JOSEPH PALMER

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ACADEMIC EMPLOYMENT

Rutgers University *September 2016 - June 2019*
Honors College Assistant Professor (postdoc) New Brunswick, NJ, USA

EDUCATION

University of California San Diego *2016*
Ph.D. in Mathematics La Jolla, CA, USA
Thesis title: Symplectic invariants and moduli spaces of integrable systems
Advisor: Álvaro Pelayo

Washington University in St. Louis *2013*
M.S. in Mathematics St. Louis, MO, USA
Advisor: Álvaro Pelayo

Truman State University *2011*
B.S. in Mathematics Kirksville, MO, USA
B.S. in Physics
Minor in Computer Science
Magna Cum Laude

VISITING POSITIONS

Institut des hautes études scientifiques (IHÉS) *June/July 2017*
Invited Researcher Bures-sur-Yvette, France

PAPERS

9 published/accepted and 3 preprints.

Submitted or in the arxiv:

1. Invariance of immersed Floer cohomology under Lagrangian surgery (with C. Woodward), `arXiv:1903.01943`, 96 pages.
2. Semitoric families (with Y. Le Floch), `arXiv:1810.06915`, 85 pages.
3. Immersed Floer cohomology and Maslov flow (with C. Woodward), `arXiv:1804.06799`, 71 pages.

Published/Accepted:

4. A family of compact semitoric systems with two focus-focus singularities (with S. Hohloch), *The Journal of Geometric Mechanics* 10(3) (2018), 331–357.
5. Minimal models of semitoric manifolds (with D. M. Kane and Á. Pelayo). *The Journal of Geometry and Physics* 125 (2018), 49–74.
6. Classifying toric and semitoric fans by lifting equations from $\mathrm{SL}_2(\mathbb{Z})$ (with D. M. Kane and Á. Pelayo). *SIGMA Symmetry Integrability Geom. Methods Appl.* 14 (2018), 016, 43 pages.
7. Symplectic G-capacities and integrable systems (with A. Figalli and Á. Pelayo). *Ann. Sc. Norm. Super. Pisa Cl. Sci.* (5) Vol. XVIII (2018), 65-103.

8. Metrics and convergence in the moduli space of maps. *Annales de la Faculté des Sciences de Toulouse Sér. 6*, 27 no. 3 (2018), p. 497–526.
9. Moduli spaces of semitoric systems. *The Journal of Geometry and Physics* 115 (2017), 191–217.
10. Self-similar sequences and generalized Wythoff arrays (with D. Garth). *The Fibonacci Quarterly* 54, 1 (2016), 72–78.
11. On the structure group of a decomposable model space (with C. Dunn and C. Franks). *Beiträge zur Algebra und Geometrie* 56, 1 (2015), 199–216.
12. Self generating sets and numeration systems (with D. Garth and H. Ta). In *Combinatorial Number Theory.* Walter de Gruyter, Berlin, (2009) 41–56.

INVITED CONFERENCE TALKS

- *Families of semitoric systems* — Taipei, Taiwan — *2018*
  AIMS conference on dynamical systems
- *Some results on semitoric integrable systems* — Ascona, Switzerland — *2018*
  Momentum maps and integrability conference at Congressi Stefano Franscini
- *Explicit compact semitoric integrable systems* — La Jolla, CA, USA — *2018*
  Gone Fishing Poisson Geometry Conference 2018
- *New constructions of semitoric systems* — Barcelona, Spain — *2017*
  Finite Dimensional Integrable Systems (FDIS) 2017 Conference at CRM

INVITED SEMINAR TALKS

- *Semitoric families* — Princeton, NJ, USA — *2018*
  IAS/Princeton symplectic geometry and dynamics seminar
- *Immersed Floer theory and reverse mean curvature flow* — Antwerp, Belgium — *2018*
  UAntwerpen Geometry and Analysis seminar
- *Invariants and constructions of semitoric systems* — Antwerp, Belgium — *2018*
  UAntwerpen Geometry and Analysis seminar

CONTRIBUTED CONFERENCE TALKS

- *Symplectic capacities, group actions, and integrable systems* — Seattle, WA, USA — *2016*
  American Mathematical Society Joint Mathematics Meetings 2016
- *Understanding semitoric systems by lifting equations from* $\mathrm{SL}_2(\mathbb{Z})$ — Fullerton, CA, USA — *2015*
  American Mathematical Society Western Sectional Meeting
- *A distance function on symplectic embeddings* — Lausanne, Switzerland — *2013*
  Integrable Systems in The XXI Century Conference at EPFL

