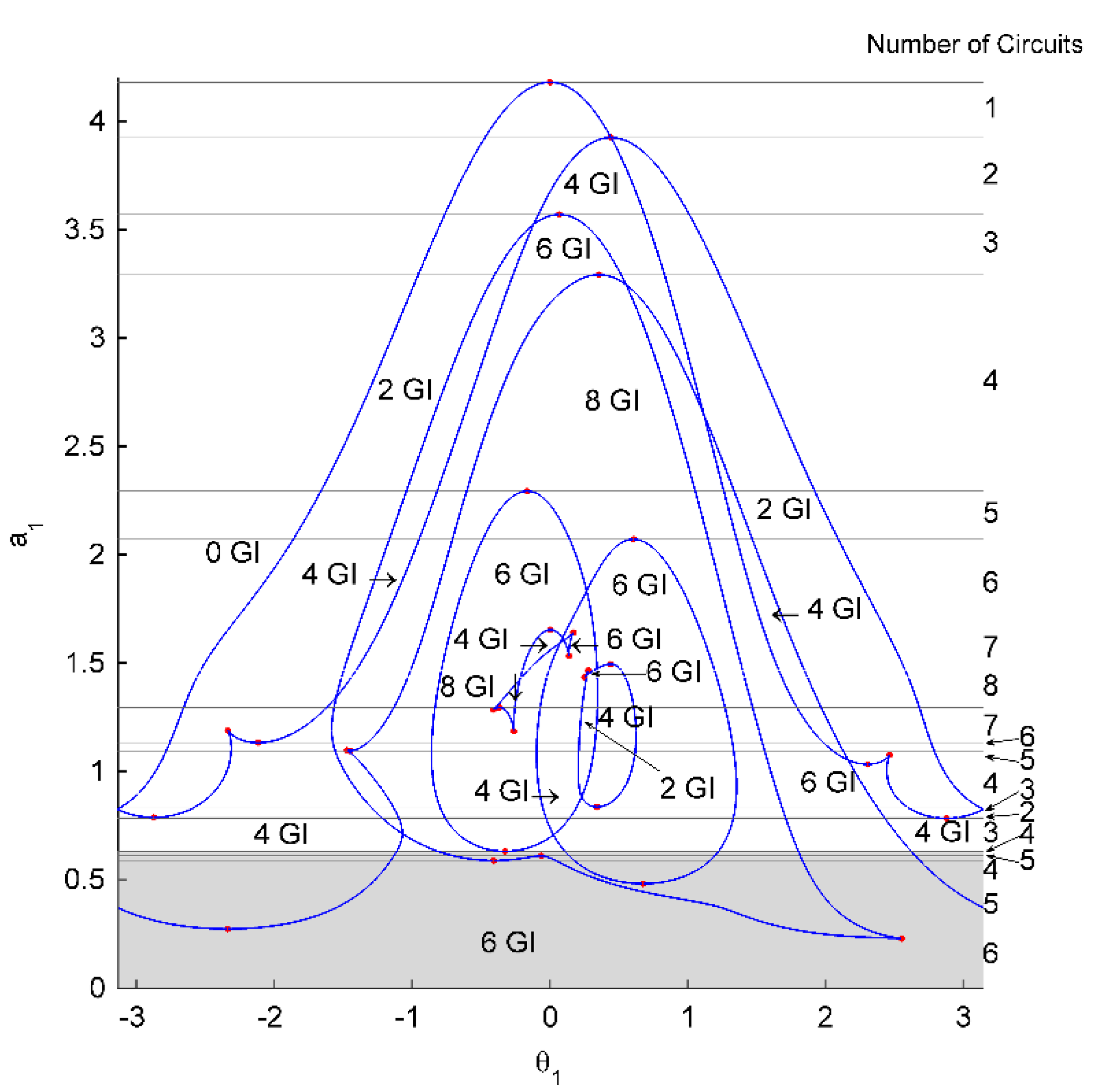
Saleh M. Almestiri
Advisors: Andrew Murray & David Myszka
Design of Innovative Machines Lab (the DIMLab), University of Dayton

Interests:

- Using numerical algebraic geometry techniques to solve spatial mechanism analysis and design problems.
- Developing approaches especially suited to implementing these techniques.
- Considering the specialization to spherical mechanisms.
- Efficient techniques for solving high Bezout number polynomial systems.

Singularity Traces of Planar Mechanisms



Created using isotropic coordinates due to their suitaboility in using Bertini

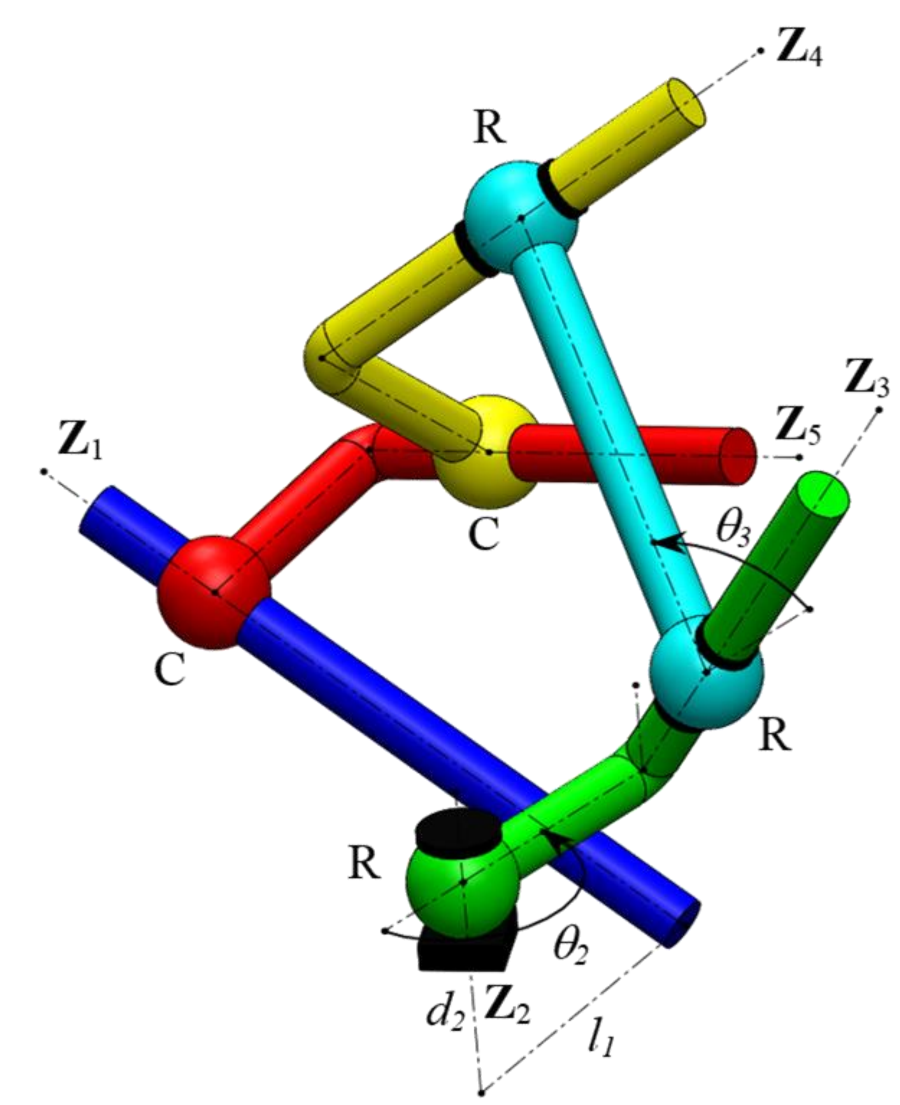
SU(2) and the Dual of SU(2)

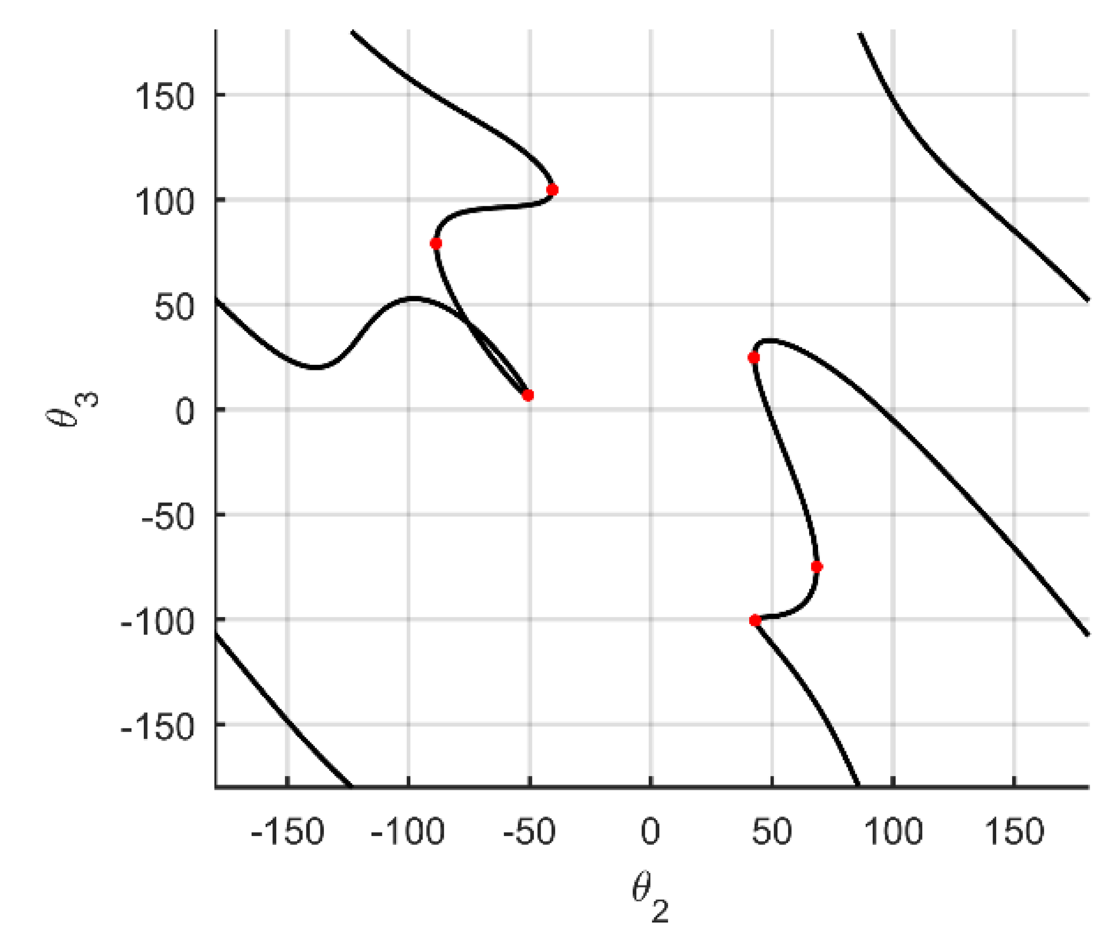
The group SU(2) is isomorphic to the group of quaternions, thus can be used to represent rotation in 3-dimentional space.

$$\mathrm{SU}(2) = \left\{ \begin{pmatrix} \alpha & -\overline{\beta} \\ \beta & \overline{\alpha} \end{pmatrix} : \ \alpha, \beta \in \mathbf{C}, |\alpha|^2 + |\beta|^2 = 1 \right\}$$

$$Q(s, \theta) = \begin{bmatrix} \cos\frac{\theta}{2} + \mathrm{i}s_z \sin\frac{\theta}{2} & s_y \sin\frac{\theta}{2} - \mathrm{i}s_x \sin\frac{\theta}{2} \\ -s_y \sin\frac{\theta}{2} - \mathrm{i}s_x \sin\frac{\theta}{2} & \cos\frac{\theta}{2} - \mathrm{i}s_z \sin\frac{\theta}{2} \end{bmatrix}.$$

