Steven Craig Clontz, Jr.

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Education

Doctor of Philosophy, Mathematics, Auburn University   *May 2015*
Dissertation: *Limited information strategies for topological games*, under Gary Gruenhage
GPA: 4.00
Fitzpatrick Fellow in Topology (2012-13, 2014-15), DMS Teaching Citation (2014-15)

Master of Science, Mathematics, Auburn University   *December 2010*
Thesis: *Applications of stationary sets in set theoretic topology*, under Gary Gruenhage
GPA: 4.00

Bachelor of Science, Mathematics, Auburn University   *May 2008*
Honors Thesis: *The edge unfolding of generalized pyramids*, under Andras Bezdek
GPA: 3.88
Summa Cum Laude, University Honors Scholar, Dean's Medalist, Undergraduate Research Fellow
Phi Kappa Phi, Phi Beta Kappa

Specialties and Interests

- Set-theoretic topology
- Selection principles and games
- Continuum theory
- Generalized inverse limits

- Cyberinfrastruture of mathematics research and education
- Mathematical puzzles and games in education and outreach
- Active, team-based, and inquiry-based learning

Employment and Professional Experience

- **Assistant Professor of Mathematics**, University of South Alabama (August 2016 - present)

- **Visiting Assistant Professor of Mathematics**, University of North Carolina at Charlotte (August 2015 - May 2016)

- **Director and Founder**, Mathematical Puzzle Programs (May 2015 - present)

- **Founder and Software Engineer**, Teloga LLC (August 2011 - July 2015)

- **GTA and Instructor of Mathematics**, Auburn University (August 2008 - May 2015)

- **Mathematics Instructor**, Southern Union State Community College (August 2013 - May 2014)

Papers

- *Proximal compact spaces are Corson compact.* Topology Appl. 173 (2014), 1-8. (with G. Gruenhage)

- *Zero-Markov information in topological games.* Ala. J. Math. 39 (2015).

- *Destruction of metrizability in generalized inverse limits.* Top. Proc. 48 (2016), 289-297. (with S. Varagona)

- *Tactic-proximal compact spaces are strong Eberlein compact.* Topology Appl. 204 (2016), 306-317.

- *On k-tactics for Gruenhage's compact-point game.* Q&A in Gen. Topology 34 (2016), 1-10.

- *Game-theoretic strengthenings of Menger's property.* (accepted to CMUC pending revisions)

- *Almost compatible functions and topological games.* (accepted to RMJM pending revisions, with A. Dow)

- *Nonmetrizability of inverse limits indexed by uncountable total orders.* (in preparation)

- *On strategic versions of selective separability, countable fan tightness, and the Menger property.* (in preparation)

Selected Presentations

- *Game On!*, invited talk for the National Museum of Mathematics Family Fridays program (November 2016)

- *Relating games of Menger, countable fan tightness, and selective separability*, presentation for 31st Summer Conference on Topology and its Applications (August 2016)

- *Generalized inverse limits indexed by arbitrary total orders*, presentations for Spring AMS Southeastern Sectional Meeting Special Session on Topology and Dynamical Systems, Spring Topology and Dynamics Conference 2016 Special Session on Continuum Theory (March 2016)

- *IBL and Mathematical Puzzlehunt Competitions*, presentation for Legacy of R.L. Moore Conference at the Univeristy of Texas (June 2015, with PJ Couch)

- *Limited information strategies for a topological proximal game*, presentations for the AMS Sectional Mathematics Meeting at the University of Alabama at Huntsville (March 2015), the 49th Spring Topology and Dynamics Conference at UNC Greensboro (May 2015)

- *Game-theoretic strengthenings of Menger's property*, presentations for the 29th Summer Topology Conference at CUNY Staten Island (July 2014), the AMS Fall Southeastern Sectional Meeting special session on Set Theoretic Topology (November 2014)

Teaching

- **Intermediate Algebra — MTH-098 (Southern Union)**

  Hybrid lecture/lab course in developmental algebra using the ALEKS learning management system.

- **Calculus for Engineering Technology — MATH-1121 (UNC Charlotte)**

  Topics covered: elements of differential and integral calculus for polynomial, rational, exponential, logarithmic and trigonometric functions, with applications to engineering.

- **(Honors) Calculus I — MATH-1610/1617 (Auburn University)**

  Topics covered: limits; the derivative of algebraic, trigonometric, exponential, and logarithmic functions; applications of the derivative, antiderivatives, the definite integral; applications to area problems; the fundamental theorem of calculus.

