromagnetism
	<u>Wangberg, Aaron;</u> <u>Gire, Elizabeth</u> Raising Calculus to the Surface: Extending derivatives and concepts with multiple representations	<u>Monaghan, John</u> The place of limits in elementary calculus courses	<u>Viirman, Olov;</u> <u>Pettersson, Irina</u> What to do when there is no formula? Navigating between less and more familiar routines in a calculus task for engineering students
<i>12:30 – 13:30 Lunch (The Canteen - Lilletunstova)</i>			
13:30 – 15:00 Paper discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Günter Törner</i>	<i>Kathleen Clark</i>	<i>Anatoli Kouropatov</i>
<i>Reactor</i>	<i>Alon Pinto</i>	<i>Chris Sangwin</i>	<i>Vilma Mesa</i>
<i>Scribe</i>	<i>Regina Ovodenko</i>	<i>Robert Ely</i>	<i>Hans Kristian Nilsen</i>
<i>15:00 – 15:30 Coffee break</i>			
15:30 – 17:00 Future discussion group			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
<i>Chair</i>	<i>Pat Thompson</i>	<i>Ivy Kidron</i>	<i>Rolf Biehler</i>
<i>Scribe</i>	<i>Elena Nardi</i>	<i>John Monaghan</i>	<i>Tommy Dreyfus</i>
Room	F1 022 (EN)		
17:10 – 17:40 Meet the editors			

FRIDAY

09:00 – 11:00 Plenary panel (room: B2 003) From Newton's first to second law: How can curriculum, pedagogy and assessment celebrate a more dynamic experience of calculus?			
<i>11:00 – 11:30 Coffee break</i>			
11:30 – 13:00 Reports on paper presentations and discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
11:30-12:10	A	B	C
	<u>Herbst, Patricio;</u> Shultz, Mollee How professional obligations can help understand decisions in the teaching of calculus across institutional contexts	Biza, Irene Calculus as a discursive bridge for Algebra, Geometry and Analysis: The case of tangent line	Clark, Kathleen M. Examining students' secondary-tertiary transition: Influences of history, disposition, and disciplinary engagement
	<u>Jennings, Michael;</u> Goos, Merrilyn; Adams, Peter Teacher and lecturer perspectives on secondary school students' understanding of the limit definition of the derivative	<u>Kontorovich, Igor';</u> Herbert, Rowan; Yoon, Caroline Students resolve a commognitive conflict between colloquial and calculus discourses on steepness	Hagman, Jessica Ellis A vision for the future of college calculus
	Pinto, Alon Towards transition-oriented pedagogies in university calculus courses	Swidan, Osama Construction of the mathematical meaning of the function-derivative relationship using dynamic digital artifacts	Törner, Günter The 'Signature' of a Teaching Unit – 'Calculus' as the 'Heart' within Standard Introductory Mathematical Courses
<i>Chairs (**)</i>	<i>Rogier, Bos Courtney Simmons</i>	<i>Alejandro González-Martín, Niels Grønbæk</i>	<i>Tommy Dreyfus, Olov Viirman</i>
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
12:20-13:00	A	B	C
	<u>Bos, Rogier;</u> Doorman, Michiel; Drijvers, Paul Supporting the reinvention of slope	<u>Bang, Henrik;</u> Grønbæk, Niels; Larsen, Claus Teachers' choices of digital approaches to upper secondary calculus	Derouet, Charlotte Introducing the integral concept with probability tasks

	<p><u>Kouropatov, Anatoli;</u> Ovodenko, Regina Construction (and re-construction) and consolidation of knowledge about the inflection point: Students confront errors using digital tools</p>	<p><u>Mesa, Vilma; Liakos, Yannis; Boelkins, Matt</u> Designing textbooks with enhanced features to increase student interaction and promote instructional change</p>	<p>Ely, Robert Teaching calculus with (informal) infinitesimals</p>
	<p><u>Stewart, Sepideh; Reeder, Stacy</u> Examining unresolved difficulties with school algebra in calculus</p>	<p>Sangwin, Christopher J. The mathematical apprentice: an organising principle for teaching calculus in the 21st century</p>	<p>Nilsen, Hans Kristian First-year engineering students' reflections on the Fundamental Theorem of Calculus</p>
<i>Chairs (**)</i>	<i>Aaron Wangberg, Irene Biza</i>	<i>Frank Feudel, Jessica Hagman</i>	<i>Osama Swidan, Athina Thoma</i>
<i>13:00 – 14:00 Lunch (The Canteen - Lilletunstova)</i>			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
14:00- 14:40	A	B	C
	<p><u>Simmons, Courtney; Oehrtman, Michael</u> Quantitatively Based Summation: A framework for student conception of definite integrals</p>	<p><u>Durand-Guerrier, Viviane; Montoya Delgadillo, Elizabeth; Vivier, Laurent</u> Real exponential in discreteness-density-completeness contexts</p>	<p>Feudel, Frank Required knowledge of the derivative in economics – Results from a textbook analysis</p>
	<p><u>Thoma, Athina; Nardi, Elena</u> Linear stability or graphical analysis? Routines and visual mediation in students' responses to a stability of dynamical systems exam task</p>	<p>Kidron, Ivy The dual nature of reasoning in Calculus</p>	<p><u>González-Martín, Alejandro S.;</u> Hernandes-Gomes, Gisela What happens after Calculus? Examples of the use of integrals in engineering: the case of Electromagnetism</p>

