Vivian Miranda

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ACADEMIC EMPLOYMENT

- Assistant Professor, C.N. Yang Institute of Theoretical Physics — Feb 2022 - present
- Senior Research Associate, **The University of Arizona** — May 2021 - Dec. 2021
- Postdoctoral Research Associate, **The University of Arizona** — Sept. 2018 - May 2021
- Postdoctoral Fellow, **The University of Pennsylvania** — Sept. 2015 - Aug.2018

EDUCATION

- Ph.D., Astrophysics, **The University of Chicago** — 2010-2015
  Advisor: Prof. Wayne Hu
- M.S., Master of Science, **The University of Chicago** — 2010-2011
- M.S., Physics, **Federal University of Rio de Janeiro (UFRJ)** — 2008-2010
  Advisor: Prof. Ioav Waga
- B.S., Physics, **Federal University of Rio de Janeiro (UFRJ)** — 2004-2008
  Advisor: Prof. Ioav Waga

FELLOWSHIPS AND AWARDS

- **2025 Stony Brook Trustees Faculty Award**[1], 2025
  Prestigious award that recognizes promising early-career faculty for their significant contributions to research, scholarship, and art-making.
- **Ben Barres Fellowship Award**[2], 2021
  Award for the professional development of trans, intersex, and non-binary graduate students and post-doctoral fellows in STEM.
- **Leona Woods Distinguished Postdoctoral Lectureship Award**[3], 2019
  Prestigious Prize granted by the Brookhaven National Laboratory.
- **Schramm Fellowship**[4]**, 2014**
  Prestigious Fellowship granted by the University of Chicago.
- **Nathan Sugarman Award for Excellence in Graduate Student Research**[5], 2014
  Prestigious Prize granted by the University of Chicago.
- **Fulbright Fellowship**, 2010-2014
  Prestigious Fellowship granted by the Department of State
- **McCormick Fellowship**, 2010-2012
  Prestigious Fellowship granted by the University of Chicago.

[1] https://news.stonybrook.edu/university/five-early-career-faculty-win-stony-brook-trustees-faculty-awards/
[2] https://www.outtoinnovate.org/assets/docs/PR/2021-03-03_%202021-Out-to-Innovate-Ben-Barres-Fellowship-Awardees-Announced.pdf
[3] https://www.bnl.gov/newsroom/news.php?a=114332
[4] https://astro.uchicago.edu/news/news_2014.php
[5] https://news.uchicago.edu/story/fermi-institute-announces-recipients-nathan-sugarman-research-awards. PS: Vinicius Miranda is my passport name.

- **FAPERJ Scholarship Award** (*FAPERJ Nota 10*), 2009
  Competitive fellowships awarded by the Rio de Janeiro State Science Agency (FAPERJ).

CURRENT STUDENTS

- **Victoria Lloyd**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook.
- **Evan Saraivanov**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook.
- **Yijie Zhu**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook.
- **Bela Arqwen**, Master Student, Department of Physics and Astronomy, Stony Brook.
- **Iago Lopes**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook (start 09/2026).
- **João Gabriel**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook (start 09/2026).

CURRENT POSTDOCS

- **Rafael**, Ph.D. from University of Pennsylvania (start 11/2026).

FORMER POSTDOCS

- **Joshua Kable**, Ph.D. from John Hopkins University. Dr. Kable moved to become a senior postdoc at a joint position between Rutgers and Princeton.

FORMER GRADUATE STUDENTS

- **Amritpal Nijjar**, Master's Student, Department of Physics and Astronomy, Stony Brook University. Amritpal Nijjar transitioned to a data science career.
- **Jonathan Gordon**, Ph.D. Student, Department of Physics and Astronomy, Stony Brook University, 2022-2024. Dr. Gordon transitioned to a data science career.
- **Evan Saraivanov**, Master's Student, Department of Physics and Astronomy, Stony Brook University, 2022-2023. Mr. Saraivanov became a Ph.D. student at Stony Brook University in August 2023.
- **Huangfei Xiao**, Master's Student, Department of Physics and Astronomy, Stony Brook University, 2022-2023. Ms. Xiao became a Ph.D. student at Florida State University in August 2023.
- **KunHao Zhong**, Master's Student, Department of Physics and Astronomy, Stony Brook University, 2022-2023. Mr. Zhong became a Ph.D. student at the University of Pennsylvania in August 2023.
- **Diogo de Souza** (co-advised with Prof. Rogério Rosenfeld), Ph.D. Student, State University of São Paulo, 2021-2024. Mr. De Souza began a junior postdoctoral position at NASA JPL in September 2024.
- **João Rebouças** (co-advised with Prof. Rogério Rosenfeld), Ph.D. Student, State University of São Paulo, 2021-2024. Mr. Rebouças became a junior postdoc on a joint offer between the Brazilian Center for Physics Research and the University of Arizona (1+3 years) .

FORMER UNDERGRADUATE STUDENTS

- **Megan Schlogl**, Undergraduate at Rensselaer Polytechnic Institute (NSF-REU), 2025-2026. Ms. Megan Schlogl became a Ph.D. student at the University of Pennsylvania.
- **James Caputi**, Undergraduate Research and Creative Activities (URECA) Student, Department of Physics and Astronomy, Stony Brook University, 2022-2023. Mr. James Caputi became a Ph.D. student at Stony Brook University in August 2023.

