

Philip Etter

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Education

2017 – 2022 **Stanford University**

Ph.D. Candidate in Computational and Mathematical Engineering, GPA: 4.1 / 4.0

- **Primary Interests:** Numerical Linear Algebra, Probability, Statistics, Model Order Reduction, Data Science, Machine Learning
- **Relevant Background:** Numerical Linear Algebra, Algorithms, Discrete Mathematics, Optimization, Probability, Stochastic Processes, Statistics, Machine/Deep Learning, Partial/Stochastic Differential Equations, Differential Geometry, Quantum Mechanics, General Relativity, Computer Graphics

2013 – 2017 **Princeton University**

B.A. in Mathematics, with *Highest Honors*, GPA: 3.96 / 4.0

Research Projects and Experience

2019 **Ph.D. Research**, *Determinantal Point Process Sampling via Random Walks*

- Currently developing methods for ensuring sample diversity in statistical models by expanding the theory of loop-erased random walks to larger classes of determinantal point processes.

2019 **Ph.D. Research**, *Accelerated Hessian Transport for Probability Distributions*

- Currently developing a theory of accelerated probability flows on modified Wasserstein geometries that enables faster approximate sampling of probability distributions via particle swarms.

Summer 2018 **Sandia National Laboratories**, *Data Science Research Intern*, Livermore, CA

- Developed an adaptive basis refinement/compression method for reduced-order models that efficiently guarantees model generalization to problems outside of the training distribution.

2017 – 2019 **Ph.D. Research**, *Coarse-Proxy Reduced Basis Methods for Integral Equations*

- Developed coarse-proxy methodology for constructing reduced-order models, enabling more sample-efficient collection of training data by filtering out redundant prospective samples.

Publications

In revision P.A. Etter, C.T. Carlberg, ***Online adaptive basis refinement and compression for reduced-order models via vector-space sieving***, submitted to *Computer Methods in Applied Mechanics and Engineering*.

In preparation P.A. Etter, Y. Fan, L. Ying, ***Coarse-proxy reduced basis methods for integral equations***.

Conference Talks

June 2019 **International Conference on Applied and Industrial Mathematics**

Minisymposium on Reduced-Order Modeling for Parametric CFD Problems

Feb. 2019 **SIAM Conference on Computational Science and Engineering**

Minisymposium on Reduced-Order Models for Fluids: Achievements and Open Problems

Work Experience

Summer 2015 **Google**, *Software Engineering Intern*, Mountain View, CA

- Authored one of the earliest cross-platform Vulkan graphics API sample sets.

2010 – 2014 **Bell Labs**, *Computer Audio Research/Software Development*, Murray Hill, NJ

- Developed audio rendering techniques and demos for improving teleconferencing experiences.

Skills

Computing C/C++, C#, Python, MATLAB, Mathematica, L^AT_EX, Linux