

# JENNIFER A. CRODELLE

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## POSITION

Courant Institute of Mathematical Sciences, NYU  
*NSF Mathematical Sciences Postdoctoral Research Fellow*  
251 Mercer St, New York, NY, 10012

*September 2017 - present*

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## EDUCATION

Rensselaer Polytechnic Institute Troy, NY  
*Ph.D. in Mathematics*

*August 2017*

Rensselaer Polytechnic Institute Troy, NY  
*M.S. in Applied Mathematics*

*August 2014*

Marist College Poughkeepsie, NY  
*B. S. in Applied Mathematics, concentration: Chemistry*

*May 2012*

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## AWARDS & HONORS

Joaquin B. Diaz Thesis Prize at Rensselaer

*May 2017*

Student Paper Award at Ninth IMACS International Conference

*April 2015*

SIAM Certificate of Recognition at Rensselaer

*Spring 2015*

Graduate Assistance in Areas of National Need Fellowship (GAANN)

*2013-2015*

Founders Award of Excellence at Rensselaer

*Fall 2014*

Ralph Ernest Huston Prize (1973) for best teaching assistant at Rensselaer

*Fall 2013*

Honors in Mathematics at Marist College

*Spring 2012*

Undergraduate travel/research grant to MAA Mathfest

*Summer 2010*

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## RESEARCH EXPERIENCE

Postdoctoral work in mathematical modeling of the circuits in the developing mouse visual cortex

*2017-present*

Thesis work in computational neuroscience under advisement of Gregor Kovačič (RPI) and David Cai (Courant Institute)

*2013-2017*

Mathematical modeling of the modulation of pain via circadian rhythm

*Summer 2015*

at NIMBioS and AWM Workshop.

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|---|----------------------|
| Underwater Acoustics project under advisement of Scott Frank          | <i>AY 2011- 2012</i> |
| REU at Bard College in neural networks                                | <i>Summer 2011</i>   |
| Computational Chemistry project under advisement of John Galbraith    | <i>Fall 2010</i>     |
| Mathematical Epidemiology project under advisement of Matthew Glomski | <i>Fall 2009</i>     |
| Pre-REU at Texas A&M University in sound-wave acoustics               | <i>Summer 2009</i>   |

## PUBLICATIONS

A firing-rate model for circadian modulation of pain sensitivity. **J. Crodelle**, M. Hagenauer, S. Piltz, and V. Booth. *In preparation*

Mechanism underlying synchronization of a cortical network with synaptic and electric connections. **J. Crodelle**, G. Kovačič, D.Zhou, D. Cai *In preparation*

A neural circuit model for pain processing in the spinal cord. **J. Crodelle**, M. Hagenauer, S. Piltz, and V. Booth. *Proceedings of A Research Collaboration Workshop for Women in Mathematical Biology*, Springer, 2016

The Modulation of Pain by Circadian and Sleep-Dependent Processes: A Review of the Experimental Evidence. M.Hagenauer, **J. Crodelle**, S. Piltz, N. Toporikova, P. Ferguson, and V. Booth. *Proceedings of A Research Collaboration Workshop for Women in Mathematical Biology*, Springer, 2016

## SELECT PRESENTATIONS

Circadian Rhythmicity of Pain Sensitivity: A Firing-Rate Model of Dorsal Horn Circuitry  
*Computational Biology Seminar*, Courant Institute, NYU, NY *February 2018*

Circadian Rhythmicity of Pain Sensitivity: A Mathematical Model  
*Pi Mu Epsilon Honor Society Induction Ceremony*, Marist College, NY *March 2018*

Synchrony among synaptically and electrically connected neurons in the cortex  
*Third International Conference on Mathematical Neuroscience*, Boulder, CO *June 2017*

Mathematical model of a network containing electrotonic junctions between excitatory neurons in the adult cortex  
*SIAM Conference on Applications of Dynamical Systems*, Salt Lake City, UT *May 2017*

