Charles Fieseler

Research Interests

Key Words: Dynamical systems, strongly interacting systems, data-driven discovery, control theory, network control, biophysics

Description: I apply data-driven techniques like Dynamic Mode Decomposition (DMD) and Sparse Identification of Nonlinear Dynamics (SINDy) to neural recordings in order to derive governing equations and discover network design and control principles.

Education

2015–present **PhD in Physics**, *University of Washington*, Advisor: J Nathan Kutz.

2009–2013 **B.S. in Physics and Math**, *University of Kentucky*.

Publications

[1] David Blyth, Jason Fry, Nadia Fomin, Ricardo Alarcon, L Pete Alonzi, Evan M Askanazi, Stefan Baeßler, Septimiu Balascuta, Libertad Barrón-Palos, Alex Barzilov, et al. First observation of p-odd γ asymmetry in polarized neutron capture on hydrogen. *arXiv preprint arXiv:1807.10192*, 2018.

[2] Charles Fieseler, James Kunert-Graf, and J Nathan Kutz. The control structure of the nematode caenorhabditis elegans: Neuro-sensory integration and proprioceptive feedback. *Journal of biomechanics*, 74:1–8, 2018.

[3] Charles Fieseler, Manuel Zimmer, and J Nathan Kutz. C elegans is approximately a proportional controller [in proceedings].

Fellowships

2015-present **National Science Foundation Graduate Research Fellow**, *University of Washington*.

Additional Research Experience

Computational

2012-2013 **Condensed Matter**, *University of Kentucky*.
Developed simulations for novel SU(N) symmetric materials.

Experimental

Summer 2010 **Oak Ridge National Lab**, *Knoxville, TN*.
Characterized detectors for NPDγ experiment.

Summer 2011 **Research Experience for Undergraduates**, *University of Washington*.
Developed new method for characterizing laser profiles.

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Teaching Experience

Physics

2015-2016 **Graduate Teaching Assistant**, *University of Washington*.
Teaching assistant for laboratory courses.

2013 **Undergraduate Teaching Assistant**, *University of Kentucky*.
Help develop a new active learning course for non-physics majors.

High School

2013–2015 **Assistant Language Teacher**, *Japanese Government*, Taragi, Kumamoto, Japan.
Non-English speaking work environment; taught high school English classes as an assistant and as a primary teacher; designed long-term curricula and test materials; cultural and science education outreach; prefectural-wide professional presentations.

Computer skills

Languages MATLAB (advanced), Python (intermediate), C/C++ (int.), Julia (int.)

Packages Latex (int.), Inkscape (int.)

Non-Academic Experience

Non-profit

2017–present **Board Member**, *Savoy Swing Club*, Seattle.
Run weekly dance event; safer spaces committee, dealing with legal and ethical issues.

2018–present **Co-founder**, *Coalition For Safer Spaces*, Seattle.
Formalize the response of the swing dance community to sexual assault allegations; proactively reduce other forms of discrimination and marginalization.

High School Teaching

2013–2015 **Assistant Language Teacher**, *Japanese Government*, Taragi, Kumamoto, Japan.
Non-English speaking work environment; taught high school English classes as an assistant and as a primary teacher; designed new long-term curricula; cultural and science education outreach.

Languages

English Native

Japanese Advanced *N2 Japanese Language Proficiency (second highest)*

References

Professors

- J Nathan Kutz
- Christopher Crawford

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