ANDY J. GOLDSCHMIDT

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Interests

Quantum dynamics and control ◆ Multi-scale physics
Physics-informed machine learning ◆ Dynamical systems

Education

PhD 2022* | University of Washington | Seattle, WA
Physics. Advised by J. Nathan Kutz.
MSc 2018 | University of Washington | Seattle, WA
Physics
BSc 2016 | The Ohio State University | Columbus, OH
Math, Physics

* Expected.

Work experience

2017-present | J. Nathan Kutz group | Seattle, WA
Thesis: Data-driven Methods for Quantum Optimal Control

2016-17 | Battelle Memorial Institute | Columbus, OH
Research associate developing software (C++, C#, F#, Python) for chemical and biological risk assessments.

2015 | SULI Internship, Lawrence Livermore National Lab. | Livermore, CA
Project: High-performance computing for simulation of heavy-ion collisions.

Awards & honors

2020 | NSF QISE-NET Fellowship
2014 | Phi Beta Kappa
2014 | The Ohio State Univ. Undergrad. Research Scholarship & International Research Grant
2011-2015 | The Ohio State Univ. Bruce W. Erickson Medalist Scholarship

Publications

5. **A. J. Goldschmidt**, J. L. DuBois, S. L. Bruton, J. N. Kutz.
Robust Quantum State Preparation with Model Predictive Control.
2021. In preparation†.
4. **A. J. Goldschmidt**, J. Kunert-Graf, A. C. Scott, Z. Tan, A. M. Dudley, J. N. Kutz.
Quantifying yeast colony morphologies with feature engineering from time-lapse photography.

2021. In preparation†.

3. **A. J. Goldschmidt**, E. Kaiser, J. DuBois, S. Bruton, N. Kutz.
Bilinear Dynamic Mode Decomposition for Quantum Control.
New J. Phys. 23, 033035 (2021).

2. J. Weil, V. Steinberg, J. Staudenmaier, L. G. Pang, D. Oliinychenko, J. Mohs, M. Kretz, T. Kehrenberg, **A. J. Goldschmidt**, B Bäuchle, J. Auvinen, M. Attems, H. Petersen
Particle production and equilibrium properties within a new hadron transport approach for heavy-ion collisions.
Phys. Rev. C 94, 054905 (2016).

1. **A. J. Goldschmidt**, Z. Qiu, C. Shen, U. Heinz
Collision geometry and flow in uranium + uranium collisions.
Phys. Rev. C 92, 044903 (2015)

† Preprint available upon request.

Software

2. **derivative** (readthedocs)
Python software. Optimal numerical differentiation of noisy time-series data, and a contribution to the open-source PySindy software (GitHub stars: >450).

1. **pyprotoclust** (readthedocs)
Cython software. Representative hierarchical clustering using minimax linkage. From J. Bien and R. Tibshirani. J Am Stat Assoc. 2011; 106(495): 1075–1084.

Presentations

7. Invited talk. SIAM Mechanistic Machine Learning and Digital Twins. San Diego, CA (2021).
6. Invited talk. SIAM Conference on Control and Its Applications. Online (2021).
5. Invited talk. SIAM Conference on Computational Science and Engineering. Online (2021).
4. Contributed talk. Spring Meeting of the APS Ohio-Region Section. Kent, OH (2015).
3. Invited talk. Workshop on Particle Correlations and Femtoscopy. Gyöngyös, Hungary (2014).
2. Poster. Quark Matter XXIV. Darmstadt, Germany (2014).
1. Contributed talk. Midwest Theory Get-Together. Argonne National Lab., IL (2013).

Leadership & service

2021 | Minisymposium at SIAM CSE 2021
Organizer: Data-Driven Methods for Quantum Dynamics and Control.

2018-19 | Career Development Org. for Grad. Physics at UW (website)
Organizer (2018, 2019) of a multi-day networking event with invited industry sponsors, speakers, and alumni guests.

2014-16 | The Ohio State Univ. Undergrad. Research Student Advisory Committee