

# ANDY GOLDSCHMIDT

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## Interests

Quantum control ♦ Physics-informed machine learning  
Multi-scale physics ♦ Dynamical systems

## Education

(expected) PhD 2022 | University of Washington  
Physics. Advised by J. Nathan Kutz.

MSc 2018 | University of Washington  
Physics

BSc 2016 | The Ohio State University  
Math and Physics

## Work

**2017-present | Nathan Kutz Group | Seattle, WA**  
Thesis: Data-driven Methods for Quantum Optimal Control

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

## Awards

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

**2020 | NSF QISE-NET Fellowship**

## Software

**derivative** ([readthedocs](#))  
Python software. Methods for optimal numerical differentiation of noisy time series data. Contribution to the open-source PySindy software (Stars: 434).

**pyprotoclust** ([readthedocs](#))  
Cython software. Representative hierarchical clustering using minimax linkage. From J. Bien and R. Tibshirani. *Hierarchical Clustering With Prototypes via Minimax Linkage*. J Am Stat Assoc. 2011; 106(495): 1075–1084.

## Papers

A. Goldschmidt, J. DuBois, S. Bruton, N. Kutz. **Robust Quantum State Preparation by Model Predictive Control**. [2021. In preparation]

A. Goldschmidt, J. Kunert-Graf, A. Dudley, N. Kutz. **Quantifying yeast colony morphologies with feature engineering from time-lapse photography**. [2021. In preparation.]

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

J. Weil, [and 12 others including A. Goldschmidt], **Particle production and equilibrium properties within a new hadron transport approach for heavy-ion collisions**. Phys. Rev. C 94, 054905 (2016)

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

## Talks

Invited talk . SIAM Mechanistic Machine Learning and Digital Twins. San Diego, CA (2021).

Invited talk . SIAM Conference on Control and Its Applications. Online (2021).

Minisymposium organizer. SIAM Conference on Computational Science and Engineering. Online (2021).

Invited talk. Workshop on Particle Correlations and Femtoscopy. Gyöngyös, Hungary (2014).

## Leadership

Career Development Organization for Graduate Physics at UW ([website](#)) Organizer (2018, 2019) of a multi-day networking event with invited industry sponsors, speakers, and alumni guests.