Paramita Chakraborty

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Education

- **Doctor of Philosophy in Statistics & Probability:** July 2009
  Michigan State University, East Lansing, Michigan, USA.
  Dissertation Title: "Particle Tracking Using Stochastic Differential Equation Driven by Pure Jump Lévy Processes."
  Advisor: V.S. Mandrekar.

- **Master of Statistics:** July 2004
  Indian Statistical Institute, India.
  Specialization: Mathematical Statistics and Probability.

- **Bachelor of Science in Statistics:** July 2002
  St. Xavier's College, Kolkata, India
  Major: Statistics.

Experience

- **Assistant Professor:** August 2012 - present
  Department of Statistics, University of South Carolina, Columbia, SC 29208, USA.

- **Assistant Professor:** August 2009 - August 2012
  Department of Mathematics, California State University, Bakersfield, CA 93311, USA.

- **Graduate Assistant:** August 2004 - June 2009
  Department of Statistics and Probability, Michigan State University, East Lansing, MI 48824, USA.

Research Interest

- Applied Probability.
- Stochastic Differential Equations.
- Stochastic Modeling.
- Large-scale multiple Testing.

Publications

- **P. Chakraborty**, X. Hu and H. Wang (2018): "Stable Lévy Diffusion and Related Model Fitting." *Modern Stochastics: Theory and Application (In press).*
- Kamaljeet Kaur, Arpit Saxena, Irina Debnath, Jacqueline L. O'Brien, Nadim J. Ajami, Thomas A. Auchtung, Joseph F. Petrosino, Alexander-Jacques Sougiannis, Sarah Depaep, Alexander Chumanevich, Phani M. Gummadidala, Mayomi H. Omebeyinje, Sourav Banerjee, Ioulia Chatzistamou, **Paramita Chakraborty**, Raja Fayad, Franklin G. Berger, James A. Carson & Anindya Chanda. (2018) "Antibiotic-mediated bacteriome depletion in ApcMin/+ mice is associated with reduction in mucus-producing goblet cells and increased colorectal cancer progression." *Cancer Medicine, doi:10.1002/cam4.1460.*
- R. Rowshan, C. Agbasi, **P. Chakraborty**, S. Banerjee. (2015). "Spiral Sensing and Probability Map of Impact (PMOI) for Impact Characterization." *International Journal of Modern Engineering, Vol 16, No 1*, 2015.
- G. Kenne, **P. Chakraborty** and A. Chanda (2014). "Modeling Toxisome Protrusions in Filamentous Fungi." *JSM Environmental Science & Ecology, 2(1)*, 2014.
- C. Bhan, **P. Chakraborty** and V.S. Mandrekar (2012). "Invariant Measure and Stability of the Solution of a Stochastic Differential Equation Driven by a Jump Levy Process." *Int. J. Contemp. Math. Sciences, Vol. 7, no. 1, Pages 33 – 52, (2012).*
- **P. Chakraborty** (2009). "Stochastic Differential Equation Model with Jumps for Fractional Advection and Dispersion." *Journal of Statistical Physics: Volume 136, Issue 3, Page 527.*
- **P. Chakraborty**, M. Meerschaert and C.Y. Lim (2009). "Parameter Estimation for Fractional Transport: A Particle Tracking Approach." *Water Resources Research, 45, W10415, Page 15.*

Submitted Papers

- **P. Chakraborty**, C. Ma, J. Grego and J. Lynch (2018): "Exploratory data analysis for large-scale multiple testing problems and its application in gene expression studies." Submitted to *Computational Statistics and Data Analysis. (under review).*
- **P. Chakraborty**, C. Ma, J. Grego and J. Lynch (2018): "Asymptotic Conditional Update for Mixture Models Used in Large-Scale Inference." Submitted to *Statistics and Probability Letters (under review).*

- C. Ma, **P. Chakraborty**, J. Grego and J. Lynch (2018): "A modified screening procedure for large-scale multiple hypothesis testing problems based on false discovery rate control and sub-sampling." To be submitted to *Biostatistics*.
- Phani M. Gummadidala, William Becker, Mayomi H. Omebeyinje, Li Chen, Chandrani Mitra, Rubaiya Jesmin, **Paramita Chakraborty**, Sajish Mathew, Koyeli Banerjee, Qian Wang, Mitzi Nagarkatti, Prakash Nagarkatti, Peter D. R. Moeller and Anindya Chanda (2018): "Acute and chronic administrations of delta-9-tetrahydrocannabinol modulate major gut metabolomic regulatory pathways in C57BL/6 mice." Submitted to *Scientific Reports (under review)*.
- Phani M. Gummadidala , Mayomi H. Omebeyinje, James A. Burch , Paramita Chakraborty, Prasanta K. Biswas, Koyeli Banerjee, Qian Wang, Rubaiya Jesmin, Chandrani Mitra, Peter D. R. Moeller, Geoffrey I. Scott and Anindya Chanda (2018): "Complementary feeding may pose a risk of Aflatoxin M1 and Deoxynivalenol exposures to Indian infants and toddlers: lessons from a mini-survey of food samples obtained from Kolkata, India" Submitted to *Food and Chemical Toxicology (under review)*.