	Wangberg, Aaron; Gire, Elizabeth Raising Calculus to the Surface: Extending derivatives and concepts with multiple representations	Monaghan, John The place of limits in elementary calculus courses	Viirman, Oloy; Pettersson, Irina What to do when there is no formula? Navigating between less and more familiar routines for determining velocity in a calculus task for engineering students
<i>Chairs (**)</i>	<i>Alon Pinto, Regina Ovodenko</i>	<i>Chris Sangwin, Robert Ely</i>	<i>Vilma Mesa, Hans Kristian Nilsen</i>
14:50 – 15:30 Brainstorming and Future discussion groups			
Room	F1 018 (EN)	F1 023 (JM)	F1 031 (TD)
	A	B	C
	Pat Thompson and Elena Nardi jointly present the report and chair the session.	Ivy Kidron and John Monaghan jointly present the report and chair the session.	Rolf Biehler and Tommy Dreyfus jointly present the report and chair the session.
15:30 Coffee break			
15:45 - 17:00 Planning for two journal special issues (IJRUME¹, TeaMAT²) (F1 022)			
18:00 - 19:30 Farewell gathering and conference closure (Scandic Bystranda Hotel)			

(**)

- Chairs are the two participants who acted as reactors and scribes in the Day 1-3 session in which the papers were discussed.
 - The participant who acted as reactor will summarise and outline themes across papers (10 min).
 - The participant who acted as scribe will report the discussion of the papers (10 min).
- Plenary discussion will follow (20 min).

¹ [International Journal of Research in Undergraduate Mathematics Education](#)

² [Teaching Mathematics and its Applications](#)

Assignment to Brainstorming-Future Discussion Groups (Br-Ftr), Topic Discussion Groups (TDG) and Tasks

First name	Family name	Br-Ftr DG	TDG	Tasks		
				Chair	Reactor	Scribe
Aaron	Wangberg	C	A		WeA	
Alejandro S.	González-Martín	A	A		TuB	
Alon	Pinto	C	A		ThA	
Anatoli	Kouropatov	A	C	ThC		
Athina	Thoma	A	B			WeC
Charlotte	Derouet	B	C	TuA		
Christopher	Sangwin	C	A		ThB	
Courtney	Simmons	A	A			TuA
Elena	Nardi	A	A	DG A		Br-Ftr A
Frank	Feudel	B	C		WeB	
Günter	Törner	C	A	ThA		
Hans Kristian	Nilsen	C	B			ThC
Igor'	Kontorovich	C	B	WeB		
Irene	Biza	B	B			WeA
Ivy	Kidron	B	C	Br-Ftr B		
Jessica	Hagman	A	A			WeB
John	Monaghan	B	B	DG B		Br-Ftr B
Kathleen	Clark	A	A	ThB		
Laurent	Vivier	B	C	TuC		
Michael	Jennings	C	A	WeA		
Niels	Grønbæk	B	C			TuB
Ninni Marie	Hogstad	A	A			
Olov	Viirman	B	B			TuC
Osama	Swidan	C	B		WeC	
Pat	Thompson	A	C	Br-Ftr A		
Patricio	Herbst	A	A	WeC		
Regina	Ovodenko	B				ThA
Robert	Ely	B	A			ThB
Rogier	Bos	C	C		TuA	
Rolf	Biehler	C		Br-Ftr C		
Sepideh	Stewart	A	B	TuB		
Tommy	Dreyfus	C	C	DG C	TuC	Br-Ftr C
Vilma	Mesa	B	B		ThC	

Naming convention: The paper presentation sessions are named “DayCol”, where DayCol is a three letter code, two letters for the weekday and one for the column in this program, for example TuB (for Tuesday column B), WeA or ThC. **A: room F1 018, B: room F1 023, C: room F1 031**

Non-presenting participants

First name	Family name	Br-Ftr DG
Farzad	Radmehr	C
Floridona	Tetaj	C
Niclas	Larson	B
Olav	Dovland	B
Pauline	Vos	A
Said	Hadjerrouit	A
Svitlana	Rogovchenko	C
Yuriy	Rogovchenko	B

Day 4-only participants

First name	Family name
Heidi M.	Oftedahl
Ragnhild Johanne	Rensaa

A: room F1 018, B: room F1 023, C: room F1 031

Organizer email

Elisabeth Rasmussen: elisabeth.rasmussen@uia.no

WIFI:

Username: bzrqb

Password: KdxE

Opening hours, campus Kristiansand

Every day: 07:00 - 21:00