Paul G. Beckman

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Education

New York University **2020-**
PhD in Mathematics
Advisor: Mike O'Neil

The University of Chicago **2015-2019**
BS with Honors in Computational and Applied Mathematics
Thesis: Nonstationary Gaussian process approximations of piecewise analytic computer codes
Advisor: Mihai Anitescu

Research

Lawrence Berkeley National Laboratory *CSGF Practicum* **2023**
Advisors: Xiaoye Sherry Li, Yang Liu
Towards an optimal complexity black-box butterfly factorization from matrix-vector products

Argonne National Laboratory *Predoctoral Researcher* **2019-2020**
Advisor: Mihai Anitescu
Maximum likelihood estimation for nonstationary Gaussian processes with rank-structured covariance matrices

Lawrence Berkeley National Laboratory *BLUR Intern* **2018**
Advisor: Chao Yang
Clustering-based shift selection in parallel shift-invert spectrum slicing eigensolver for self-consistent field iterations

Lawrence Livermore National Laboratory *SULI Intern* **2017**
Advisors: Jean-Luc Fattebert, Daniel Osei-Kuffuor
Geometric initial guess for the locations of localized electronic orbital centers in DNA, RNA, and protein systems

University of Chicago Computation Institute *Undergraduate Researcher* **2016-2017**
Advisors: Ian Foster, Kyle Chard
Statistical data mining software for heterogeneous databases; streaming and storage systems for sensor network data

Publications & Reports

Beckman, Paul G., Christopher J. Geoga. "Fast Adaptive Fourier Integration for Spectral Densities of Gaussian Processes." arXiv preprint.

Beckman, Paul G., Christopher J. Geoga, Michael L. Stein, and Mihai Anitescu. "Scalable Computations for Nonstationary Gaussian Processes." Statistics and Computing 33, no. 4 (2023): 84.

Williams–Young, David B., Paul G. Beckman, and Chao Yang. "A Shift Selection Strategy for Parallel Shift-Invert Spectrum Slicing in Symmetric Self-Consistent Eigenvalue Computation." *ACM Transactions on Mathematical Software (TOMS)* 46, no. 4 (2020): 1-31.

Skluzacek, Tyler J., Rohan Kumar, Ryan Chard, Galen Harrison, Paul G. Beckman, Kyle Chard, and Ian Foster. "Skluma: An Extensible Metadata Extraction Pipeline for Disorganized Data." In *2018 IEEE 14th International Conference on e-Science (e-Science)*, pp. 256-266. IEEE, 2018.

Beckman, Paul G., Jean-Luc Fattebert, Edmond Y. Lau, and Daniel Osei-Kuffuor. *A geometric initial guess for localized electronic orbitals in modular biological systems.* No. LLNL-TR-738503. Lawrence Livermore National Lab. 2017.

Awards

Courant Institute of Mathematical Sciences *Moses A. Greenfield Research Prize* **2024**

Department of Energy *Computational Science Graduate Fellowship* **2020**

Presentations

SIAM *Uncertainty Quantification* **2024**
Talk: "Fast adaptive Fourier integration of spectral densities"
Poster: "Butterfly-accelerated Gaussian random fields on manifolds"

ICIAM *International Congress on Industrial and Applied Mathematics* **2023**
Talk: "Boundary integral methods for computing covariances in inverse source problems"

New York University *Modeling and Simulation Group Meeting* **2022**
Talk: "Rank, screening, and noise: The Vecchia approximation for kernel matrices"

SIAM *Mathematics of Data Science (Minisymposium co-organizer)* **2022**
Talk: "Fast algorithms for elliptic PDEs with Gaussian boundary noise"

Teaching

Mathematic Statistics *Teaching Assistant* **Spring 2024**
New York University MATH-UA.2340

Statistics *Teaching Assistant* **Fall 2021**
New York University MATH-GA.2962

Computational Statistics *Teaching Assistant* **Spring 2021**
New York University MATH-GA.2080

Outreach and Service

Petey Greene Program *Volunteer Tutor* **2020-**
Math and science tutor for currently and formerly incarcerated individuals

- Elementary through middle school math and classroom preparedness for adults
- High school equivalency (GED and TASC)
- College algebra