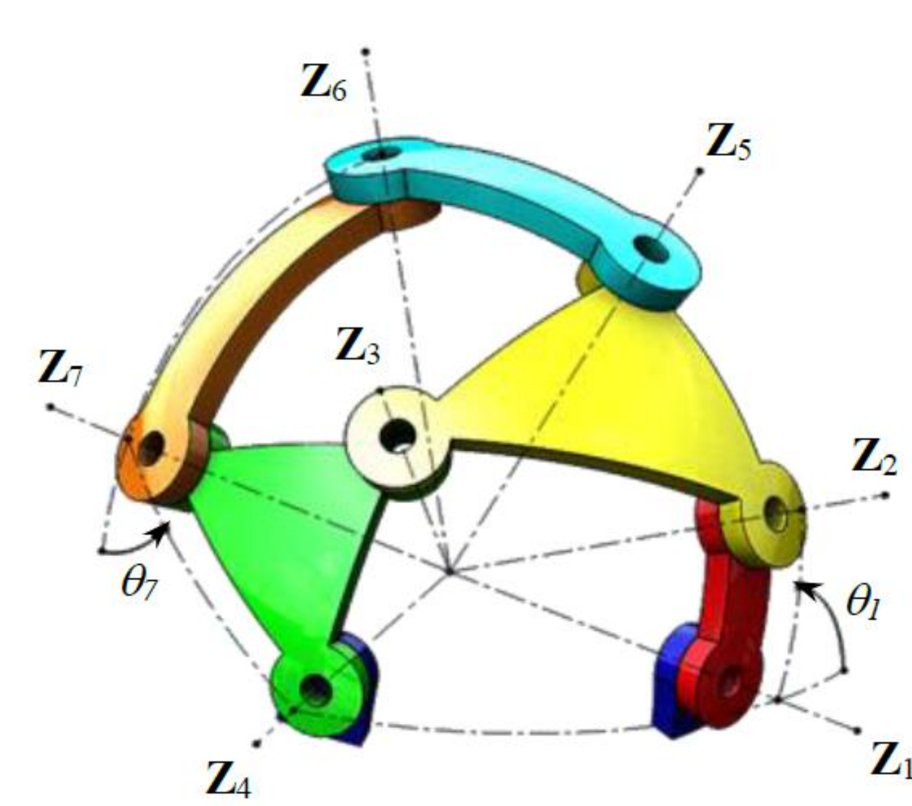
RRRCC Linkage

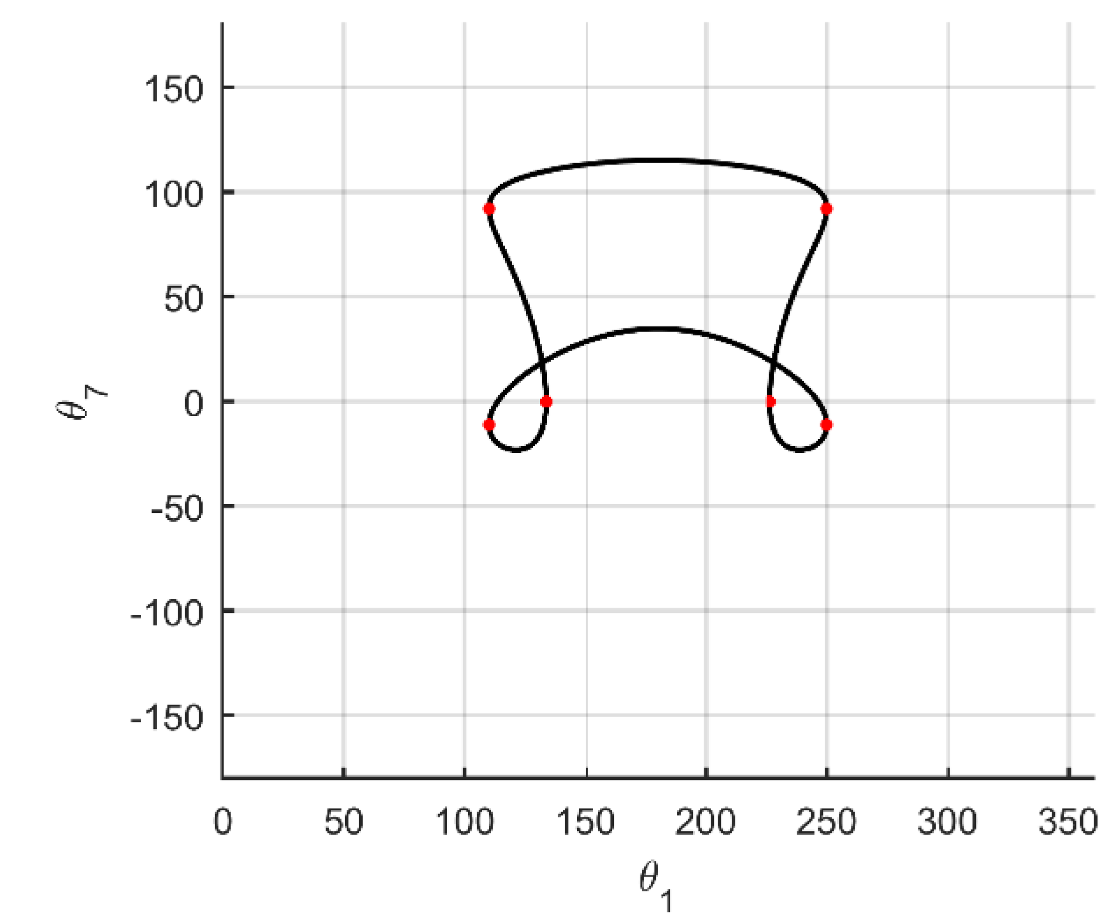




Motion curve for the RRRCC projected onto θ_2-θ_3

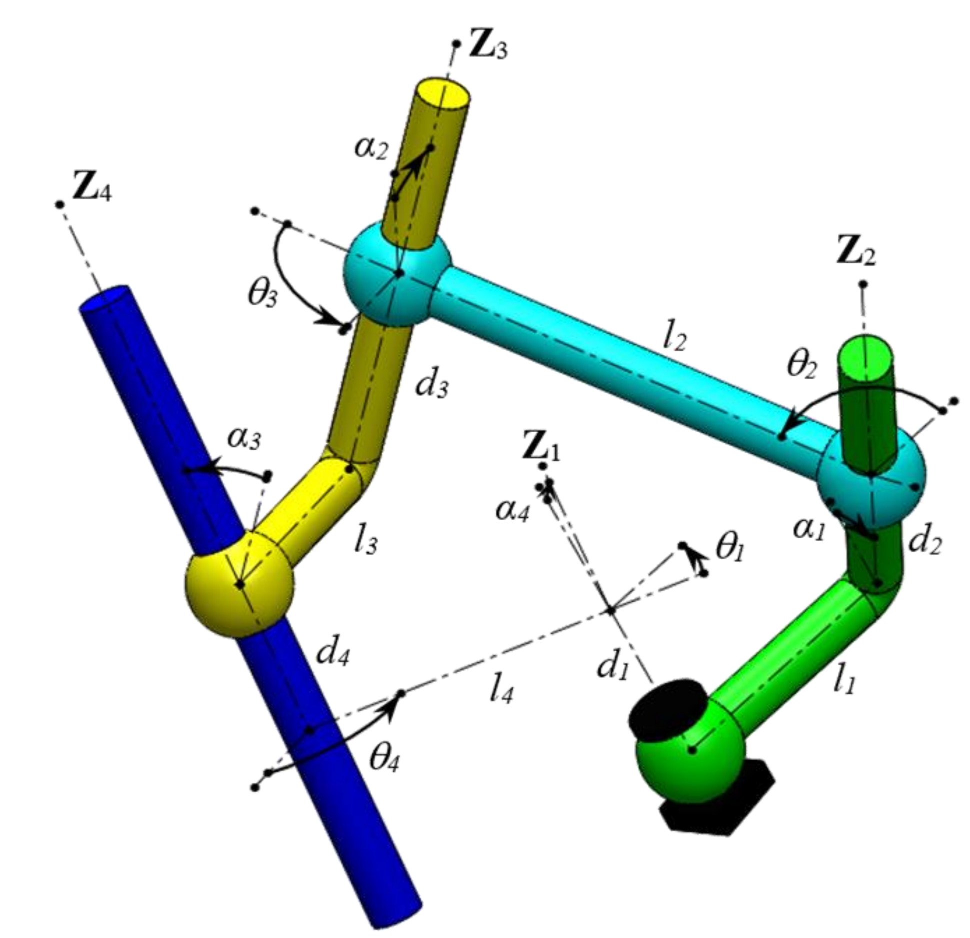
Spherical Watt I Linkage



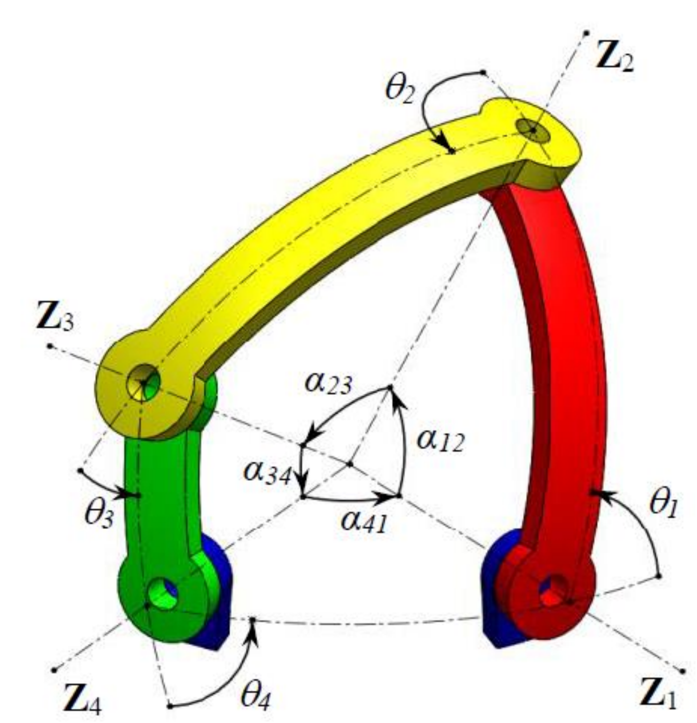


Motion curve for spherical Watt I projected onto θ_1-θ_7

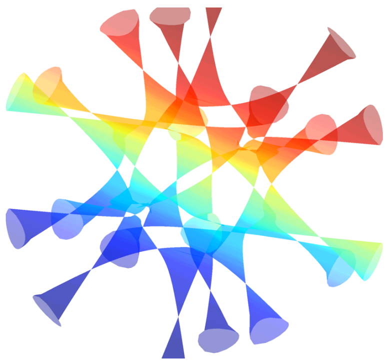
RCCC Linkage



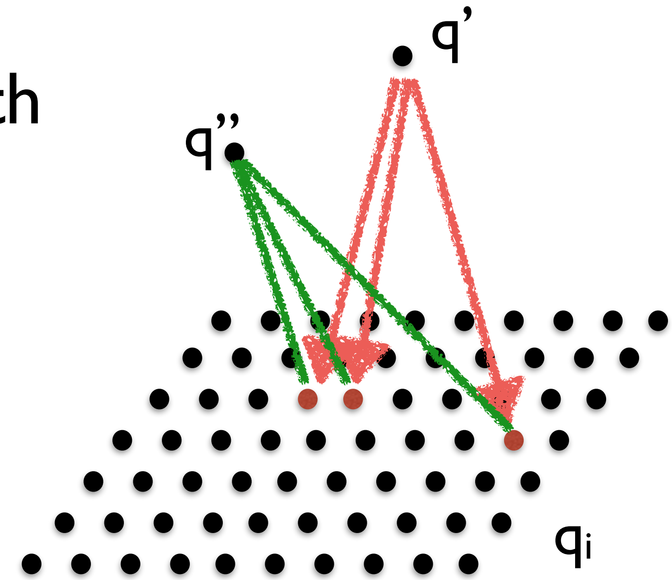
Spherical Four-Bar Linkage



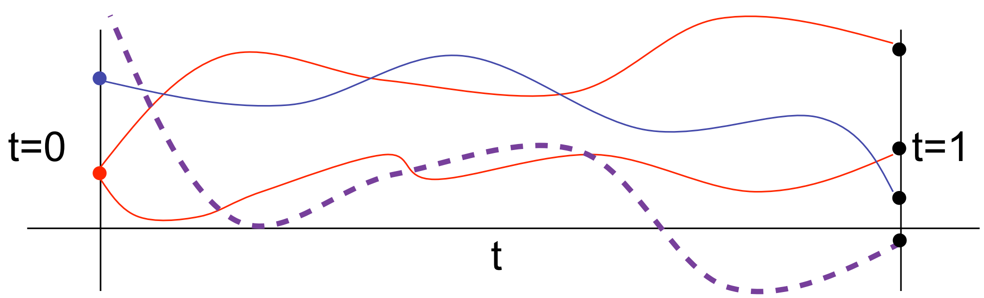
Dan Bates
Colorado State University Math



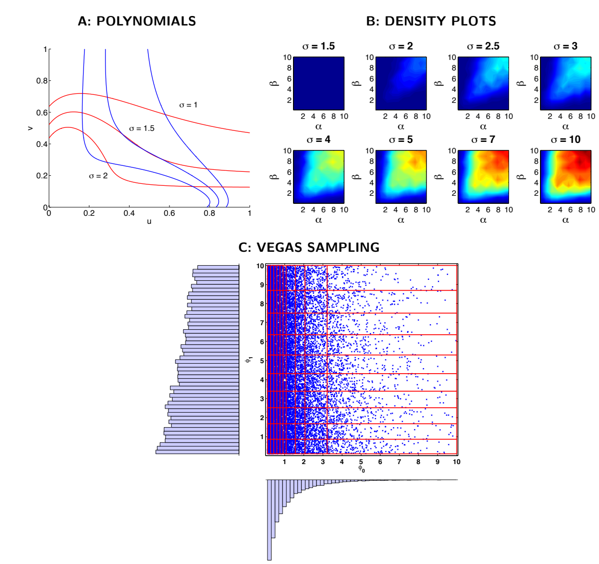
real solutions (Bertini_real)



parameter homotopies (Paramotopy)



general algorithm & software dev
(Bertini, Bertini 2.0)



applications in & out of math

Daniel Brake
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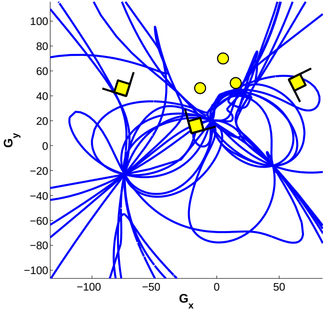
danielthebrake.org



Interests:

- Numerical algorithm development – C++, Python
- Implementation – Bertini2
- Parallel computation
- Kinematics
- 3D printing, real decompositions

Paul Breiding
Technische Universität Berlin
breiding@math.tu-berlin.de
page.math.tu-berlin.de/∼breiding

Interests:

- Solving (structured) polynomial systems using homotopy methods
- Random real algebraic geometry
- Condition numbers of...
  - Polynomial equation solving
  - Eigenvalues of tensors
  - Tensor Rank

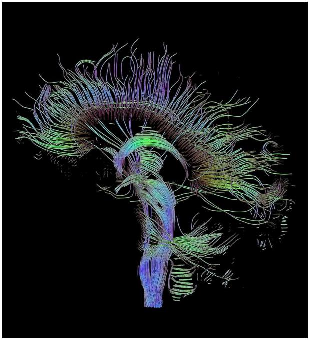


Figure : Reconstruction of nerves in the brain using diffusion tensor imaging. Picture by Thomas Schultz.

Taylor Brysiewicz
Texas A & M University

Interests

- Numerical Algebraic Geometry
- Combinatorial Algebraic Geometry
- Osculating Curves

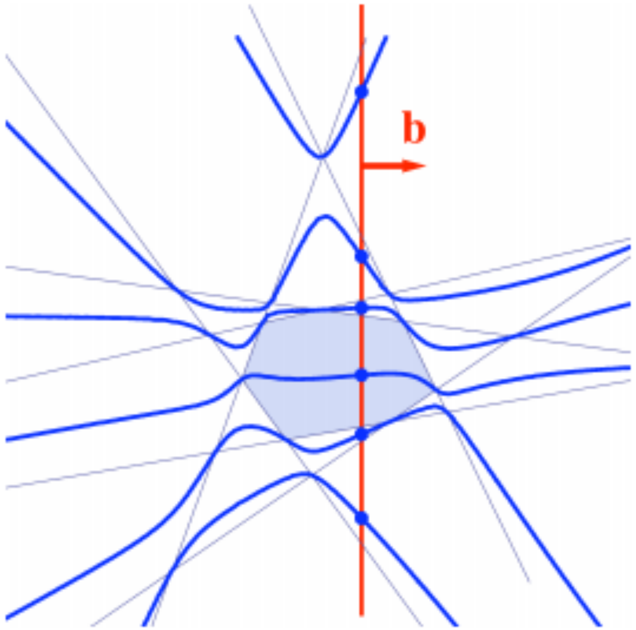
Current Project

Implementation of an Algorithm by Jon Hauenstein and Frank Sottile
Input: Hypersurface
Output: Newton Polytope of defining polynomial

Karleigh Cameron
Colorado State University
cameron@math.colostate.edu

Interests:

- Linear/ Nonlinear Programming
- Real-world problems and applications
- Numerical Algebraic Geometry



Central curve for a linear system with 6 constraints
(Sturmfels, The central curve in linear programming)

Jeb Collins

West Texas A&M University

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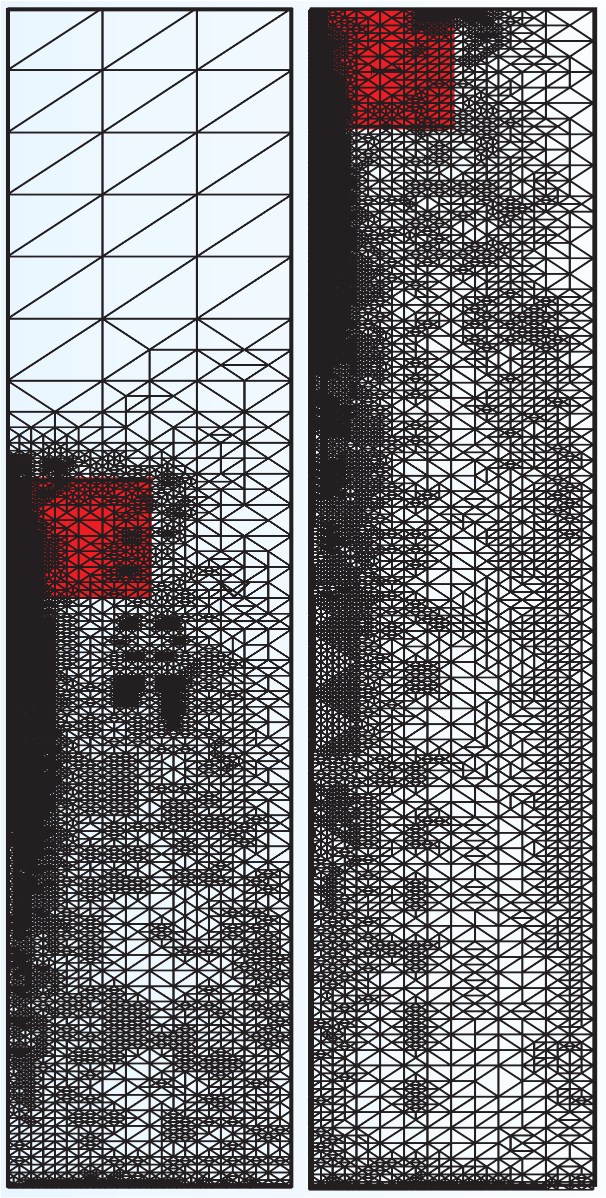
www.wtamu.edu/~jcollins



Interests

- *a posteriori* error estimation
- Bertini 2 implementation
- Fully nonlinear PDEs

JULIO C. CORREA, Ph.D
UPB
Medellín-Colombia

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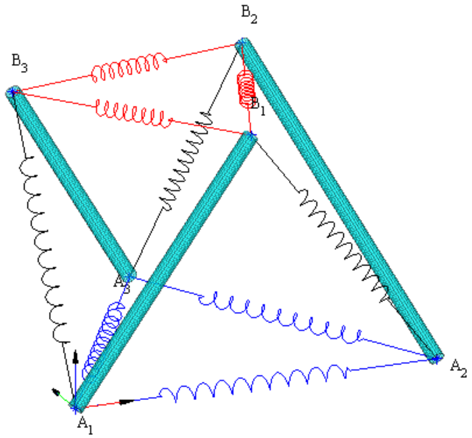
Tensegrity Systems
Kinematics of Robots
Remote Operated Vehicles



Trinh Duc Cuong

University of Genova

Brent Davis

- Colorado State University
- Department of Mathematics
- davisb@math.colostate.edu
- `www.math.colostate.edu/~davisb/`

Equations

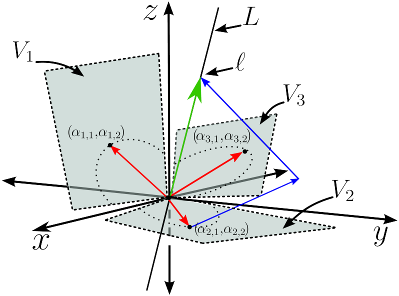
- $A^T A x = \Lambda x, \; \|x_i\| = 1$
- $J_f^T f = 0$
- $(x - y) + J_f^T \lambda = 0, \quad f = 0$

Applications

- Phylogenetic reconstruction
- Model selection in biology
- Data analysis & subspace models

NAG

- Real solutions
- Solving techniques
- Optimization problems

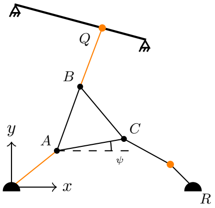


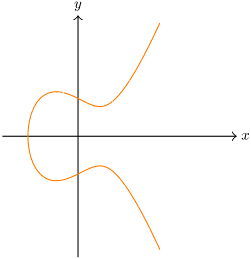
Colorado State University

Marc Diesse

Hochschule Heilbronn

marc.diesse@hs-heilbronn.de





Interests:

- Planar Robots,

  Workspace Boundaries, Singularities, Kinematically redundant robots.

- Gröbner Bases,

  Buchberger Algorithm, Comprehensive Gröbner Bases.

- Algebraic Curves.

- Numerical Algebraic Geometry,

  Real Solution Sets.

