Siddharth Maddali, Ph.D

Research Scientist, GPG/BBP Division (Broadband Plasma)







NOTE: Icons are clickable links.

Summary

Physicist specializing in Fourier optics, microscopy/imaging algorithms and software development for materials science research and the semiconductor industry.

Education

Ph.D, Applied physics

- Carnegie Mellon University

MS, Physics

- Carnegie Mellon University

M.Sc, Physics

— Indian Institute of Technology - Madras

B.Sc, Physics, mathematics, electronics

- Bangalore University

Pittsburgh, PA, USA

2010 - 2016

Pittsburgh, PA, USA

2009 - 2010

Chennai, India

2007 — 2009

Bengaluru, India

2004 - 2007

□□ Skills

Proficiency	Physics	Computation	Programming
& Research	Fourier optics, diffraction, microscopy, condensed matter physics	Linear algebra, imaging, reconstruction, signal processing, inverse problems	Python, MATLAB, development on Linux, scripting, automation
Expert	Quantum & statistical physics, mechanics, electromagnetism, acoustics	Statistics, probability, visualization, complex analysis	Parallel computing/HPC, GPU programming
☐ Functional	Semiconductors, Instrumentation/experimental design	Differential equations, machine learning, data science	C/C++, Linux sysadmin
☐ Elementary	Dynamical systems, field theory	Bayesian inference, uncertainty quantification	HTML, Javascript, CSS

□ Experience

KLA Corp. (KLA-Tencor)

Research Scientist: Broadband Plasma (BBP) Division

Milpitas, CA, USA Nov 2022 — present

- Optical wafer inspection with broadband illumination

Argonne National Laboratory

Staff Scientist: Materials Science Division

Chicago, IL, USA Oct 2019 — Oct 2022

- Imaging: Inverse problems for 3D nanoscale materials imaging using coherent X-ray probes.
- *Time-resolved studies*: Signal processing methods for XPCS at free electron laser facilities.
- $-\ \textit{Experiments} \colon \mathsf{POCs} \ \& \ \mathsf{demonstrations}$ for the above at APS/future APS-U instruments.
- Fundraising: Research grants (LDRD, DoE), APS, ESRF user-time proposals.
- *Dissemination/Outreach*: Publications, peer review, editorship, conferences, tech reports.
- Mentoring/Organization: Postdocs, students (unofficial), workshop planning/chairing.

Argonne National Laboratory

Post-doctoral researcher: Materials Science Division

Chicago, IL, USA Jan 2017 — Sep 2019

— Coherent X-ray diffraction -based 3D nanoscale materials imaging at very high beam energies.

National Energy Technology Laboratory Post-doctoral researcher: ORISE Fellow

Pittsburgh, PA, USA May 2016 — Nov 2016

— Machine learning -driven materials discovery applied to steel alloy data for optimized power plant components.

Carnegie Mellon University

Graduate student: Physics Dept.

Pittsburgh, PA, USA

Aug 2009 — Feb 2016

- Dissertation on mining meso-scale materials physics from high-energy synchrotron data.
- Teaching mechanics & electromagnetism to undergraduate science majors.

Awards & Grants

- ANL LDRD: Coherence-enhanced dark-field X-ray microscopy (PI; \$930,000).
- ANL LDRD: Detecting critical micro-structural processes with AI (PI, \$100,000).
- Oak Ridge Institute for Science and Education (ORISE) post-doctoral fellowship (2016).
- Indian Institute of Technology Madras Merit Scholarship (2007 2009).
- Bangalore University undergraduate rank 5 (2007).

☐ Hobbies & Activities

Swimming, hiking, biking, table tennis (ping-pong), squash.

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