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Dr. Siddharth Maddali

Assistant Scientist

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Education

- **Ph.D** in *physics* (2016, Carnegie Mellon University, Pittsburgh, PA)
- **M.S.** in *physics* (2010, Carnegie Mellon University, Pittsburgh, PA)
- **M.Sc** in *physics* (2009, Indian Institute of Technology - Mardas, Chennai, India)
- **B.Sc** in *physics* , *mathematics* , *electronics* (2007, Bangalore University, Bengaluru, India)

Experience

- **Assistant Scientist**, Synchrotron radiation studies of materials (Argonne National Laboratory, ***Oct 2019 - present***)
- **Post-doctoral researcher**, Coherent diffraction imaging of materials structure (Argonne National Laboratory, ***Jan 2017 - Sept 2019***)
- **Post-doctoral researcher**, Materials discovery with machine learning (National Energy Technology Laboratory, ***May 2016 - Sept 2016***)
- **Graduate research assistant**, Department of physics (Carnegie Mellon University, ***2012 - May 2016***)
- **Graduate teaching assistant**, Department of physics (Carnegie Mellon University, ***2009 - 2012***)
- **Intern**, Department of physics (National University of Singapore, ***May 2008***)

Research interests

- X-ray sciences, direct and diffraction-based imaging

  - Coherent diffraction imaging of tensor fields
  - High-energy diffraction microscopy
  - Multiscale characterization with x-rays
- Condensed matter physics
  - Mesoscale and nanoscale structure and lattice strain
  - Interfacial dynamics in polycrystals
- Computational methods in physics
  - Inverse problems
  - Signal processing and optimization
  - Data science, machine learning, AI-based control
  - High-performance computing and scientific software development

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Presentations

Invited

1. Advanced probes and data analytics for enabling single-pulse imaging under dynamic conditions, Santa Fe, NM (August 2019)
2. The Minerals, Metals and Materials Society (TMS), San Antonio, TX (March 2019)
3. Department of physics, Carnegie Mellon University, Pittsburgh, PA (May 2018)

Select contributed

1. Gordon X-ray Science Seminar, Easton, MA (July-August 2019: seminar & poster; July-August 2017: discussion leader)
2. Coherence: International workshop on phase retrieval and coherent scattering, Port Jefferson, NY (June 2018)
3. Materials Research Society, Phoenix, AZ (April 2018)
4. The Minerals, Metals and Materials Society (TMS), Orlando, FL (March 2015: Poster)
5. Materials Science and Technology (MS&T), Pittsburgh, PA (October 2014: seminar; October 2012: poster)

Awards and honors

- Oak Ridge Institute for Science and Education (ORISE) post-doctoral fellowship (2016)
- The Indian Institute of Technology Madras Freeship (2007-2009)

- Bangalore University rank 5 (2007)

Professional activity

Society membership

Americal Physical Society (APS), Materials Research Society (MRS), The Minerals, Metals and Materials Society (TMS)

Peer review

Philosophical Magazine, Computational Materials Science, New Journal of Physics, Optics Letters, Physical Review X

Organization

- Advanced Photon Source (APS) User Workshop: *Advanced in Phase Retrieval Methods for High-Resolution X-ray Imaging*, Argonne National Laboratory, Lemont IL (April 2020)
- Workshop: *Advanced Probes and Data Analytics for Enabling Single Pulse Imaging Under Dynamic Conditions*, Santa Fe (August 2019)

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[15] N. Krishnamurthy, S. Maddali, A. Verma et al., "Data analytics for alloy qualification", National Energy technology Laboratory, number: NETL-PUB-21550, 2017. online

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