Dong Quan Ngoc Nguyen

Department of Mathematics,
University of Texas at Austin
Email: dongquan.ngoc.nguyen@gmail.com

Research Interests

- ⋆ Arithmetic of the Carlitz module, and Drinfeld modules
- ⋆ Diophantine geometry and Diophantine equations

⋆ Arithmetic of the Carlitz module, and Drinfeld modules

$$\varphi : A \longrightarrow \mathrm{End}_{\mathbb{F}_q}(\mathbb{G}_{a,R})$$

$$t \longmapsto \theta + \tau$$

Figure 1: the Carlitz module

⋆ Diophantine geometry and Diophantine equations

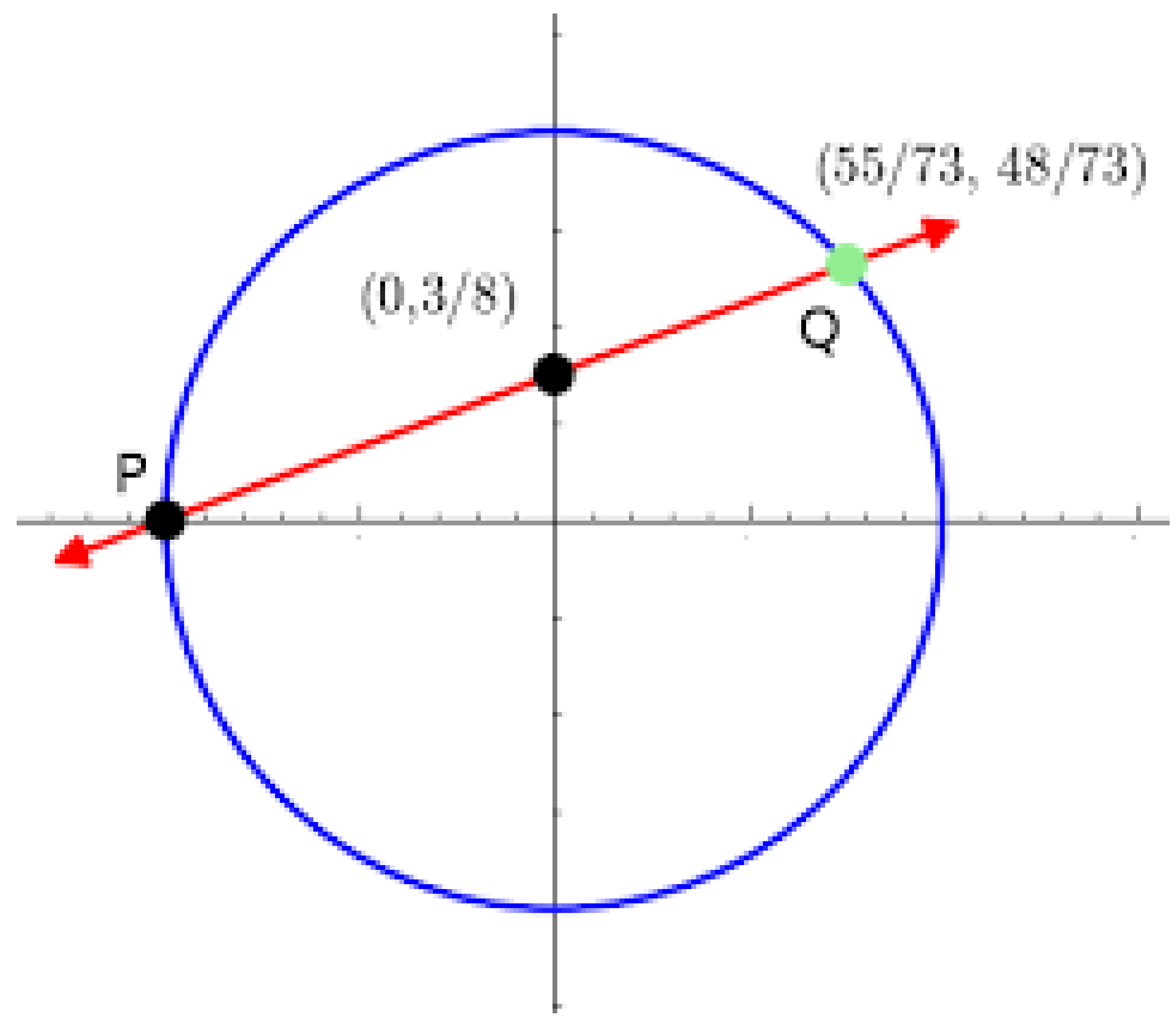
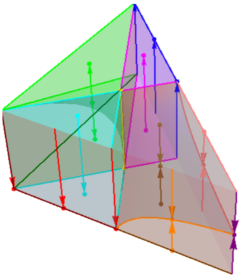


Figure 2: Rational points on a variety

Jesse Drendel

Colorado State University



Eliana Duarte
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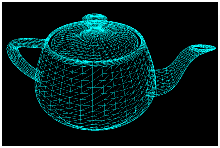
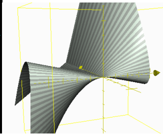
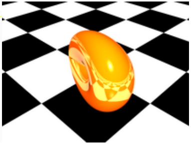
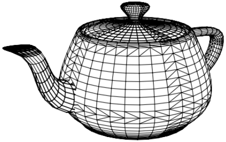
Interests

- Rees-Algebras, parameterizations and implicit equations.
- Algorithms to find implicit equations of parameterizations in Macaulay2.
- Syzygies, points in $\mathbb{P}^1 \times \mathbb{P}^1$.
- Implicitization of tensor product surfaces with basepoints.









Liz Ferme
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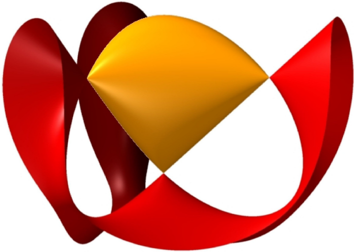
math.berkeley.edu/∼ferme

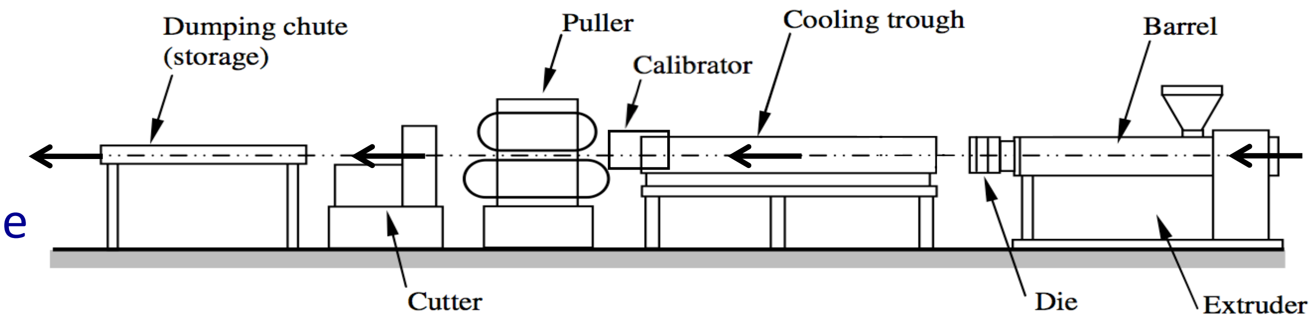


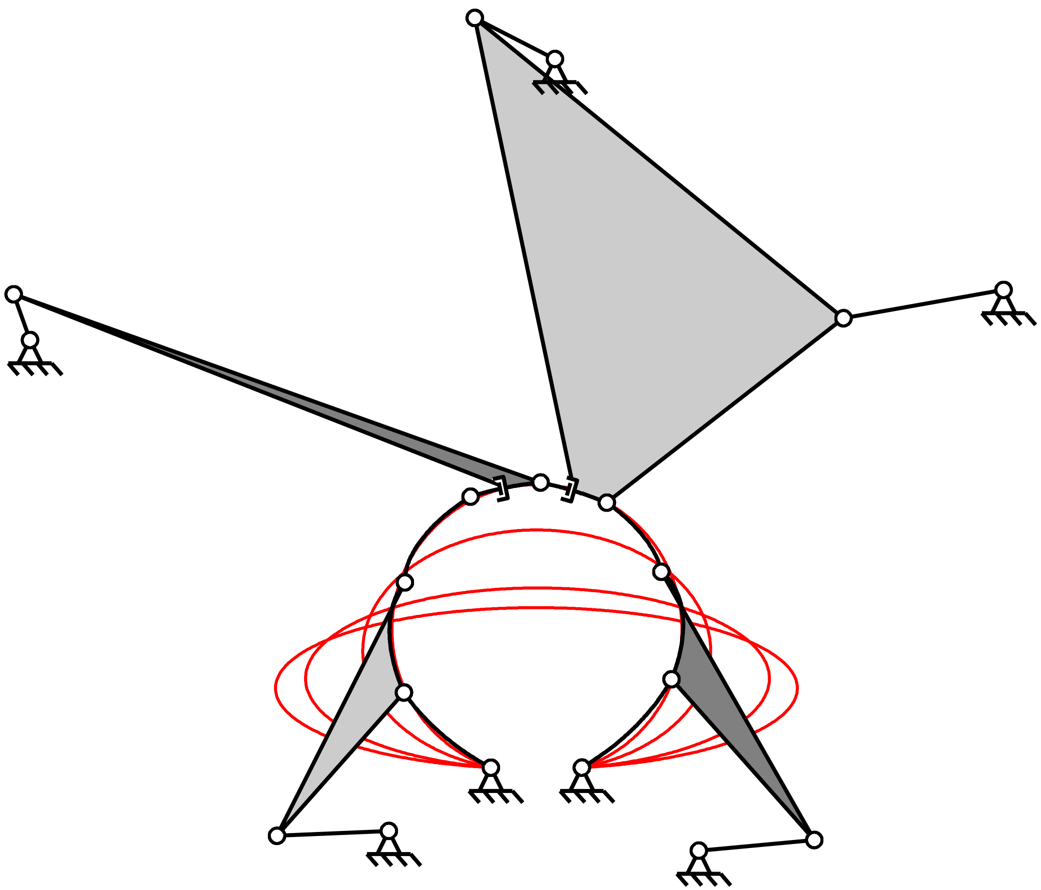
Interests:
Real algebraic geometry
Computer algebra algorithms
Tropical geometry

Glen Frost

UC Santa Barbara

Lawrence Funke
Ph.D. Candidate
University of Notre Dame
LFunke@nd.edu





Interests:

- Kinematics
- Mechanism synthesis and design
- Process control
- Applying Iterative Learning Control (ILC) to extrusion

Fulvio Gesmundo
Texas A&M University

Geometry and Complexity Theory:
Use geometry and representation theory to describe and evaluate *how hard* a problem is.

Some examples:

- Complexity of linear maps (e.g. DFT):
  projections of determinantal varieties (matrix rigidity);
- Complexity of computational linear algebra:
  tensor (border-)rank of matrix multiplication;
- P vs NP (and VP vs VNP):
  properties of $\det_n$ and perm_n;
  properties of Iterated Matrix Multiplication.

Introduction to myself

- Yonghui Guan
- Texas A&M University
- yonghuig@math.tamu.edu
- http://www.math.tamu.edu/ yonghuig

Research interests

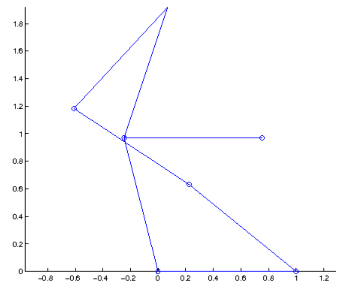
- Algebraic geometry
- Representation theory
- Complexity theory

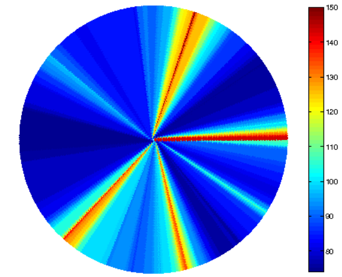
Valiant's Conjecture

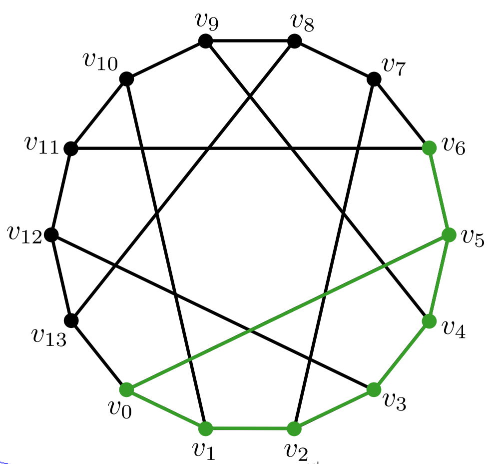
$VP \neq VNP$

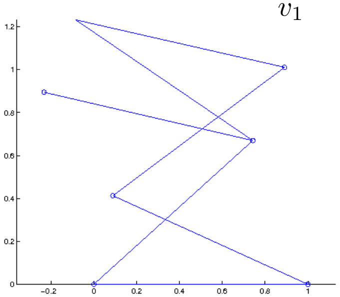
Finding equations for secant varieties arising complexity theory to seperate VP from VNP.

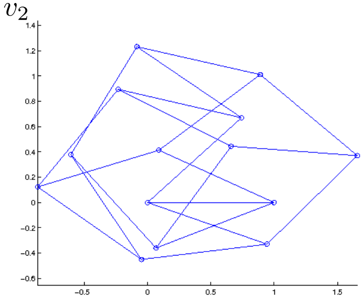
Eric Hanson
Texas Christian University
eric.hanson@tcu.edu





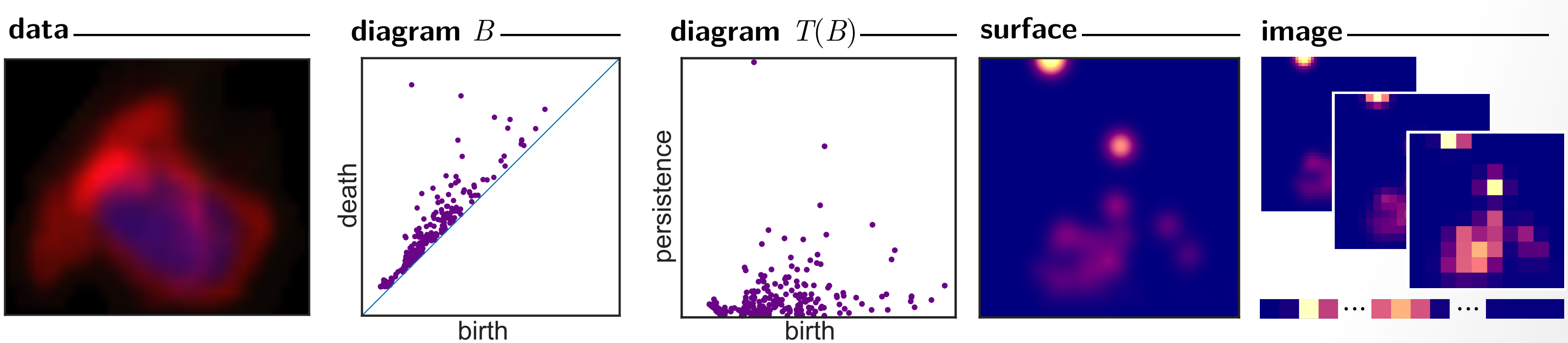






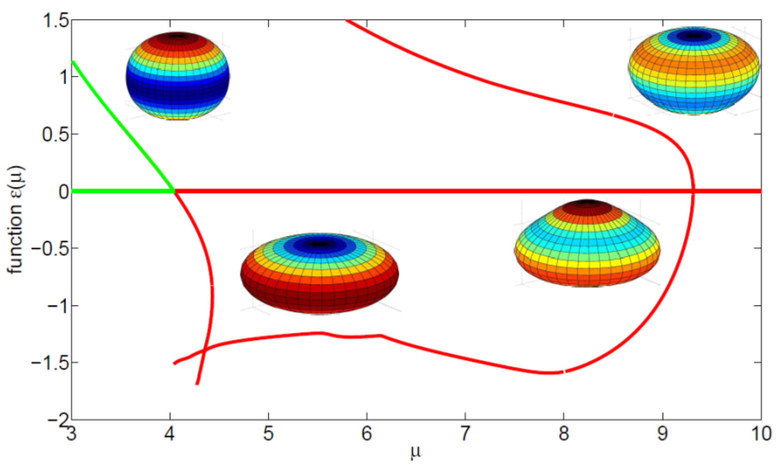
Interests:

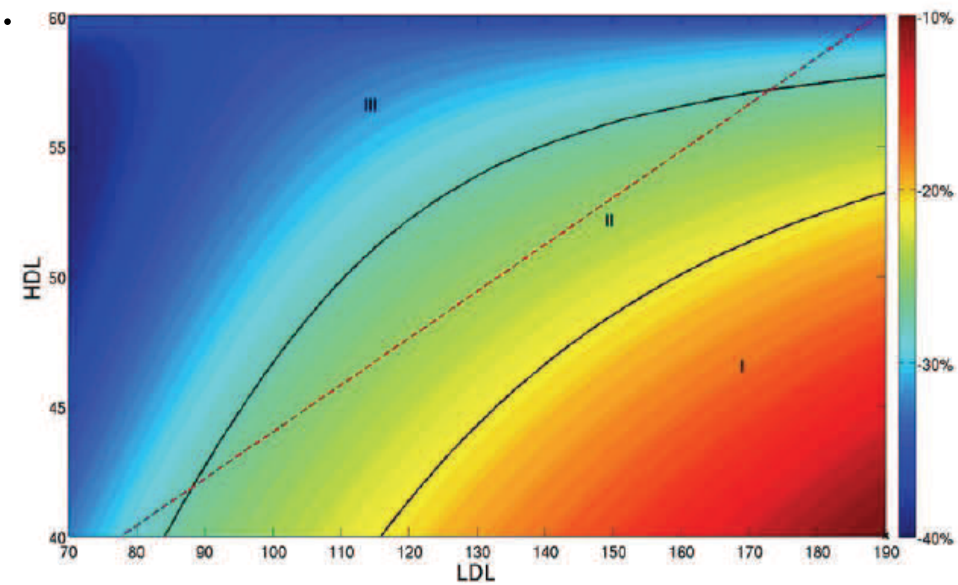
- Numerical Algebraic Geometry
  - Fiber Product Algorithms
  - Graph Realizations (& EDM)
- Topological Data Analysis
  - Machine Learning
  - Economic Data
- Recent *“Preoccupations”*
  - Jacobian conjecture
  - (Algebraic) Statistics

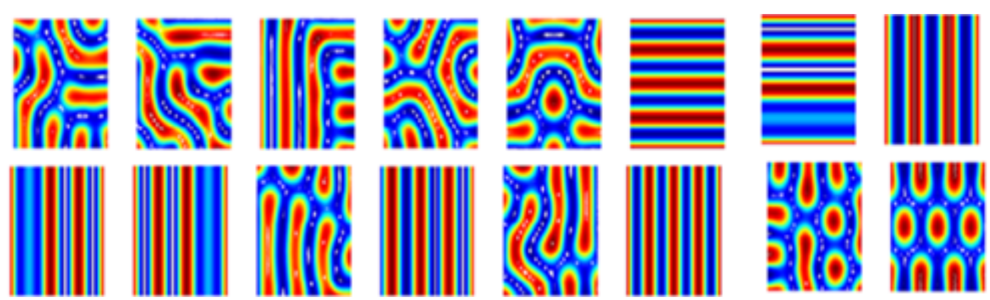


Wenrui Hao

- Numerical methods for nonlinear PDEs: multiple solutions, bifurcations;
- Applications in biology: tumor growth, atherosclerosis, species competition, pattern formation.