  For honors sections, students created a capstone project and presentation illustrating the application of calculus to their own field of study or interests.

- **Calculus II — MATH-1620 (Auburn University) and MTH-126 (University of South Alabama)**

  Topics covered: techniques of integration, applications of the integral, parametric equations, polar coordinates, vectors, lines and planes in space, infinite sequences, and series.

  Developed inquiry-based learning notes, flipped classroom notes, and online lectures available at Clontz.org.

- **(Honors) Calculus III — MATH-2630/2637 (Auburn University)**

  Topics covered: vector-valued functions, partial derivatives, multiple integration, and vector calculus.

  For honors sections, students were assigned to research and present topics and examples during lecture (with optional assistance from the instructor). Developed inquiry-based learning notes available on GitHub.

- **Calculus IV — MATH-2242 (UNC Charlotte)**

  Topics covered: functions $\mathbb{R}^n \to \mathbb{R}^m$, vector fields, line and surface integrals; Green's theorem, Divergence theorem, Stokes' theorem and applications.

- **Advanced Calculus of Several Variables — MATH 3142 (UNC Charlotte)**

  Proof-based course covering integration of single variable functions, topology of Euclidean space, construction of exponential, logrithmic, and trigonometric functions, and the continuity and differentiability of functions of several variables.

- **Senior Project — MATH 3689 (UNC Charlotte)**

  Mentored senior mathematics major in a survey of finite combinatorial games.

- **Intermediate Euclidean Geometry I — MATH 5380 (Auburn University)**

  Topics covered: fundamental concepts and theorems of Euclidean geometry, introduction to higher dimensions; regular polygons and polyhedra, symmetry groups, convexity, geometric extremum problems; geometric transformations and their invariants.

Selected student comments: (More at clontz.org/teaching.)

- "Calc 2 is definitely a hard course but Mr. Clontz taught it in a way that made it easier to understand. Very glad he was my professor for the semester."

- "This was an interesting style [active learning] of class. I think that if it is implemented more frequently, it could really help future students understand and retain the material."

- "One of the best professors I have ever had. I have learned so much from this class and enjoyed it a lot. I wish I have teachers like Dr. Clontz in every class."

Service

- **Auburn University Graduate Student Council** (President, Executive Board Member, 2010-2012)

- **AU Mathematics and Statistics Graduate Student Leadership** (Founding Member, 2013)

Outreach

- **Mathematical Puzzle Programs** (National Director, 2015-present)

  Founded to bring mathematical puzzle competitions to campuses across the nation, and provide free mathematical puzzle materials for teachers to use in the classroom. Responsible for the MaPP High School Challenge and MaPP Middle School Challenge competitions to be ran in North America and Australia throughout the 2016-2017 school year. Website at `MaPPmath.org`.

- **National Museum of Mathematics** (Dimensions Puzzle Hunt Designer, 2016)

- **Julia Robinson Mathematics and Computing Festival** (Activity Designer, 2016)

- **Lamar University Mathematical Puzzlehunt** (Director, 2015)

- **Auburn Mathematical Puzzle Challenge** (Co-founder, Director, 2012-2014)

- **AU Explore - Math EXPO** (Designer, Organizer, 2009-2013)

- **BEST Robotics Competition** (Judge, 2013)

- **AU Science Olympiad for Elementary School** (Event Designer, 2013)

- **AU Science Olympiad for Middle School** (Event Organizer, 2011-2012)

Cyberinfrastructure and Software Development

- **Online Seminars in Mathematics (OSM)**

  Initiative to bring online streaming of mathematical content using free and open-source software and minimal hardware. Project hosted at `osm.clontz.org`.

- **π-Base Encyclopedia of Topological Spaces**

  Contributor and consultant. Project hosted at `topology.jdabbs.com`.

- **Teloga.com**

  Co-developed the customer relationship management (CRM) web application `Teloga.com` for collegiate music organizations.

- **Open Source Software**

  Contributor to several OSS repositories in addition to the above through the active GitHub account `@StevenClontz`.

- **Programming and Markup Languages**

  HTML5 (Markdown, HAML, Slim), CSS (LESS, SASS), ECMAScript (Typescript, Coffeescript, jQuery, AngularJS), Mobile App Development (Ionic, Cordova), PHP (Wordpress, Wolf CMS), Python (Django), Ruby (Rails, Sinatra, Jekyll, nanoc), LaTeX, Git, Firebase, SQL (MySQL, PostgreSQL, SQLite), Data Serialization (JSON, YAML)