Prashanth S. Venkataram (PSV)

Curriculum Vitae

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psv2.github.io

Education

- **Princeton University** — Princeton, NJ
  M. A. 2016, Ph. D. 2020 (GPA: 4.0/4) — *2014 September – 2020 June*
  - Electrical Engineering (advisor: Alejandro W. Rodriguez)
  - Thesis: Scattering Theory in Fluctuational Electromagnetics at the Nanoscale: From Numerical Methods to Fundamental Limits
- **Massachusetts Institute of Technology** — Cambridge, MA
  S. B. 2014 (GPA: 4.9/5) — *2010 September – 2014 June*
  - Major: Physics (Focused Option, advisor: Jesse D. Thaler), Minor: Economics
  - Thesis: Computational Investigations of Nanophotonic Systems (advisor: Marin Soljačić)

Work Experience

- **University of California, Davis** — Davis, CA
  Postdoctoral Researcher — *2020 September – [present]*

Grants

- **UC Statewide Transportation Research Program** — Davis, CA
  Principal Investigator — *2022 October – 2023 September*
- **Caltrans/Pacific Southwest Region** — Davis, CA
  Principal Investigator — *2023 July – 2024 June*
- **US DOT/Caltrans/Pacific Southwest Region** — Davis, CA
  Principal Investigator — *2021 October – 2022 September*

Journal Publications

- J. A. Flynn, G. Circella, and **PSV**, "Transportation and Neighborhood Priorities of Californians with Disabilities: Focus Group Findings", under review
- **PSV**, J. A. Flynn, G. Circella, J. M. Barajas, D. A. Sperling, and S. Handy, "Framing availability and usability of transportation for people with disabilities", under review
- S.-A. Biehs, R. Messina, **PSV**, A. W. Rodriguez, J. C. Cuevas, and P. Ben-Abdallah, "Near-field Radiative Heat Transfer in Many-Body Systems", Rev. Mod. Phys. **93**, 025009 (2021)
- **PSV**, S. Molesky, J. C. Cuevas, and A. W. Rodriguez, "Channel-based algebraic limits to conductive heat transfer", Phys. Rev. B **102**, 085405 (2020)
- **PSV**, R. Messina, J. C. Cuevas, P. Ben-Abdallah, and A. W. Rodriguez, "Mechanical relations between conductive and radiative heat transfer", Phys. Rev. B **102**, 085404 (2020)
- **PSV**, J. Hermann, A. Tkatchenko, and A. W. Rodriguez, "Fluctuational electrodynamics in atomic and macroscopic systems: van der Waals interactions and radiative heat transfer", Phys. Rev. B **102**, 085403 (2020)
- **PSV**, S. Molesky, P. Chao, and A. W. Rodriguez, "Fundamental limits to attractive and repulsive Casimir–Polder forces", Phys. Rev. A **101**, 052115 (2020)

- **PSV**, S. Molesky, W. Jin, and A. W. Rodriguez, "Fundamental Limits to Radiative Heat Transfer: The Limited Role of Nanostructuring in the Near-Field", Phys. Rev. Lett. **124**, 013904 (2020)
- S. Molesky*, **PSV***, W. Jin, and A. W. Rodriguez, "Fundamental limits to radiative heat transfer: Theory", Phys. Rev. B **101**, 035408 (2020) *equal contributions
- S. Molesky, W. Jin, **PSV**, and A. W. Rodriguez, "**T** Operator Bounds on Angle-Integrated Absorption and Thermal Radiation for Arbitrary Objects", Phys. Rev. Lett. **122**, 257401 (2019)
- **PSV**, J. Hermann, T. J. Vongkovit, A. Tkatchenko, and A. W. Rodriguez, "Impact of Nuclear Vibrations on van der Waals and Casimir Interactions at Zero and Finite Temperature", Sci. Adv. **5**, eaaw0456 (2019)
- **PSV**, J. Hermann, A. Tkatchenko, and A. W. Rodriguez, "Phonon-Polariton Mediated Thermal Radiation and Heat Transfer among Molecules and Macroscopic Bodies: Nonlocal Electromagnetic Response at Mesoscopic Scales", Phys. Rev. Lett. **121**, 045901 (2018)
- **PSV**, J. Hermann, A. Tkatchenko, and A. W. Rodriguez, "Unifying Microscopic and Continuum Treatments of van der Waals and Casimir Interactions", Phys. Rev. Lett. **118**, 266802 (2017)
- **PSV**, J. D. Whitton, and A. W. Rodriguez, "Nonadditivity of van der Waals forces on liquid surfaces", Phys. Rev. E **94**, 030801(R) (2016)