Mathematical Biosciences Institute
at The Ohio State University

Jonathan Hauenstein
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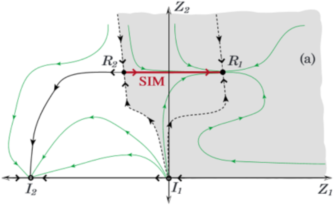
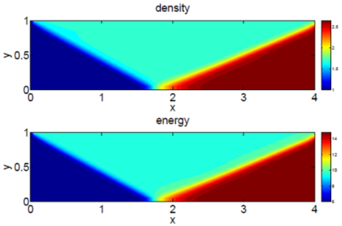
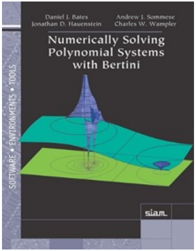
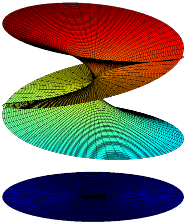




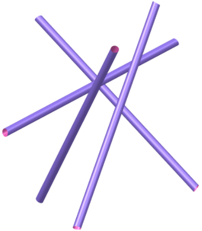
Interests:

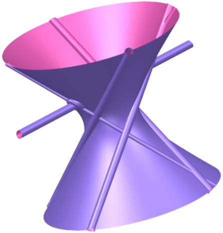
- Numerical algebraic geometry
- Science and engineering applications which involve:
    - Differential equations
    - Optimization and real solutions
    - Parameter space decomposition
    - Projections of algebraic sets





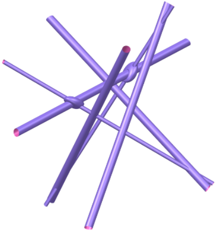
Nickolas Hein
University of Nebraska at Kearney
heinnj@unk.edu (Through July)
nhein@benedictine.edu (After July)

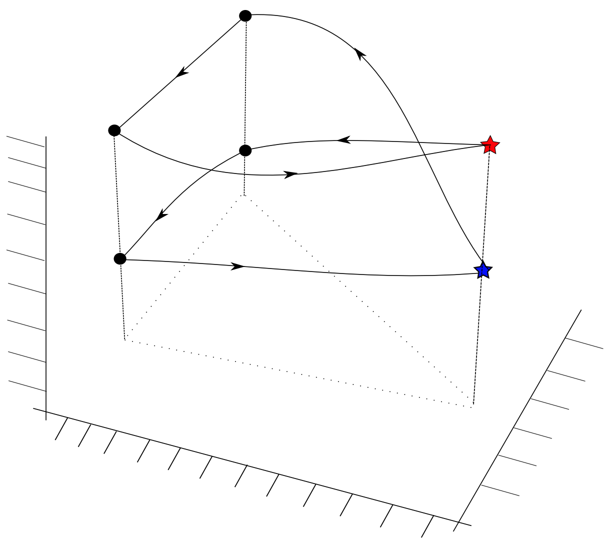




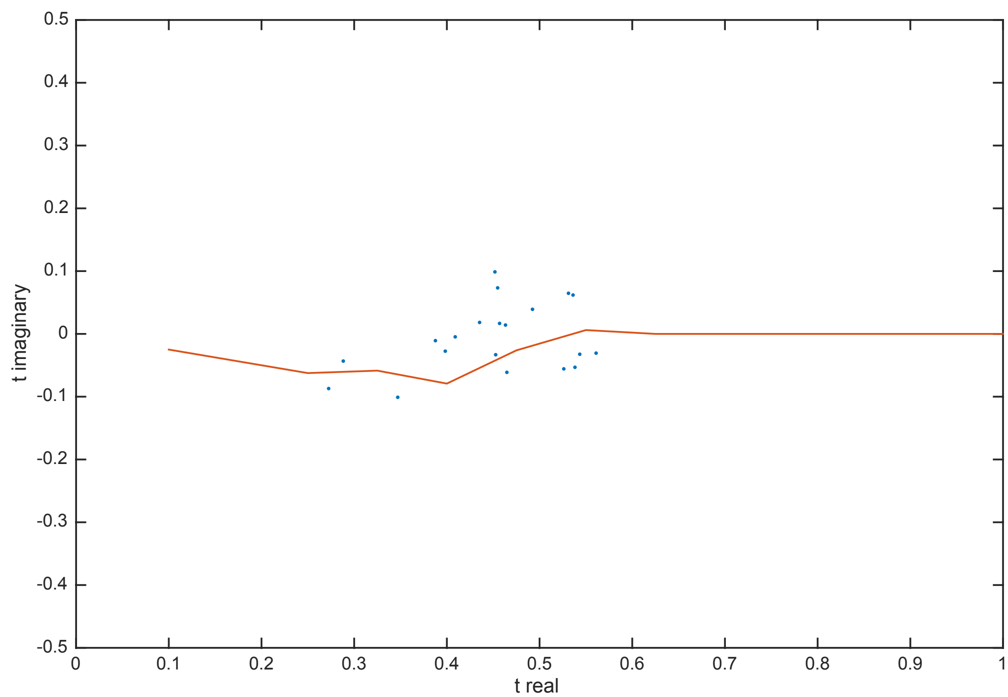
Interests:

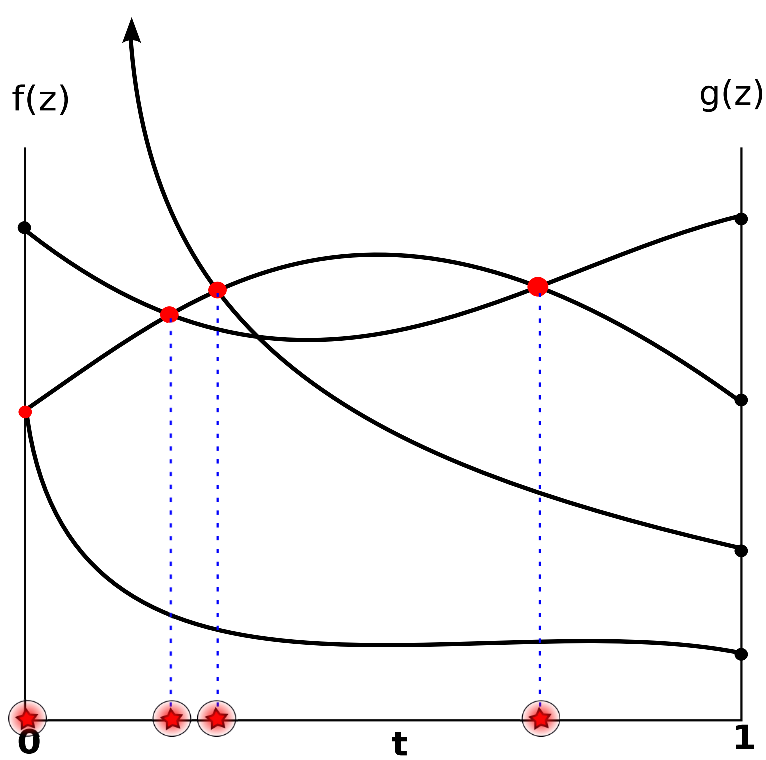
- Computational Algebraic Geometry
- Real Algebraic Geometry
- Schubert Calculus
- Square Systems
- Certifiability





Tim Hodges
Colorado State University
hodges@math.colostate.edu





Research Interests:

I. Choosing good paths for homotopy continuation.

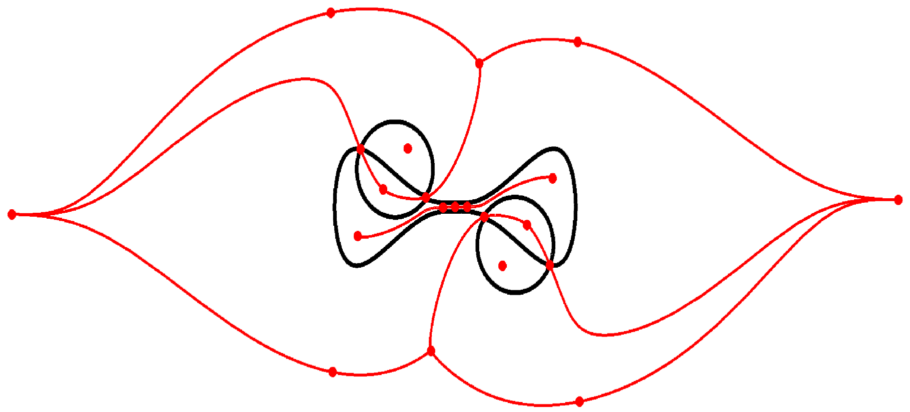
II. Understanding singularities that arise in homotopy continuation.

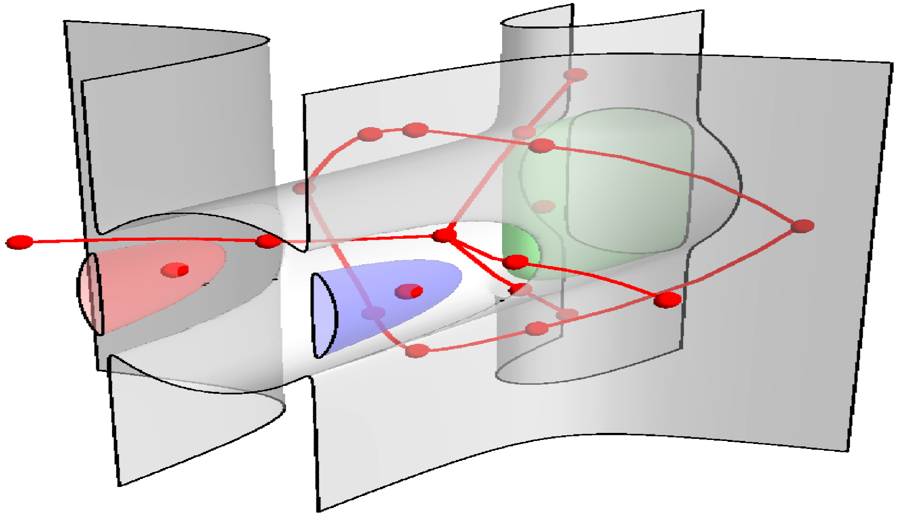
III. Development of endgames in Bertini 2.0

Hoon Hong

North Carolina State University

hong@ncsu.edu





Interests

- Computational real algebraic geometry
- Real quantifier elimination
- Computer algebra

Input: $\exists Y \quad F(X,Y) = 0 \quad \wedge \quad G(X,Y) > 0$

$$X = \{a, b\}$$
$$Y = \{c_1, s_1, c_2, s_2\}$$
$$F = \{c_1^2 + s_1^2 - 1,\ c_2^2 + s_2^2 - 1\}$$
$$G = \{g\}$$

$$\begin{aligned} g = {} & 4a^6b^2c_1^4c_2^2 - 8a^5b^3s_1s_2c_1^3c_2 - 8a^5b^3s_1s_2c_1^2c_2^2 + 4a^4b^4c_1^4c_2^2 + \\ & 16a^4b^4c_1^3c_2^3 + 4a^4b^4c_1^2c_2^4 - 8a^3b^5s_1s_2c_1^2c_2^2 - 8a^3b^5s_1s_2c_1c_2^3 + \\ & 4a^2b^6c_1^2c_2^4 - 4a^7bs_1s_2c_1^3 + 4a^6b^2c_1^4c_2 - 4a^6b^2c_1^3c_2^2 + 8a^5b^3s_1s_2c_1^3 + \\ & 12a^5b^3s_1s_2c_1^2c_2 + 16a^5b^3s_1s_2c_1c_2^2 - 8a^4b^4c_1^4c_2 - 24a^4b^4c_1^3c_2^2 - \\ & 24a^4b^4c_1^2c_2^3 - 8a^4b^4c_1c_2^4 + 16a^3b^5s_1s_2c_1^2c_2 + 12a^3b^5s_1s_2c_1c_2^2 + \\ & 8a^3b^5s_1s_2c_2^3 - 4a^2b^6c_1^2c_2^3 + 4a^2b^6c_1c_2^4 - 4ab^7s_1s_2c_2^3 + a^8c_1^4 + \\ & 12a^7bs_1s_2c_1^2 - 8a^6b^2c_1^4 - 12a^6b^2c_1^3c_2 - 12a^6b^2c_1^2c_2^2 - 4a^5b^3s_1s_2c_1^2 - \\ & 8a^5b^3s_1s_2c_2^2 + 4a^4b^4c_1^4 + 22a^4b^4c_1^2c_2^2 + 4a^4b^4c_2^4 - 4a^4b^2c_1^4c_2^2 - \\ & 8a^3b^5s_1s_2c_1^2 - 4a^3b^5s_1s_2c_2^2 + 8a^3b^3s_1s_2c_1^2c_2^2 - 12a^2b^6c_1^2c_2^2 - \\ & 12a^2b^6c_1c_2^3 - 8a^2b^6c_2^4 - 4a^2b^4c_1^2c_2^4 + 12ab^7s_1s_2c_2^2 + b^8c_2^4 - 4a^8c_1^3 - \\ & 12a^7bs_1s_2c_1 + 16a^6b^2c_1^3 + 12a^6b^2c_1^2c_2 + 20a^6b^2c_1c_2^2 - 16a^5b^3s_1s_2c_1 - \\ & 4a^5b^3s_1s_2c_2 + 4a^5bs_1s_2c_1^3 + 8a^4b^4c_1^3 + 12a^4b^4c_1^2c_2 + 12a^4b^4c_1c_2^2 + \\ & 8a^4b^4c_2^3 + 4a^4b^2c_1^4c_2 + 4a^4b^2c_1^3c_2^2 - 4a^3b^5s_1s_2c_1 - 16a^3b^5s_1s_2c_2 - \\ & 12a^3b^3s_1s_2c_1^2c_2 - 12a^3b^3s_1s_2c_1c_2^2 + 20a^2b^6c_1^2c_2 + 12a^2b^6c_1c_2^2 + \\ & 16a^2b^6c_2^3 + 4a^2b^4c_1^2c_2^3 + 4a^2b^4c_1c_2^4 - 12ab^7s_1s_2c_2 + 4ab^5s_1s_2c_2^3 - \\ & 4b^8c_2^3 + 6a^8c_1^2 + 4a^7bs_1s_2 - 4a^6b^2c_1c_2 - 8a^6b^2c_2^2 - 2a^6c_1^4 + \\ & 12a^5b^3s_1s_2 - 12a^5bs_1s_2c_1^2 - 14a^4b^4c_1^2 + 8a^4b^4c_1c_2 - 14a^4b^4c_2^2 - \\ & 4a^4b^2c_1^3c_2 + 10a^4b^2c_1^2c_2^2 + 12a^3b^5s_1s_2 + 4a^3b^3s_1s_2c_1^2 + 16a^3b^3s_1s_2c_1c_2 + \\ & 4a^3b^3s_1s_2c_2^2 - 8a^2b^6c_1^2 - 4a^2b^6c_1c_2 + 10a^2b^4c_1^2c_2^2 - 4a^2b^4c_1c_2^3 + \\ & 4ab^7s_1s_2 - 12ab^5s_1s_2c_2^2 + 6b^8c_2^2 - 2b^6c_2^4 - 4a^8c_1 - 16a^6b^2c_1 + \\ & 8a^6c_1^3 + 12a^5bs_1s_2c_1 - 12a^4b^4c_1 - 12a^4b^4c_2 - 8a^4b^2c_1^2c_2 - 16a^4b^2c_1c_2^2 - \\ & 4a^3b^3s_1s_2c_1 - 4a^3b^3s_1s_2c_2 - 16a^2b^6c_2 - 16a^2b^4c_1^2c_2 - 8a^2b^4c_1c_2^2 + \\ & 12ab^5s_1s_2c_2 - 4b^8c_2 + 8b^6c_2^3 + a^8 + 8a^6b^2 - 12a^6c_1^2 - 4a^5bs_1s_2 + 14a^4b^4 - \\ & 2a^4b^2c_1^2 + 12a^4b^2c_1c_2 + 6a^4b^2c_2^2 + a^4c_1^4 + 8a^2b^6 + 6a^2b^4c_1^2 + 12a^2b^4c_1c_2 - \\ & 2a^2b^4c_2^2 + 2a^2b^2c_1^2c_2^2 - 4ab^5s_1s_2 + b^8 - 12b^6c_2^2 + b^4c_2^4 + 8a^6c_1 + 4a^4b^2c_1 - \\ & 4a^4b^2c_2 - 4a^4c_1^3 - 4a^3bs_1s_2c_1 - 4a^2b^4c_1 + 4a^2b^4c_2 - 4ab^3s_1s_2c_2 + 8b^6c_2 - \\ & 4b^4c_2^3 - 2a^6 - 2a^4b^2 + 8a^4c_1^2 + 4a^3bs_1s_2 - 2a^2b^4 - 2a^2b^2c_1^2 + 4a^2b^2c_1c_2 - \\ & 2a^2b^2c_2^2 + 4ab^3s_1s_2 - 2b^6 + 8b^4c_2^2 - 8a^4c_1 - 4a^2b^2c_1 - 4a^2b^2c_2 - 8b^4c_2 + \\ & 3a^4 + 6a^2b^2 - 2a^2c_1^2 + 3b^4 - 2b^2c_2^2 + 4a^2c_1 + 4b^2c_2 - 2a^2 - 2b^2 \end{aligned}$$