Working Papers

- **P. Chakraborty** (2018): The Martingale Problem Associated with jump (α-Stable) Diffusion Processes and the Existence of the Solution.
- **P. Chakraborty and H. Chakraborty:** Two State Time Homogeneous Continuous Markov Chain Model for HIV Disease Progression: Application to HIV Data in South Carolina.
- H. Chakraborty, **P. Chakraborty,** and others: Clinical Trial of Recurring Infection Data Analysis Using Markov Chain: Intervention to Reduce Human Papillomavirus Infection.

Grants/ Research Contracts

Funded

1. Spinal Cord Pilot

Source of support: SC Spinal Cord Injury Research Foundation
Grant Number: SCIRF# 2017 P-01
Grant title: Retrospective Assessment of Microbial Infections in Traumatic Spinal Cord Injured (TSCI) Population
Period of funding: 04/15/2018 - 04/14/2019
Role: Co-Principal Investigator (**PI:** A. Chanda).
 Amount of funds: $ 30,000.

2. USDA Research Contract

Source of support: USDA
Grant Number: 58-6054-5-031
Grant title: Molecular Characterization of Regulatory Factors Involved in Aspergillus flavus Development, Secondary Metabolism and Survival
Period of funding: 09/01/2015- 08/31/2020
Role: Co-Principal Investigator (**PI:** A. Chanda).
Amount of funds: $55,000

Pending

3. DOE Research Grant

Sponsor: DOE
Grant Title: Developing a systems level understanding of fungal bioremediation using integrated omics
Role: Co-Principal Investigator (**PI:** A. Chanda)
Total Requested $749,154,
Dates: 09/15/2018 - 09/14/2021

4. NIH Research Grant

Sponsor: National Institute of Health (NIH)- **R01 mechanism**
Grant Title: The interplay of Oxidative Stress and Secondary Metabolism in endosome biogenesis of the human pathogen Aspergillus flavus"
Role: Co-Principal Investigator (**PI:** A. Chanda)
Total Requested $1,739,729.
Dates: 01/01/2019 - 12/31/2023

Unfunded

5. **NSF** [**Role: PI**]: A Modified Mixture Model Approach to the Large-Scale Multiple Testing Problems in Biology.
6. **NSF** [**Role: Co-PI**]: Community network within corn ear microbiomes: their impacts on resistance to Aspergillus flavus infection and aflatoxin production.
7. **Aspire**II [**Role: Co-PI**]: A combinatorial multi-scale imaging approach for studying cellular export in toxigenic fungi.

Teaching Experience

Stat 822: Advance Statistical Inference.

Stat 810: Probability Theory I.

Stat 811: Probability Theory II.

Stat 721: Stochastic Processes.

Stat 712: Mathematical Statistics I.

Stat 713: Mathematical Statistics II.

Stat 515: Statistical Methods I.

Stat 205: Elementary Statistics for the Biological and Life Sciences.

Professional Presentations

Invited Talks

- "A Modified Mixed Model Approach to the Large Scale Multiple Testing Problem." Latent Variables Conference organized by the University of South Carolina, Department of Statistics. (Oct 2016).
- "Fractional Diffusion and its Application." International Conference organized by Institute of Applied Statistics, Sri Lanka (IASSL) (Dec 2014).
- "Stochastic Diffusion Driven by Stable Processes and Related Model Fitting." International Conference on Fractional Differentiation and its Application (ICFDA), Catania, Italy (2014).

Seminars

- "Stochastic Diffusion Driven by Jump Levy Processes and Related Uniqueness Problem." Statistics and Probability seminar, Department of Mathematics, Clemson University (2014).
- "Introduction to Stochastic Calculus." Applied and Computational Mathematics (ACM) Seminar, Department of Mathematics, University of South Carolina, Columbia (2013).
- "Stochastic Diffusion Driven by Jump Levy Processes and its Application in Hydrology." Statistics Department Colloquium, Department of Statistics, University of South Carolina, Columbia (2013).
- "An Exposure to Stochastic Calculus." Statistics Department Colloquium, Department of Statistics, University of South Carolina, Columbia (2012).
- "Stochastic Differentiation and its Applications." Research Seminar, Department of Mathematics, California State University, Bakersfield (2011).
- "Stochastic Diffusion Driven by Jump Levy Processes." Statistics and Probability Colloquium, Department of Statistics and Probability, Michigan State University (2008).

<u>Poster Presentation</u>

- Mathematical Foundation for FADE particle tracking codes (Poster). The Geological Society of America Annual Meeting, Denver (2007).

Professional Membership

- Institute of Mathematical Statistics.
- American Statistical Association.