Presentations

- **PSV**, "Disability, Transportation, and Accessibility: New Trends and Longstanding Challenges in the US", UC Berkeley Institute of Transportation Studies 2023 February (Invited)
- J. A. Flynn, G. Circella, and **PSV**, "Transportation and Neighborhood Priorities of Californians with Disabilities: Focus Group Findings", 2023 TRB Annual Meeting
- **PSV**, "Transportation Challenges facing Adults with Disabilities in California", 2022 Future Mobility, Automation, and Transit Research Workshop (Invited)
- **PSV**, "Disability and Physics Laboratories", CU Boulder Physics Education Research 2022 November (Invited)
- **PSV**, "Transportation Challenges facing Adults with Disabilities in California", TRANSED 2022
- **PSV**, "Disability and Latent Demand for Transportation in California", 2022 Caltrans Planning Horizons
- **PSV**, G. Circella, A. L. Brown, and D. Sperling, "Micro- and Macro-accessibility in Transportation for People with Disabilities", 2022 TRB Annual Meeting
- **PSV**, "Universal Design and Mobility", 2021 Asilomar Conference 3 Revolutions Side Event (Invited)
- **PSV**, S. Molesky, W. Jin, and A. W. Rodriguez, "Approaching the fundamental limits of heat transfer at the nanoscale: the surprisingly limited role of inverse design", META 2019 (Invited)
- **PSV**, "Mesoscale fluctuational electrodynamics: modeling and bounds, from molecules to continuous media", Université du Luxembourg 2019 July (Invited)
- **PSV**, J. Hermann, T. J. Vongkovit, A. Tkatchenko, and A. W. Rodriguez, "Impact of nuclear vibrations on van der Waals interactions and radiative heat transfer in graphene", 2019 APS March Meeting

- **PSV**, J. Hermann, A. Tkatchenko, and A. W. Rodriguez, "Van der Waals Interactions and Radiative Thermal Energy Exchange among Molecules and Macroscopic Bodies", 2018 APS March Meeting
- **PSV**, J. Hermann, A. Tkatchenko, and A. W. Rodriguez, "Unifying Microscopic and Continuum Treatments of van der Waals and Casimir Interactions", 2017 APS March Meeting

Reports and Policy Briefs

- **PSV**, J. A. Flynn, G. Circella, and D. Sperling, "Challenges facing people with disabilities in private vehicular transportation in the United States of America", UC Davis Institute of Transportation Studies report (2023)
- **PSV**, J. A. Flynn, G. Circella, and D. Sperling, "Challenges faced by people with disabilities in public and active transportation systems in the United States of America", UC Davis Institute of Transportation Studies report (2023)
- J. A. Flynn, G. Circella, and **PSV**, "People with Disabilities in California Want Density, Improved Streets and Buses to Help Pedestrians, Bus Riders, and Car Drivers", UC Davis Institute of Transportation Studies policy brief (2023)
- J. A. Flynn, G. Circella, and **PSV**, "Disability, Transportation, Activity Performance, and Neighborhood Features in California: Conducting a Focus Group and Designing a Survey", UC Davis Institute of Transportation Studies report (2023)