Output: $a^6 + 3a^4b^2 + 3a^2b^4 + b^6 - 3a^4 + 21a^2b^2 - 3b^4 + 3a^2 + 3b^2 > 1$

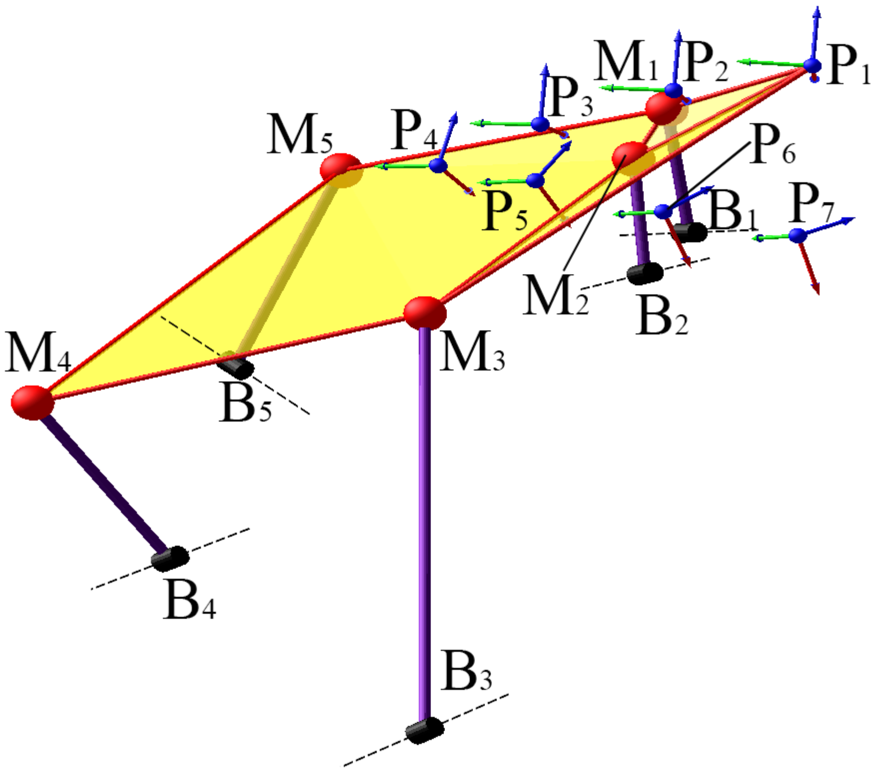
Hu Junjie

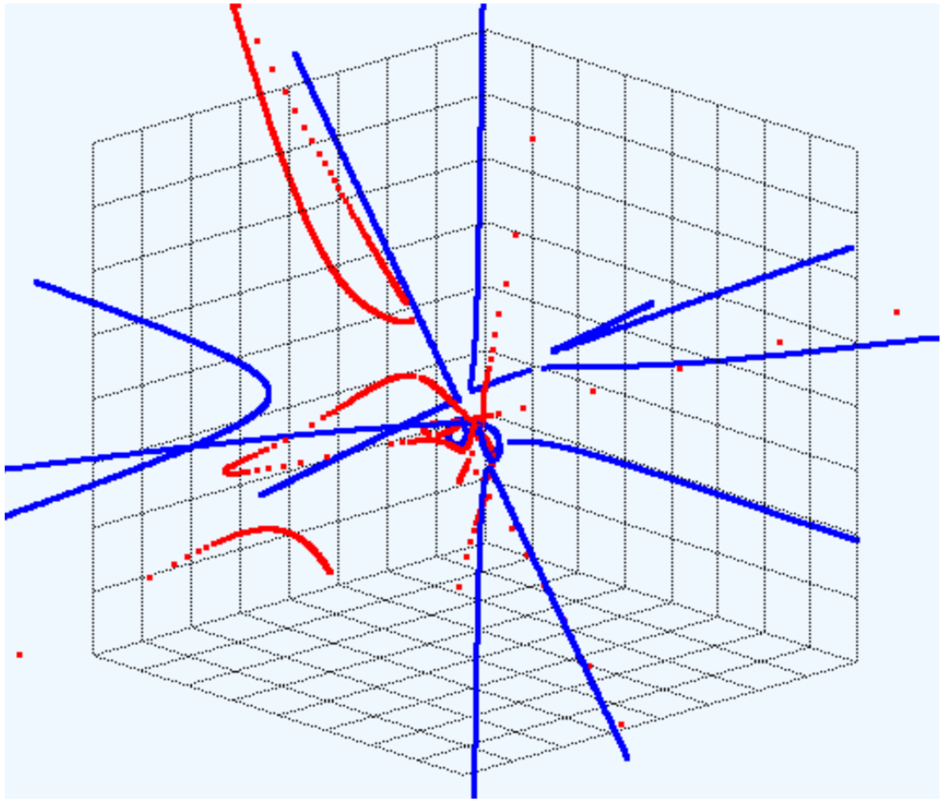
University of Science and Technology Beijing

kevinhoo1989@163.com

Interests:

- Kinematics of spatial linkage mechanisms
- Rigid-body guidance theory





Joe Kileel

UC Berkeley, Graduating May ‘17

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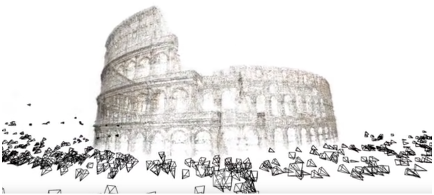
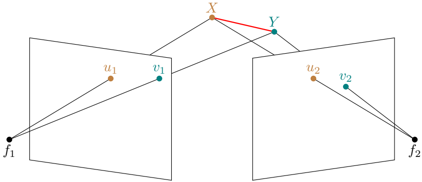
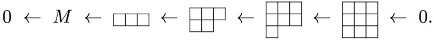
www.math.berkeley.edu/∼jkileel

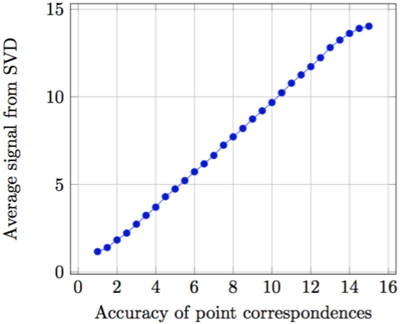




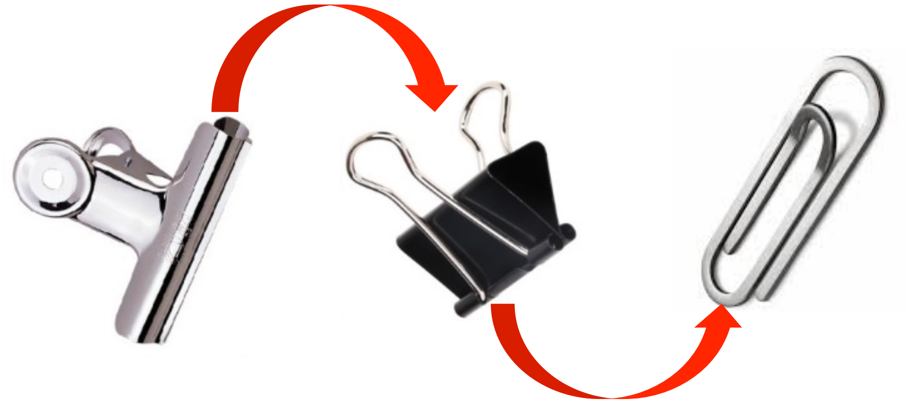


Interests:

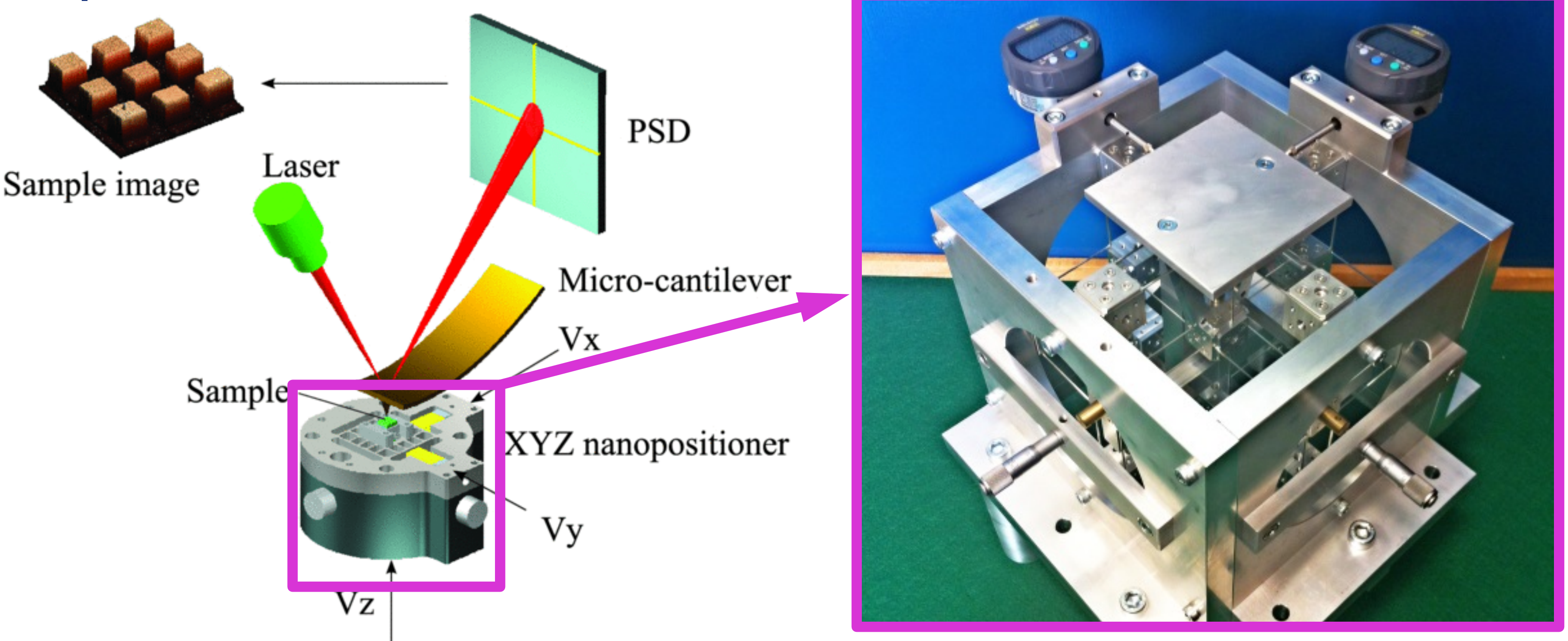
- Applied Algebraic Geometry
- Computer Vision
- NAG: degrees, Hilbert functions (M2 package)
- Real solutions



Haiyang LI
University College Cork
Haiyang.li@umail.ucc.ie



Interests:
Type synthesis, modelling, optimization and control of compliant mechanisms



AFM: Courtesy of Prof. Y. K. Yong

XYZ Nano-positioner

Alan Liddell

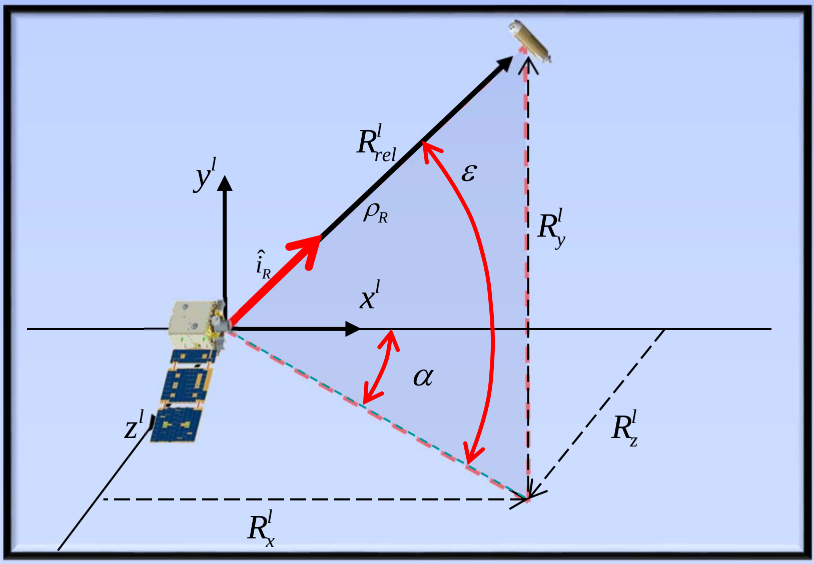
University of Notre Dame
liddell.10@nd.edu
http://www3.nd.edu/~aliddel1/

Research interests

- Numerical certification
- Real solution sets
- NAG and optimization
- Exceptional sets
- Overdetermined systems
- Bertini2-Python (and more?)

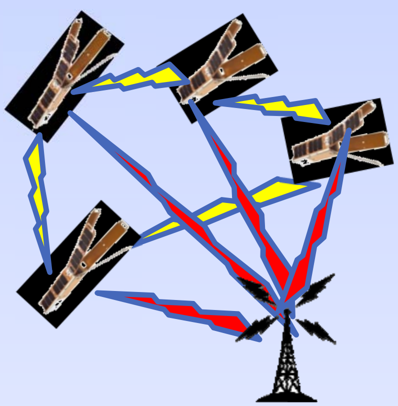
Dr. T. Alan Lovell

- **AFRL Space Vehicles Directorate, Guidance, Navigation, & Control Group since 2001**
- **PhD in Aerospace Engineering (orbital mechanics emphasis)**



Interests:

- **Orbit determination (estimation) of space objects**
  - **Ground- and space-based sensors**
  - **Processing range &/or angle measurements**
  - **Implications for both close-proximity navigation & distant space object OD**
- **RF signal localization**
  - **Geolocation from space & space-to-space localization**
  - **Processing DOA/TDOA/FDOA/CAF**



Dhagash Mehta
Dept of ACMS
University of Notre Dame.
Email: dmehta@nd.edu

Fireflies at the Smoky Mountains (Gatlinburg, Tennessee, USA).

Rhythmic Applause

Power grids

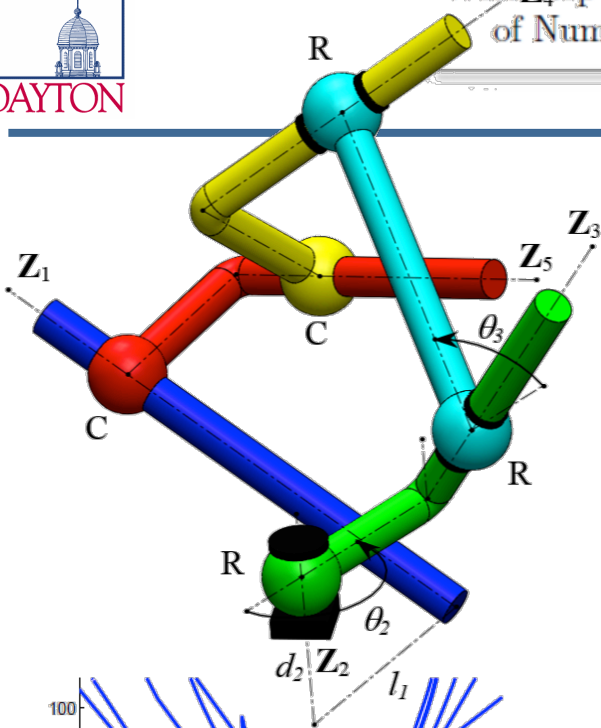
Interests:

- Algebraic geometry of synchronization

- In general, dynamical systems on networks

- Network topology dependent upper bound on the number of steady states

- Supported by the Energy, Power, Control and Networks program of NSF.



