

Prashant Padmanabhan

Education

| | |
|--|----------|
| Doctor of Philosophy in Applied Physics <i>University of Michigan, Ann Arbor MI, USA</i> | May 2014 |
| Master of Science in Electrical Engineering (Optics and Photonics) <i>University of Michigan, Ann Arbor MI, USA</i> | Aug 2014 |
| Bachelor of Science in Engineering Physics (MEMS Concentration) <i>University of Michigan, Ann Arbor MI, USA</i> | Apr 2006 |

Research & Work Experience

Staff Scientist · Los Alamos National Laboratory (LANL), Los Alamos, NM USA 2021-Present

- ▶ Exploring higher order orbital angular momentum beam generation using 2D materials and spatial pulse shaping
- ▶ Developing intense pulsed XUV source for XUV pump-optical probe spectroscopy
- ▶ Driving coherent lattice and spin dynamics in emerging 2D magnetic materials
- ▶ Plan and conduct experiments for collaborative external user research projects that utilize the various spectroscopy systems at the Center for Integrated Nanotechnologies
- ▶ Work with external users, directing the development of experimental protocols, analysis of data, and numerical modeling of observed phenomena
- ▶ Provide LSO and laser support for CINT and MPA

Postdoctoral Research Associate · Los Alamos National Laboratory (LANL), Los Alamos, NM USA 2018-2021

- ▶ Conduct ultrafast laser-based experiments demonstrating strong transient spin-lattice coupling in 2D van der Waals (vdW) magnets, giant second harmonic generation (SHG) in polar vdW semiconductors, terahertz (THz) emission from quantized photocurrents in topological chiral crystals, and THz radiation control using patterned graphene metasurfaces
- ▶ Designed, built, and currently maintain a variety of high precision visible, infrared, and THz ultrafast spectroscopy systems (THz emission, transient reflectivity, time-resolved magneto-optical Kerr effect microscopy, time-resolved SHG microscopy, and transient super-continuum microscopy)

Postdoctoral Research Scientist · II. Physics Institute, University of Cologne, Cologne, Germany 2014-2018

- ▶ Demonstrated the coherent optical manipulation of skyrmion lattice and magnetic cycloid spin textures in the multiferroic GaV_4S_8 using time-resolved magneto-optical Kerr effect spectroscopy and time-domain micro-magnetic simulations
- ▶ Studied electron-phonon scattering in the incipient ferroelectric PbTe using time-resolved super-continuum spectroscopy, time-resolved ARPES, and ab-initio vibrational structure calculations (Quantum Espresso)
- ▶ Contributed to a German Physical Society (DPG) proposal that led to the successful development of a research center focusing on the control and dynamics of quantum materials at the University of Cologne (CRC1238)
- ▶ Supervised three graduate students, who successfully completed their degrees, and taught graduate level courses in condensed matter physics and optics

PhD Candidate · Department of Physics, University of Michigan, Ann Arbor, MI USA 2007-2013

- ▶ Demonstrated the coherent excitation of massless plasmon standing-waves supported by an electron-hole plasma in an AlAs/GaAs heterostructure, driven by impulsive stimulated Raman scattering, using ultrafast and spontaneous Raman scattering spectroscopies and quasi-empirical theory
- ▶ Fabricated micro-fluidic devices for controlled nitric oxide release using micro-fluidic simulations (COMSOL), finite element analysis (ANSYS), and micro-fabrication techniques

Awards

| | |
|--|-----------|
| SFB 1238 Independence Award | 2016 |
| Zell Lurie Opportunity Grant | 2008 |
| University of Michigan Regent's Fellow | 2006-2008 |