CONFERENCE POSTERS

- *The combinatorial invariant of semitoric manifolds* — Zurich, Switzerland — *2016*
  Poisson 2016 Conference
- *The combinatorial invariant of semitoric manifolds* — Ascona, Switzerland — *2016*
  Integrable systems conference at Congressi Stefano Franscini
- *The moduli space of semitoric integrable systems* — Poznań, Poland — *2015*
  Finite Dimensional Integrable Systems (FDIS) 2015 Conference
- *The moduli space of semitoric integrable systems* — Providence, RI, USA — *2015*
  Integrability in Mechanics and Geometry Conference at ICERM

CONFERENCE MINICOURSES

- **Integrable systems minicourse** *2016*
  Geneva, Switzerland
  - Along with Y. Le Floch, acted as teaching assistant for *Integrable Systems* minicourse taught by S. Vũ Ngọc and D. Sepe during the *Poisson 2016* conference. We led problem sessions and wrote solutions for the practice problems (available online at `http://www.unige.ch/math/Poisson2016/sol_vungocsepe.pdf`).

AWARDS

- CSF Young Scientist Award (for presentation at Congressi Stefano Franscini conference) *2018*
- AMS-Simons Travel Grant *2016*
- Graduate Defense Support Award, UC San Diego *2016*
- Robert McDowell Teaching Award, Washington University in St. Louis *2014*

MENTORING ACTIVITIES

- **ARTU graduate Facilitator and Mentor** *Summer 2013*
  St. Louis, MO, USA
  - Supervised advanced undergraduates working on independent research problems through the *Advanced Research Training for Undergraduates (ARTU)* program at Washington University in St. Louis. Duties included organizing informal talks and giving the students feedback on their presentations and work.
- **Graduate Student Mentor** *2012–2013*
  St. Louis, MO, USA
  - Mentored first and second year graduate students at Washington University in St. Louis, hosted several events, and gave advice concerning qualifying exams, choosing an advisor, and being a graduate student in general.

OUTREACH

- **Rutgers Undergraduate Mathematics Association Lecture Series talk** *2017*
  - Gave an introductory talk for mathematics majors titled *The classification of Delzant polygons*.
- **Rutgers Engineers Assessing Literature (REAL) faculty guest** *2017 and 2018*
  - Was invited to sit in on an engineering book club on two separate occasions to discuss literature and offer advice about succeeding in an academic environment.
- **UC San Diego Undergraduate Seminar talk** *2014*
  - Gave an introductory talk for mathematics majors titled *Symplectic geometry and physics*.
- **Math Circle** *2011*
  - Gave an interactive talk and led an afternoon of activities for middle school students about problem solving and Conway's game of life at Washington University in St. Louis.

SERVICE

- **UC San Diego Symplectic Geometry Seminar co-organizer** *2016*
- **Refereed papers** for:
  - *SIGMA (Symmetry, Integrability, and Geometry: Methods and Applications)*
  - *Differential Geometry and its Applications*
  - *PUMP Journal of Undergraduate Research*

TEACHING

Instructor for 11 courses and teaching assistant (TA) for 9 courses.

Courses Taught at Rutgers University:

- Multivariable Calculus *(Honors section)* *Fall 2018*
- Introduction to Linear Algebra *Summer 2018*
- Multivariable Calculus *(Honors section)* *Spring 2018*
- Linear Algebra *Spring 2018*
- Multivariable Calculus *(Honors section)* *Fall 2017*
- Multivariable Calculus *(Honors section)* *Spring 2017*
- Linear Algebra *(Honors section)* *Spring 2017*
- Multivariable Calculus *(Honors Section)* *Fall 2016*
- Introduction to Mathematical Reasoning *Fall 2016*

Courses Taught at University of California, San Diego:

- Mathematical Reasoning (TA) *Spring 2016*
- Mathematical Reasoning (TA) *Winter 2016*
- Honors Linear Algebra (TA) *Fall 2015*
- Differential Equations (TA) *Summer 2015*
- Mathematical Reasoning (TA) *Winter 2015*
- Mathematical Reasoning (TA) *Fall 2014*

Courses Taught at Washington University in St. Louis:

- Introduction to Statistics *Summer 2014*
- Calculus III (TA) *Fall 2013*
- Finite Mathematics *Summer 2013*
- Calculus II (TA) *Spring 2013*
- Calculus I (TA) *Fall 2012*