Scholarships, Awards, and Honors

- **Chancellor's Postdoctoral Fellowship** — Fellow
  University of California, Davis Award — *2020 September – 2022 August*
- **Bede Liu Best Dissertation Award** — Winner
  Princeton University Dep't of Electrical Engineering Award — *2020 May*
- **SEAS Award for Excellence** — Winner
  Princeton University School of Engineering and Applied Science Award — *2018 October*
- **Yan Huo *94 Graduate Fellowship** — Fellow
  Princeton University Dep't of Electrical Engineering Fellowship — *2017 September – 2018 June*
- **Early PhD Career Award** — Winner
  Princeton University Dep't of Electrical Engineering Award — *2016 May*
- **National Science Foundation GRFP** — Fellow
  National Graduate Fellowship — *2014 September – 2019 August*
- **Sigma Pi Sigma** — Member
  National Physics Honors Society — *Inducted 2014 June*
- **Phi Beta Kappa** — Member
  National Academic Honors Society — *Inducted 2014 June*
- **Selfless Service to Undergraduate Teaching by an Undergraduate Award** — MIT Physics Department Award Winner
  For contributions to 8.033 – Relativity lecture notes — *2013 September*
- **AFCEA NOVA Scholarship** — Winner
  Regional Scholarship — *2013 & 2014 May*
- **Xerox Technical Minority Scholarship** — Winner
  National Scholarship — *2012 & 2013 & 2014 January*

- **Smiths Industries Scholarship** Winner
  Companywide Scholarship *2011 January*

Skills

- Designing & conducting surveys & focus groups online
- Engagement with dozens of community-based organizations representing people with disabilities & other marginalized groups
- Engagement with federal & state-level regulatory agencies and multiple posts on the blog Streetsblog (with Mollie D'Agostino) about transportation policy for people with disabilities
- Technical: Julia, MATLAB, LaTeX, numerical analysis

Leadership Activities

- University of California, Davis Institute of Transportation Studies: advised graduate students Justin A. Flynn (2021 October–2023 September) and Sifat Bhuiya (2022 October–2023 September)
- Featured on episodes of podcasts Arrested Mobility as well as Disability Rap for expertise in transportation & disability (2022)
- Princeton University SmartDrivingCar Summit panelist & discussant (2019, 2021, 2022)
- Princeton University Department of Electrical Engineering: mentored undergraduate research students Jeremy D. Whitton (2015), Teerit J. Vongkovit (2018), and Jason Necaise (2019)
- Princeton University School of Engineering and Applied Science: recruited students for PhD program at 2018 Society of Hispanic Professional Engineers (SHPE) Convention
- Princeton University Department of Electrical Engineering: panelist for prospective graduate student and new student fellowship panels (2016, 2017)
- MIT Society of Physics Students (SPS): Publicity Chair (2011 June–2013 May), Secretary (2013 June–2014 May), organized Lightning Lectures, weekly colloquium lunches, publicized SPS events
- 2013 MIT Diversity Summit panelist (Disability as an Aspect of Diversity)
- MIT Department of Physics: represented department at various campus-wide undergraduate major and research expositions

Educational Activities

- Guest lectured about transportation for people with disabilities for Daniel Sperling's undergraduate class and Susan Handy's graduate and high school class on public policy (2021)
- TA for Princeton class ELE 511 – Quantum Mechanics with Applications (2017 & 2018 fall): organized and led precepts, held office hours, and graded assignments & exams
- TA for Princeton class EGR 154 – Linear Systems (2018 spring): organized and led help sessions & office hours, and graded assignments
- Graded homework for MIT classes 8.012 – Physics I (2011 fall) and 8.022 – Physics II (2012 spring)
- Typeset MIT course notes for physics classes 8.033 – Relativity, 8.04 – Quantum Physics I, and 8.09 – Classical Mechanics III for use on MIT OpenCourseWare
- Online tutoring: InstaEDU/Chegg Tutors (high school through graduate school STEM subjects + economics, 2014 January–2017 December), Tutorspree (high school JAVA, 2012 August–2013 April)
- STEM educational videos: MIT UROP Spotlight (2013 January), MIT-K12 Initiative (2013–2014 January, 3 videos)