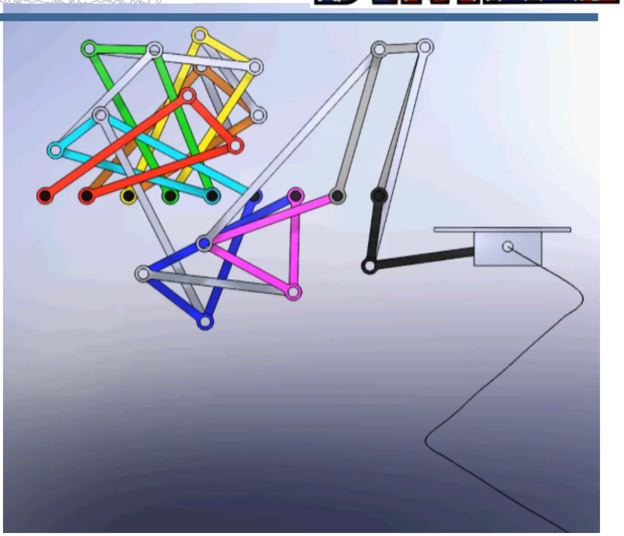
Interests:

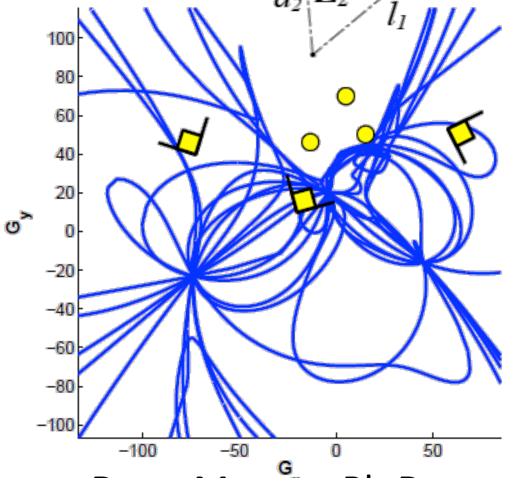
Planar mechanism analysis and synthesis via isotropic coordinates

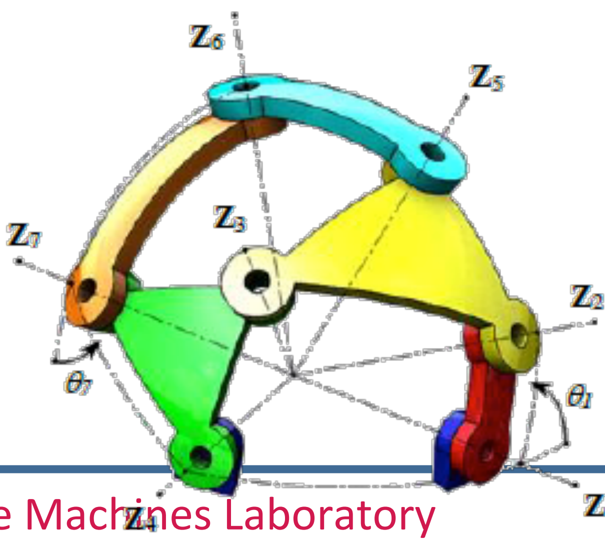
Singularity traces

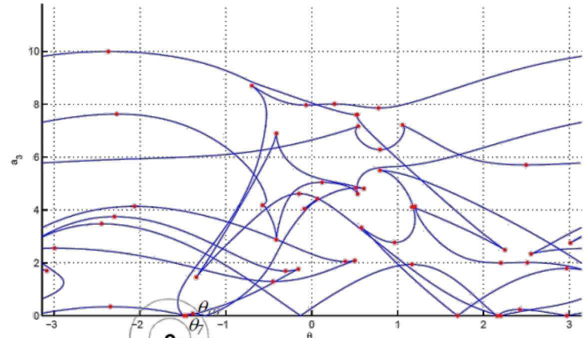
Spatial (spherical) mechanisms analysis and synthesis via the dual of SU(2)

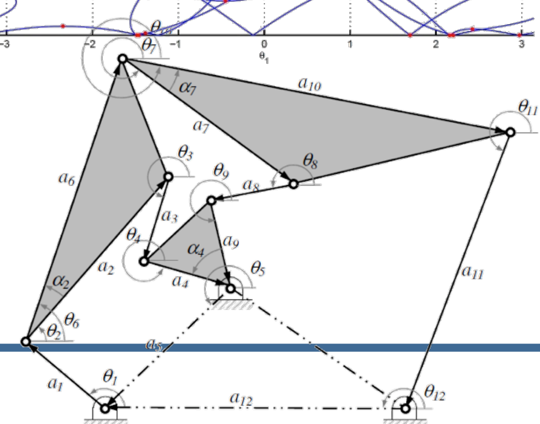
Kinematic novelties











Drew Murray, Ph.D.
murray@udayton.edu
academic.udayton.edu/DIMLab

Dong Quan Ngoc Nguyen
Department of Mathematics,
University of Texas at Austin
Email: dongquan.ngoc.nguyen@gmail.com

Research Interests

- ⋆ Arithmetic of the Carlitz module, and Drinfeld modules
- ⋆ Diophantine geometry and Diophantine equations

⋆ Arithmetic of the Carlitz module, and Drinfeld modules

$$\varphi : A \longrightarrow \mathrm{End}_{\mathbb{F}_q}(\mathbb{G}_{a,R})$$

$$t \longmapsto \theta + \tau$$

Figure 1: the Carlitz module

⋆ Diophantine geometry and Diophantine equations

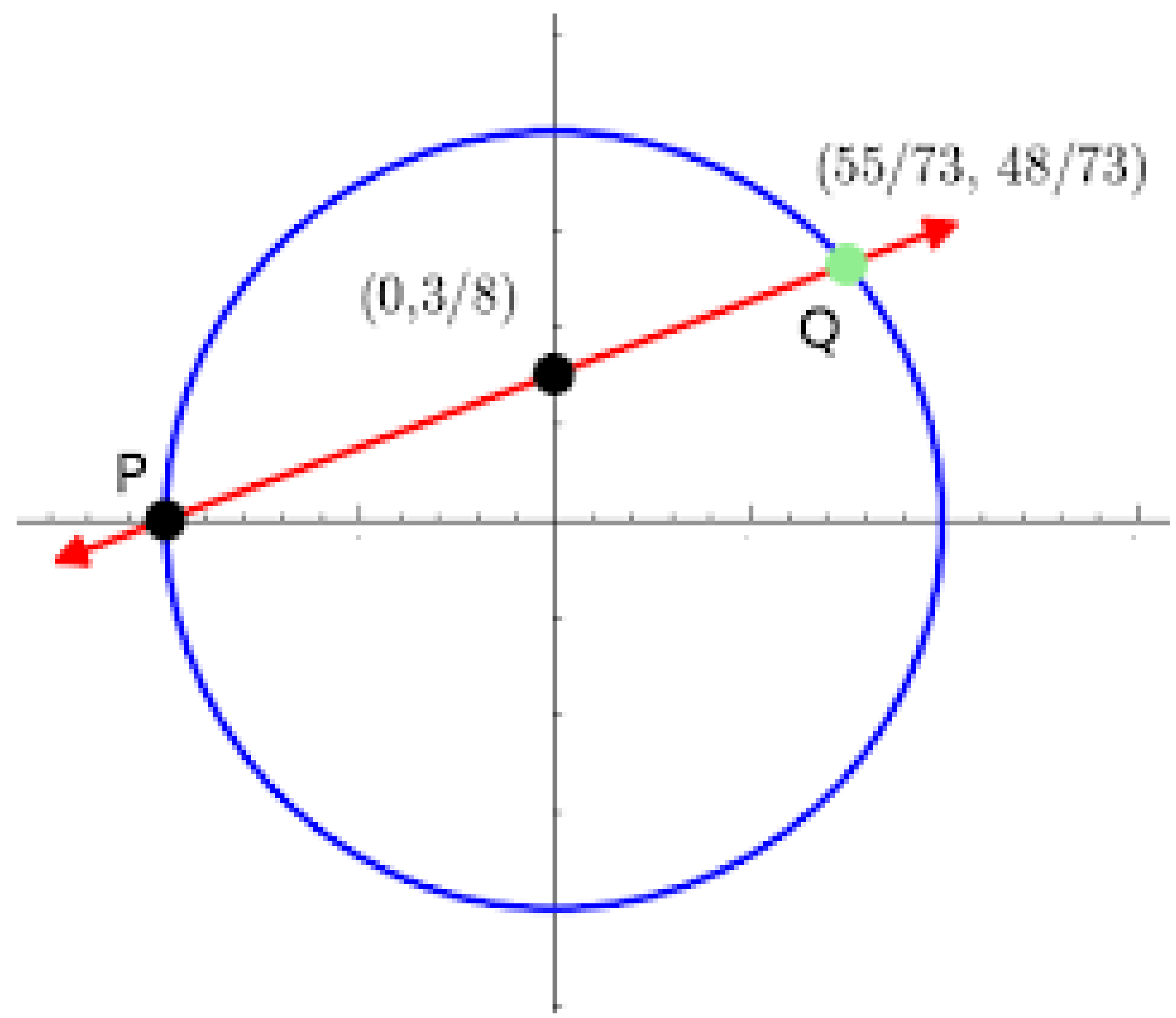


Figure 2: Rational points on a variety

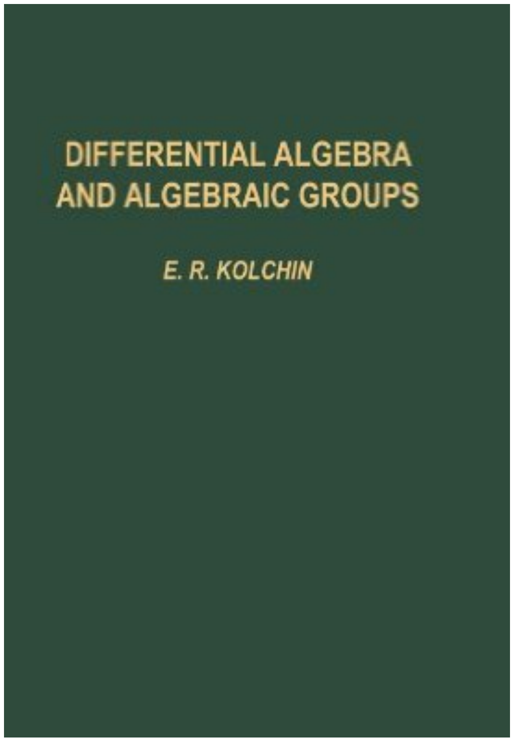
<u>Contact information:</u>

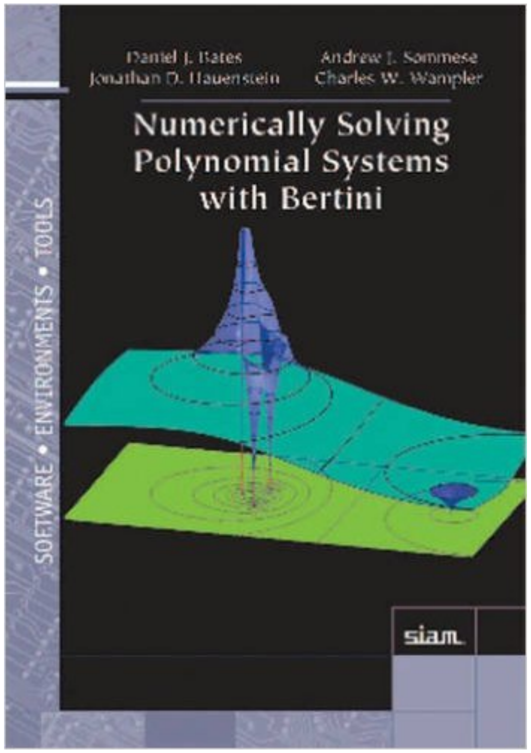
Alexey Ovchinnikov
City University of New York
aovchinnikov@qc.cuny.edu
http://qc.edu/~aovchinnikov/

<u>Interests:</u>

Polynomial differential and difference equations and algorithms for simplifying them and studying properties of their solutions:

a) Symbolic algorithms for systems of polynomial PDEs and ODEs and their computational complexity
b) Symbolic-numeric algorithms for such systems, using Bertini
c) Symbolic algorithms for the Galois theory of linear differential and difference equations; dependence on parameters





Francesco Pancaldi
PhD candidate
University of Notre Dame
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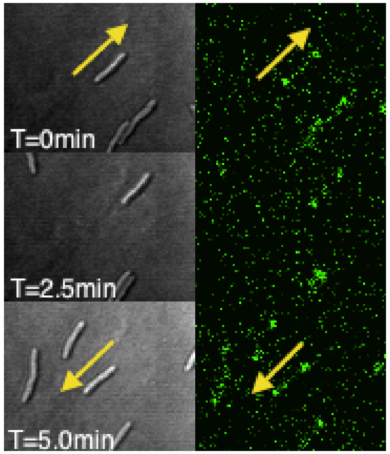
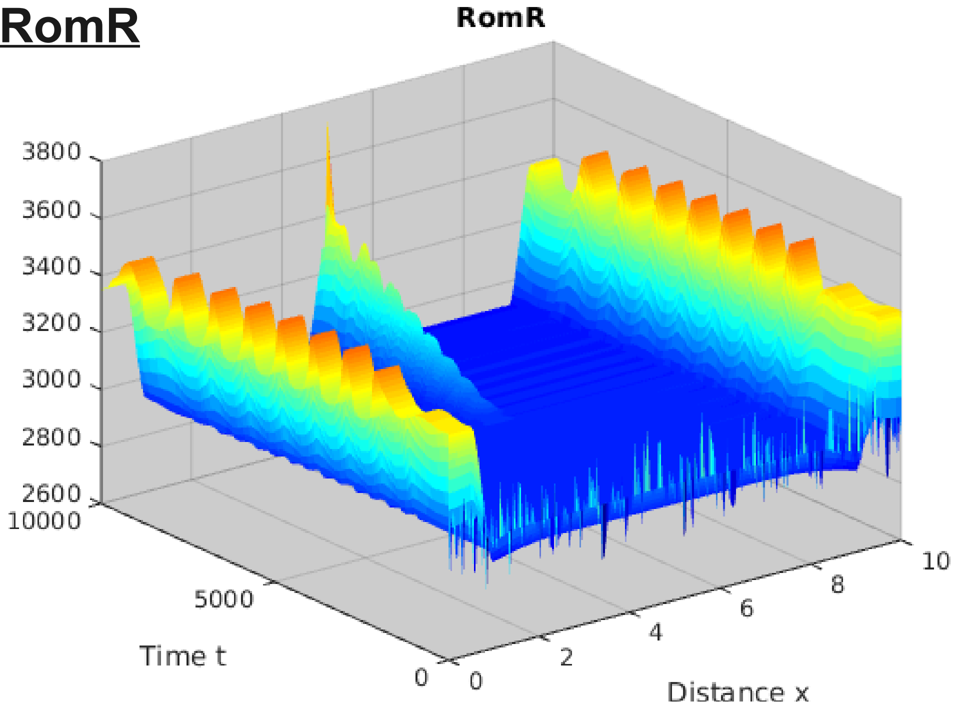
Projects and Interests:

- *M. xanthus*/RomR
- Blood Clot reaction system
- Fibrin Network Mechanics
- Bertini2 development (ODE/PDE)
- Bertini/Bertini2 timing routine
- Energy transport in Networks

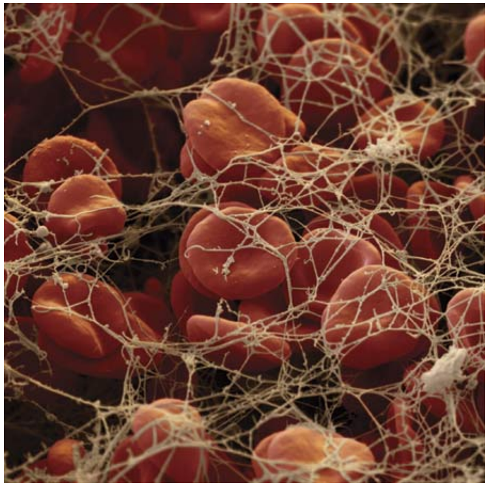
Myxo/RomR



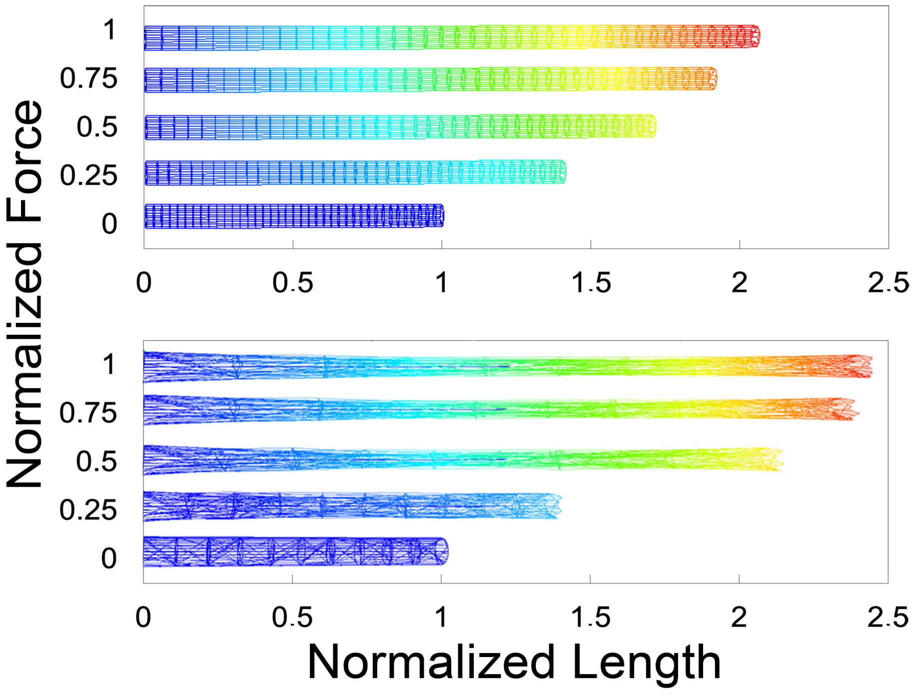


Bertini-node (CRC)