- The role of gap junctions in synchronizing neuronal activity  
*Oxford College of Emory University Colloquium* Oxford, GA *March 2017*
- Synchronizing cortical dynamics via electrotonic junctions between excitatory neurons  
*The Tenth IMACS International Conference on Nonlinear Evolution  
Equations and Wave Phenomena: Computation and Theory*, Athens, GA *March 2017*
- An Investigation into the role of gap junctions in synchronizing neuronal activity  
*Marist College Seminar Series*, Poughkeepsie, NY *January 2017*
- The role of electrotonic junctions between excitatory neurons in the cortex  
*Joint Mathematical Meetings*, Atlanta, GA *January 2017*
- Synchrony among chemically and electrically coupled neurons  
*SIAM Conference on the Life Sciences*, Boston, MA *July 2016*
- The role of gap junctions between excitatory neurons in the cortex  
*SIAM annual meeting*, Boston, MA *July 2016*
- Synchronizing cortical dynamics via gap junctions between excitatory neurons  
*AIMS Conference Series on Dynamical Systems and  
Differential Equations*, Orlando, FL *July 2016*
- Gap junctions in the cortex, and their properties  
*Dynamical Systems Seminar, RPI* *October 2015*
- A network of excitatory and inhibitory neurons with gap junctions  
*SIAM Conference on Applications of Dynamical Systems*, Salt Lake City, UT *May 2015*
- The role of gap junctions between excitatory neurons in Synchronizing Cortical Dynamics  
*The Ninth IMACS International Conference on Nonlinear Evolution  
Equations and Wave Phenomena: Computation and Theory*, Athens, GA *April 2015*
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## POSTER PRESENTATIONS

- The role of electrotonic junctions between excitatory neurons in the cortex  
*Society for Neuroscience (SFN) Annual Meeting*, San Diego, CA *November 2016*
- Synchronizing cortical dynamics via gap junctions between excitatory neurons  
*Society for Neuroscience (SFN) Annual Meeting*, Chicago, IL *Sept 2015*
- The role of gap junctions between excitatory neurons in synchronizing cortical dynamics

*Challenges in Computational Neuroscience workshop, Durham, NC*

*August 2015*

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## TEACHING & MENTORING EXPERIENCE

### **Instructor:**

Multivariable Calculus at Russell Sage College

*Fall 2016*

Calculus II at Rensselaer

*Summer 2016*

First-year T.A. Seminar at Rensselaer

*Fall 2015*

### **Research Advisor for Undergraduate Student**

*Summer 2016*

### **Substitute lecturer at Rensselaer:**

*2014-2016*

Ordinary Differential Equations and Dynamical systems

Intro to Ordinary Differential Equations

### **Teaching Assistant at Rensselaer:**

Methods of PDEs of Mathematical Physics

*Spring 2016*

Ordinary Differential Equations and Dynamical Systems

*Fall 2015*

Linear Algebra

*Fall 2015*

Calculus II

*Spring 2013*

Multivariable Calculus and Matrix Algebra at Rensselaer

*Fall 2012*

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## WORKSHOPS

### **SAMSI: Challenges in Computational Neuroscience (CCNS)**

*Understanding Neuromechanical Processes in Locomotion  
with Physical Modeling and Network Analysis, Durham, NC*

*August 2015*

### **A Research Collaboration Workshop for Women in Mathematical Biology**

*Sleep, Circadian Rhythms and Pain, NIMBioS, Knoxville TN*

*June 2015*

### **SIAM Workshop on Network Science, Salt Lake City, UT**

*May 2015*

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## MEMBERSHIPS

Association for Women in Mathematics (AWM)

Society for Neuroscience (SFN)

Society for Industrial and Applied Mathematics (SIAM)

Graduate Society for Women Engineers (SWE)

Charter Member of Marist College Chapter of Pi Mu Epsilon

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