# Jeffrey Allen

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## Summary

Research Scientist with 10+ years of experience developing high-fidelity, physics-based models and data-driven algorithms for complex physical systems, often in optics and remote sensing. Expert in numerical methods, statistical modeling, signal/image processing, and integrating theory with real-world data. Passionate about bridging modeling and experimentation to drive actionable insights. Experienced in leading technical teams, mentoring, and communicating findings to technical and non-technical audiences. Active **Top Secret/SCI clearance**. Proficient in **Python, MATLAB**, and scientific computing frameworks.

## Experience

**Lockheed Martin**                                                                 *2014 – Present*
*Staff Research Scientist*

- Developed and deployed physics-based, data-anchored models to predict performance and optimize design of advanced optical and sensor systems
- Led modeling and quantitative analysis efforts across high-impact programs, collaborating with multidisciplinary teams and external stakeholders in government and private industry
- Built end-to-end data analysis pipelines for extracting insights from field and lab test data: cleaning and pre-processing large datasets, applying statistical inference to data and model results, and fitting and validating models against empirical data
- Applied techniques leveraging statistical inference, numerical linear algebra, signal/image processing, Fourier/spectral methods, PDE solvers, and optimization
- Mentored junior scientists and engineers; led internal learning sessions on computational physics
- Proactively explored ML frameworks to augment traditional modeling workflows; known for deepening mathematical intuition and learning cutting-edge techniques

## Education

**University of Wisconsin–Milwaukee**                                                2014
M.S. in Mathematics

**University of Wisconsin–Madison**                                                  2012
B.S. in Mathematics

## Technical Skills

**Languages:** Python, MATLAB, LaTeX
**Techniques:** Statistical modeling, numerical linear algebra, Fourier/spectral methods, PDE solvers, optimization, time-series analysis, computer vision
**Tools:** NumPy, SciPy, Pandas, scikit-learn, Matplotlib

# Publications

- J. Allen, M. Bold, L. Smith, *Modeling of ground based laser propagation to low Earth orbit object for maneuver*, Proceedings of SPIE Vol. 10408, 104080G (2017).

- J. Allen, *Incorporating Krylov Subspace Methods in the ETDRK4 Scheme*, Theses and Dissertations (2014), 392.

- J. Allen, B. Seeger, D. Unger, *On the size of the Resonant Set for the Products of 2x2 Matrices*, Involve, a Journal of Mathematics **4-2** (2011), 157–166.