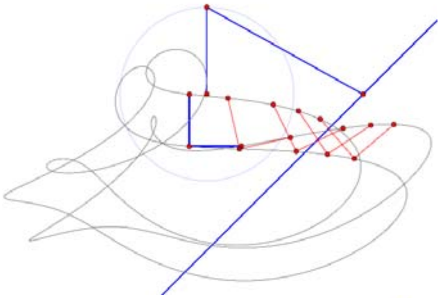
Blood Clot and Fibrin Network

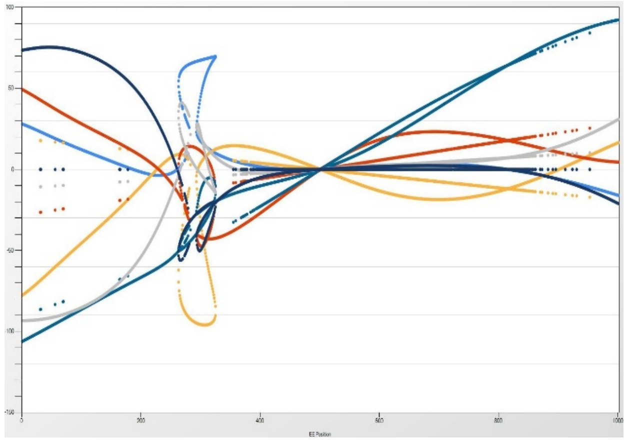


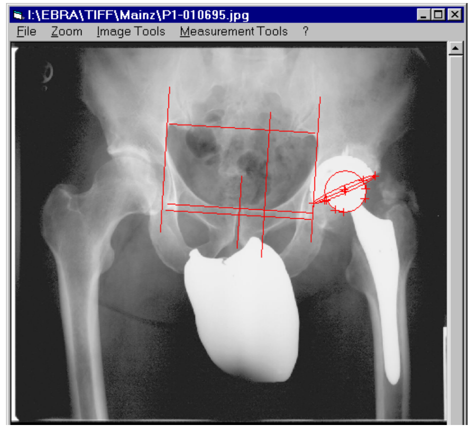
Encyclopædia Britannica Online



Martin Pfurner
University of Innsbruck, Austria
martin.pfurner@uibk.ac.at
geometrie.uibk.ac.at/pfurner

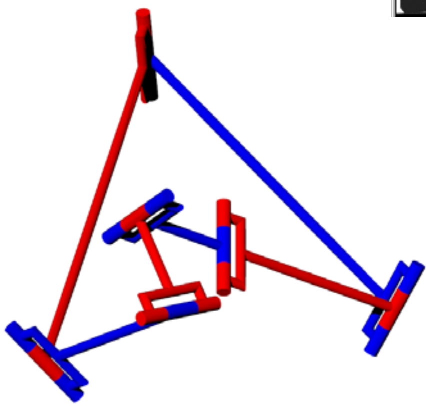


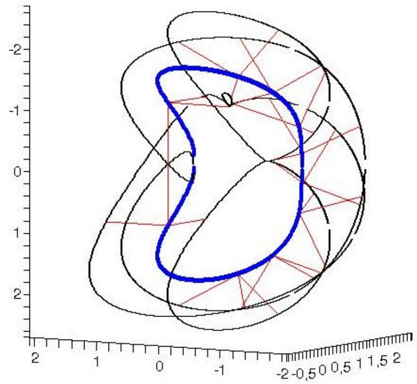




Interests

- kinematic analysis and synthesis of serial and parallel mechanisms
- single-loop serial overconstrained chains
- didactic of Geometry
- photogrammetry in x-ray pictures

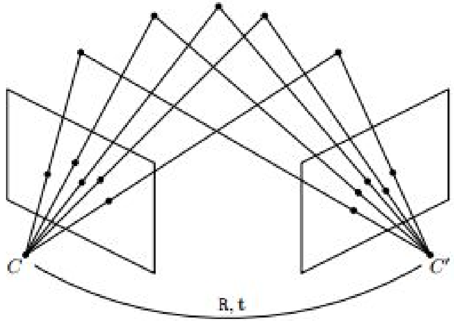




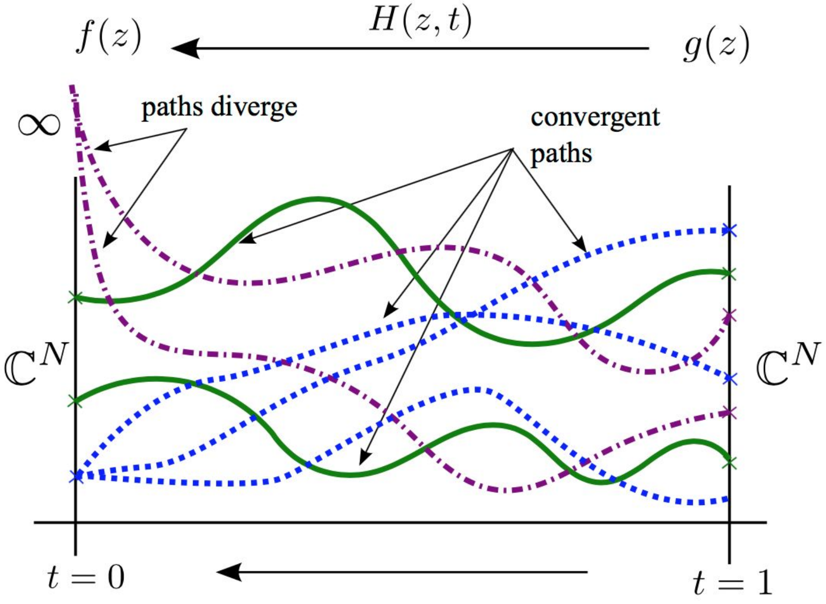
Margaret Regan
University of Notre Dame
mregan9@nd.edu

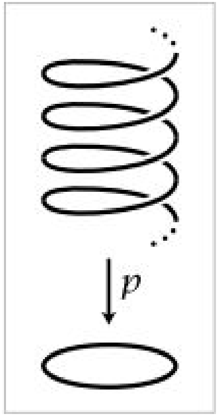
<u>Research Interests</u>:

- Numerical algorithm development - C/C++
- Fundamental group
    - Applications to physics
- Parameter homotopies
- Parallel Computation



(Kukelova 2013, Fig. 7.25, pg. 168)

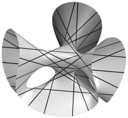




Jose Israel Rodriguez

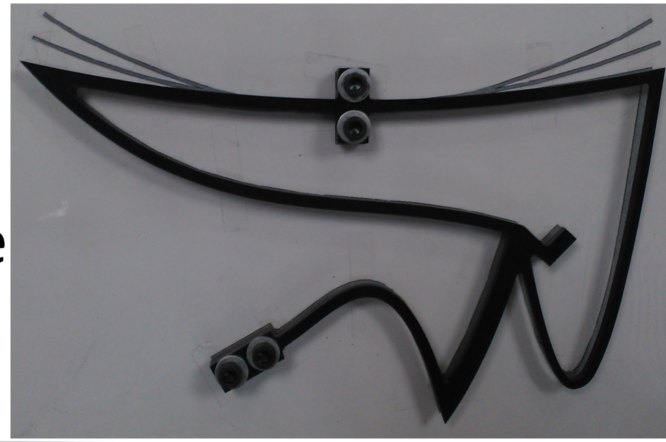
University of Chicago Statistics Department

B.S. in Mathematics: University of Texas at Austin (Eric Katz)
PhD from University of California, Berkeley (Bernd Sturmfels)
Former NSF Postdoc Mentor: Jonathan Hauenstein
Current Postdoc Mentor: Lek-Heng Lim



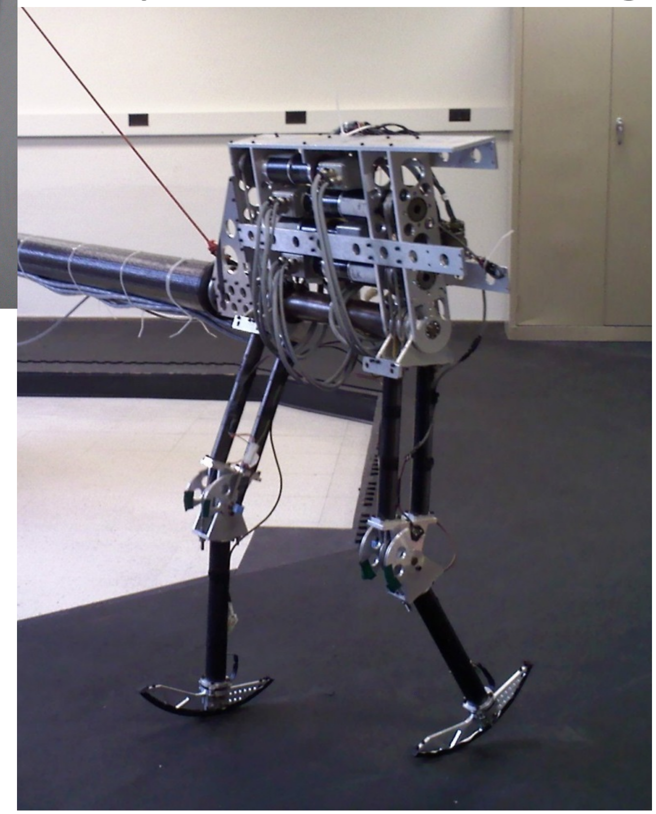
Numerical algebraic geometry: "Numerical computation of Galois groups"
Nonlinear optimization: "Critical points via monodromy and local methods"
Algebraic statistics: "Maximum likelihood duality for determinantal varieties"
Econometrics: "Solving the generalized method of moments" (In progress)

Jim Schmiedeler
Mechanical Engineering
University of Notre Dame
schmiedeler.4@nd.edu

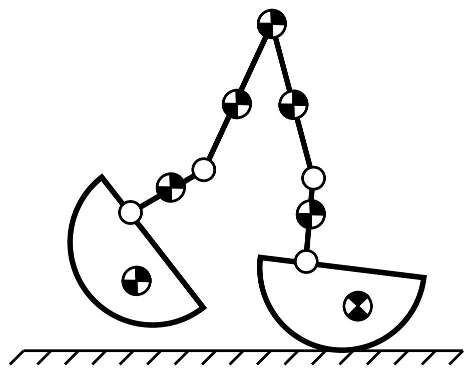


Morphing structures

Biped robot walking



Balance & walking rehabilitation

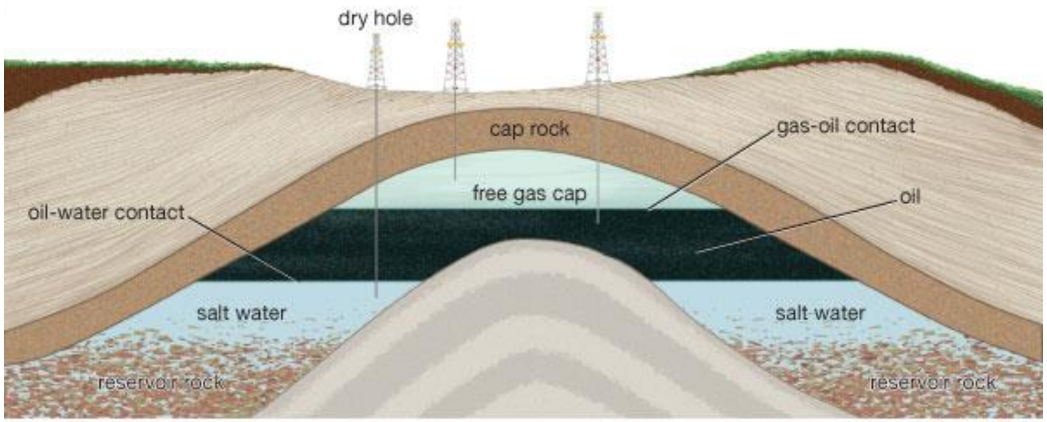


Modeling amputee gait

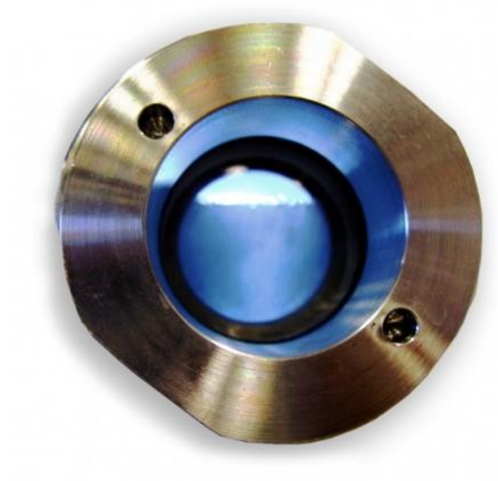
Hythem Sidky
University of Notre Dame
hsidky@nd.edu
www.labandtheory.com

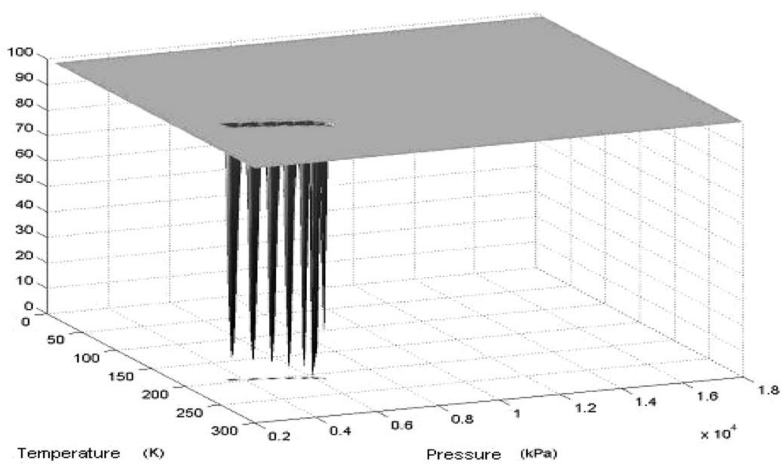
I am interested in developing reliable and efficient methods to solve classical thermodynamic modeling problems arising in fluid phase equilibria, which are often highly nonlinear and exhibit many minima.

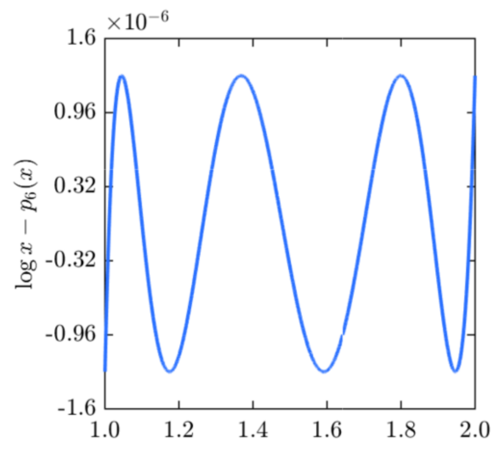
Oil / gas reservoirs

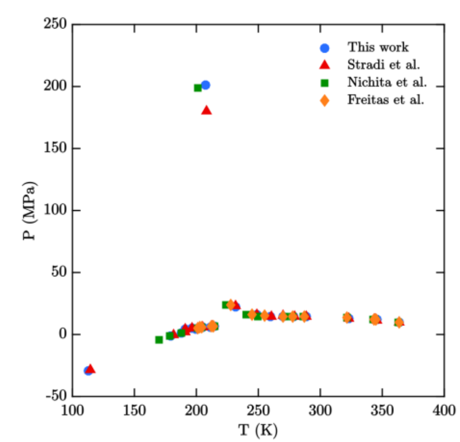


Supercritical drying/extractions









University of Notre Dame

Andrew Sommese

Chair, Department of Applied & Computational Mathematics & Statistics

Vincent J. and Annamarie Micus Duncan Professor of Mathematics

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Allan Struthers

Michigan Tech

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Numerical Linear Algebra

Polynomial Eigenvalues

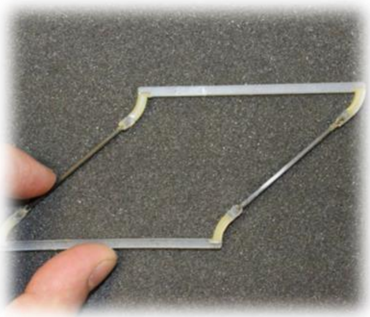
Parallel Computation

Numerical Optimization

Real time computing

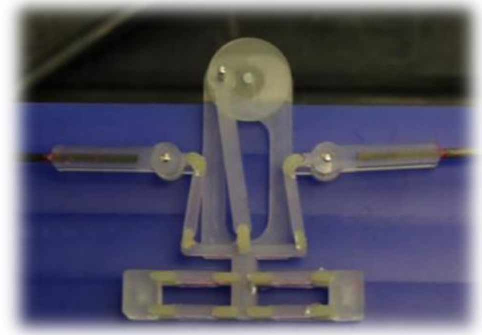
DESIGN, INNOVATION AND SIMULATION LAB.

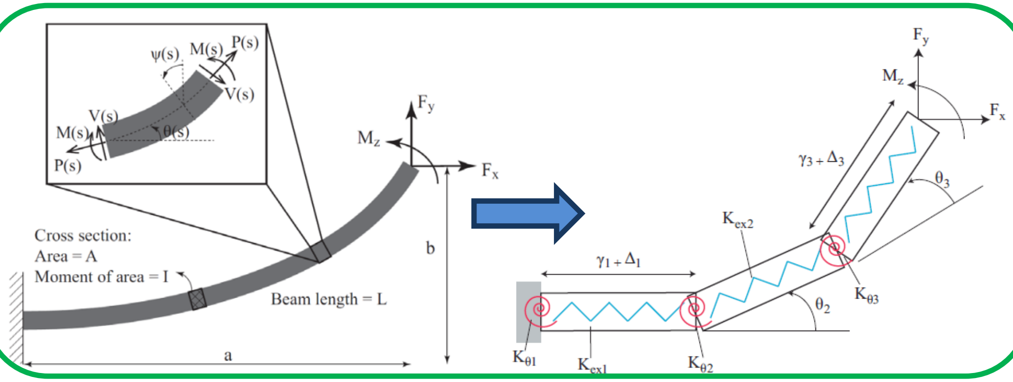
Venkatasubramanian K V (PhD candidate, Mechanical Engineering)



Research interests

- Compliant Mechanisms
- Kinematics and Robotics
- Biomechanics

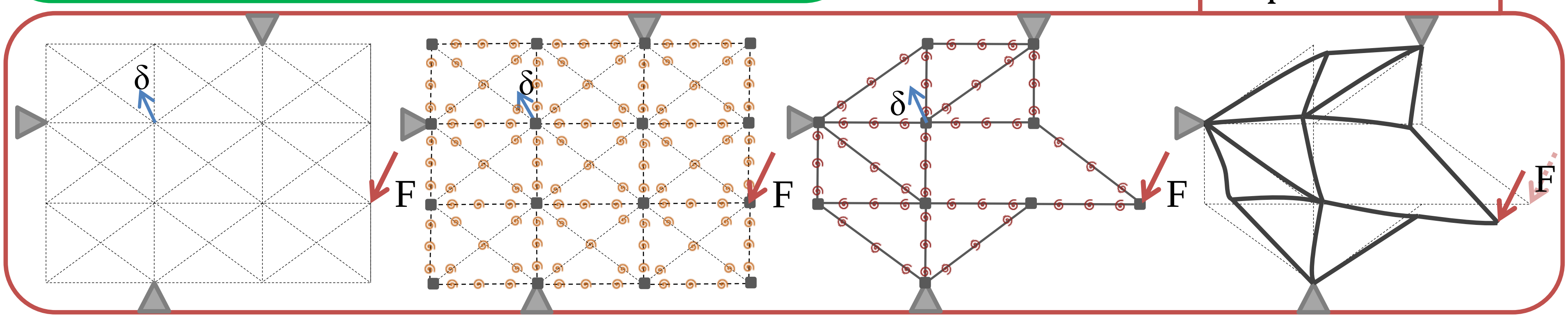




Title: Design and Analysis of Compliant Mechanisms using Pseudo-Rigid-Body Models

PRB Model

Topology Optimization



Charles Wampler
General Motors R&D
Warren, Michigan
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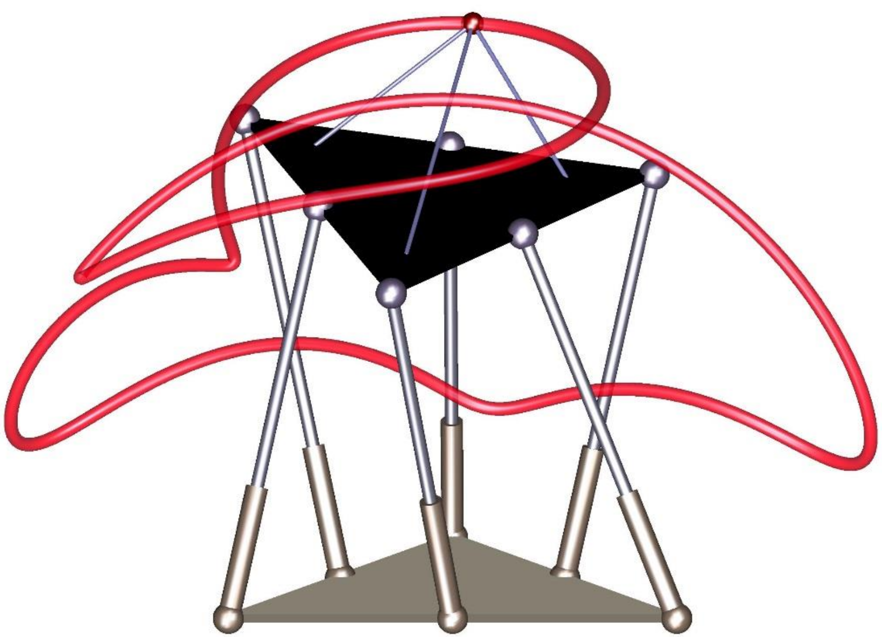
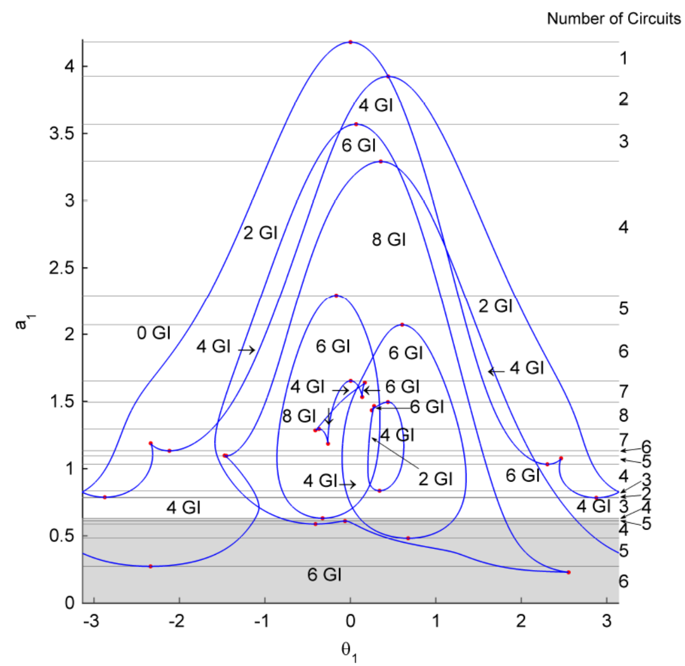
www.nd.edu/~cwample1

Interests:

- Algorithms for numerical algebraic geometry
  - Real sets
  - Sets of exceptional dimension
- Kinematics/Robotics
- Controls

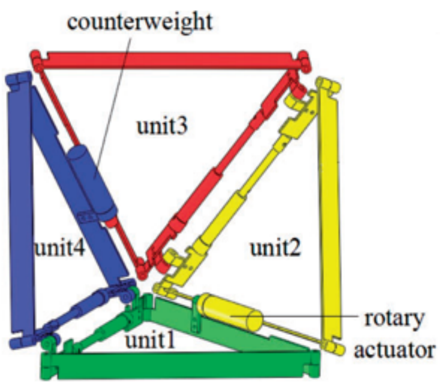


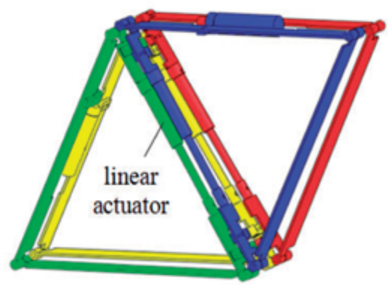


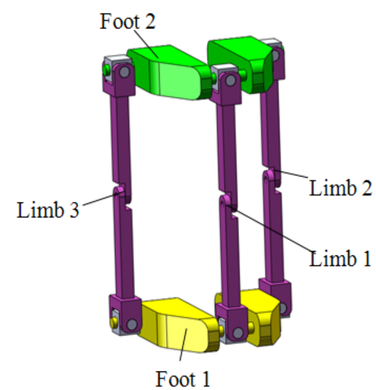
Jieyu Wang
Heriot-Watt University
jw26@hw.ac.uk

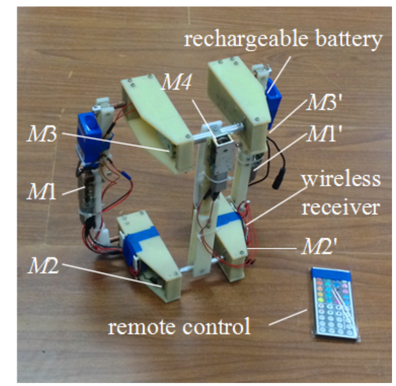
Interests:

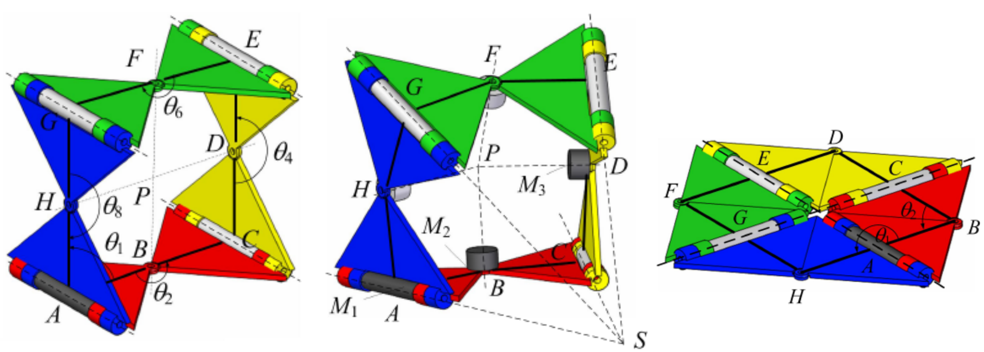
- Foldable mechanisms
- Reconfigurable mechanisms
- Mobile robots with multi-mode
- Origami

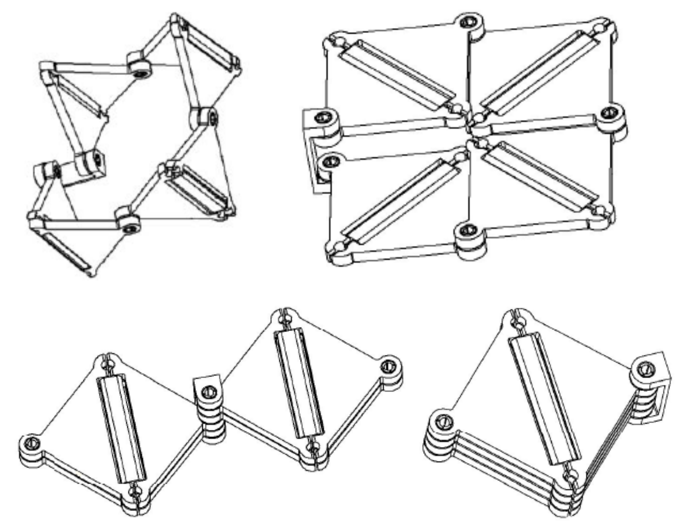












Delun Wang

Dalian University of
Technology

Kristopher Wehage
PhD Candidate
Department of Mechanical and Aerospace Engineering
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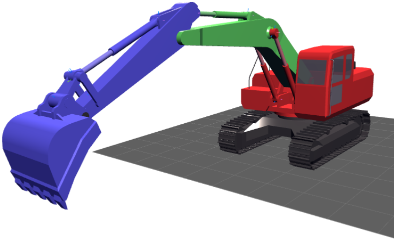
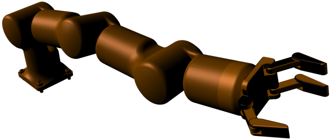
Research interests:

- Kinematics and dynamics
- Mechanical design
- Computer graphics
- Robotics
- Engineering software development in C/C++/Python/Javascript





Juan Xu
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Interests:

- Root isolation
- Complexity analysis

Shudong Yu
Professor of Mechanical Engineering
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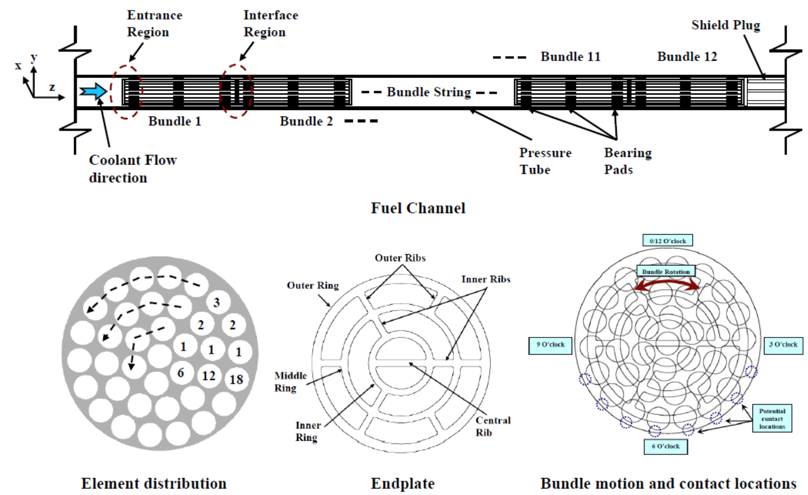
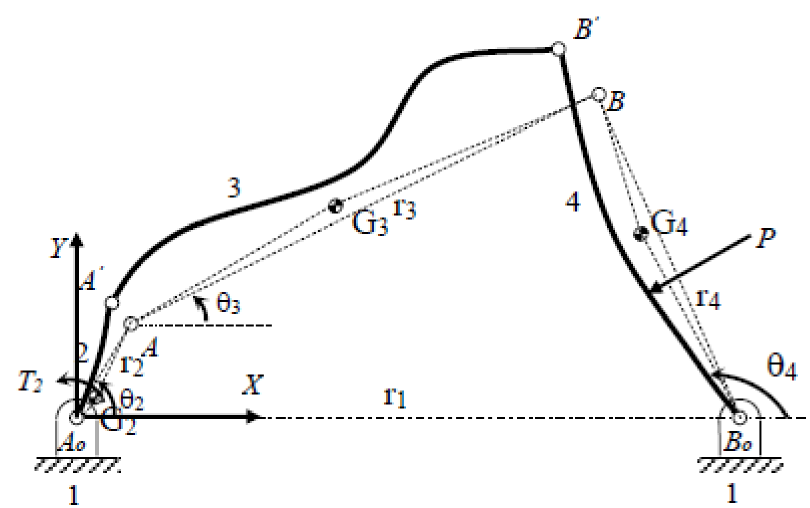
Interests:

- → Algorithms for MDOF Dynamical Systems with Smooth and Non-Smooth Nonlinearities
- → Chaos and Bifurcation in Large Scale Systems
- → Parallel processing

Applications:

- → CANDU Fuel String Vibration
- → Flexible Multibody Dynamical Systems (Mechanism) with Contact Constraints





Liang Zhao

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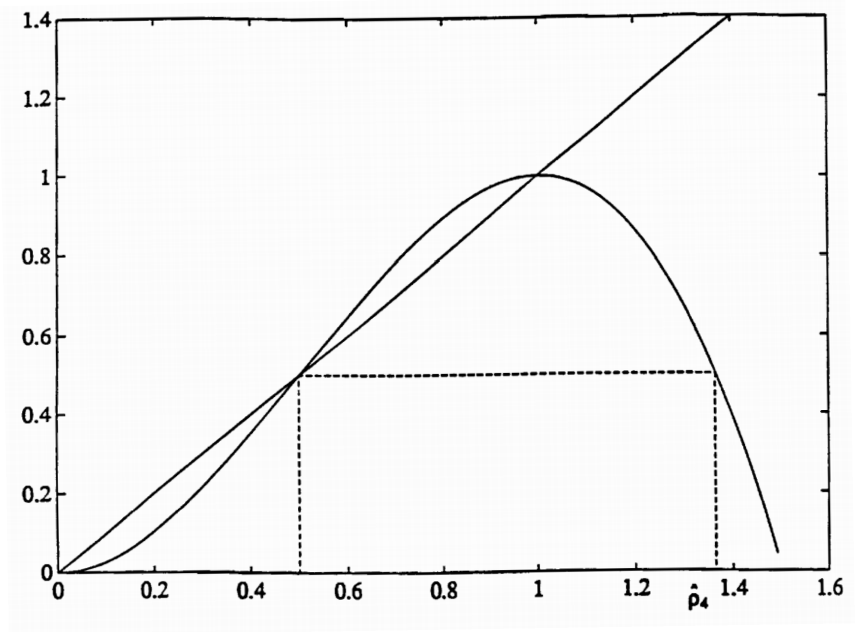

Research Interest:

- Homotopic method
- Stochastic numerical algorithms
- Computation with structured matrices
- Polynomial root-finding
- Low-rank approximation

Previous work:

- Real root-finder for polynomial in one variable that can be easily implemented.
- Matrix preprocessing aiming at Gaussian Elimination without pivoting.
- An Newton-like iterative algorithm for matrix generalized inverse that is numerically stable.