SUCCESSFUL PROPOSALS

- **Pipeline Scientist of DESC-LSST**, SLAC, 2020-2021 (total amount: US$294,422)
- **Roman Project Infrastructure Team** named *A Roman Project Infrastructure Team to Support Cosmological Measurements with Type Ia Supernovae*, Institutional Co-I, 2024-2029
- **Roman Project Infrastructured Team** named *Maximizing Cosmological Science with the Roman High Latitude Imaging Survey*, Institutional Co-I, 2024-2029

SERVICE

- **NASA Cosmic Structure Science Interest Group (CoS SIG)**
  - CoS SIG Chairs (Jan 2024 - Dec 2026) https://pcos.gsfc.nasa.gov/sigs/cossig/cossig-chairs.php
- **NASA Physics of the Cosmos Program Analysis Group (PhysPAG)**
  - Executive Committee (Jan 2024 - Dec 2026) https://pcos.gsfc.nasa.gov/physpag/ec/physpag-ec.php
- **Snowmass 2021**, Co-convener of the cosmic frontier working group CF6: Dark and Cosmic Acceleration: Complementarity of Probes and New Facilities, 2022
- **NSF Grant Reviewer**, 2022
- **NASA ADAP Grant Reviewer**, 2021, 2022, 2023
- **Physics and Astronomy Committees at Stony Brook University**
  - Graduate Master's Program Committee (2022-present)
  - Diversity, Underrepresented Minority (2022-present)
  - Firewall (temporary Committee) & IT (2024-2024)
  - Library Committee (2024-present)
  - Research Experiences for Undergraduates (REU) Admission Committee (2023-present)
  - Graduate Program Admission Committee (2025-present)
  - Latin American and Caribbean Studies (LACS) Summer Fellowships (award committee) (2023 and 2025)
- **Astronomy Committees at the University of Arizona**
  - Graduate Program Admissions Committee (2021-2021)

PUBLICATIONS

E. Saraivanov, H. Rubira, **V. Miranda**, T. Eifler, "Towards the Two-Loop EFTofLSS in Galaxy Lensing Surveys", *arXiv:2603.13031*.

Diogo de Souza, T. Eifler, **V. Miranda**, Chun-Hao To, B. Andrews, K. Markovič, E. Huff, M. Troxel O. Doré, "Modeling Redshift Uncertainties in Roman Weak Lensing Cosmology", *arXiv:2602.09230*.

K. Cao, D. H. Weinberg, **V. Miranda**, N. Dalal, T. Eifler. J. Xu, H. Bowden, "Fisher Forecasts for Cosmological Yields from 3x2pt Analysis of the Roman Space Telescope High Latitude Imaging Survey", *arXiv:2601.00438*.

J. Xu, T. Eifler, **V. Miranda**, E. Krause, J. Salcido. I. McCarthy, "Constraining baryonic feedback and cosmology from DES Y3 and Planck PR4 6×2pt data. I. CDM models", *arXiv:2510.25596*.

R. Liu, Y. Zhu, **V. Miranda**, W. Hu, "Phantom Mirage from Axion Dark Energy", *arXiv:2510.14957*

R. Kessler, R. Hounsell, B. Joshi, D. Rubin, M. Saki, R. Chen, **V. Miranda**, B. Rose, "Cosmology Constraints from Type Ia Supernova Simulations of the Nancy Grace Roman Space Telescope Strategy Recommended by the High Latitude Time Domain Survey Definition Committee", *arXiv:2506.04402*

Y. Zhu, E. Saraivanov, J. Kable, A. Sofia Giannakopoulou, A. Nijjar, **V. Miranda**, M. Bonici, T. Eifler, E. Krause, "Attention-Based Neural Network Emulators for Multi-Probe Data Vectors Part III: Modeling The Next Generation Surveys", *arXiv:2505.22574*

X. TZ Tang, D. Brout, T. Karwal, C. Chang, **V. Miranda** and M. Vincenzi, "Uniting the Observed Dynamical Dark Energy Preference with the Discrepancies in Ω_m and H_0 Across Cosmological Probes", *Astrophys.J.Lett. 983 (2025) 1, L27*.

T. Eifler, X. Fang, E. Krause, C. Hirata, J. Xu, K. Benabed, S. Ferraro, **V. Miranda** and others, "Cosmology from weak lensing, galaxy clustering, CMB lensing and tSZ: II. Optimizing Roman survey design for CMB cross-correlation science", *arXiv:2411.04088*.

A. Aires, N. Kokron, R. Rosenfeld, F. Andrade-Oliveira, and **V. Miranda**, "Mitigation of nonlinear galaxy bias with a theoretical-error likelihood ", *Journal of Cosmology and Astroparticle Physics 04 (2025) 070* .

J. Rebouças, D. H.F. de Souza, K. Zhong, **V. Miranda**, and R. Rosenfeld, "Investigating Late-Time Dark Energy and Massive Neutrinos in Light of DESI Y1 BAO", *Journal of Cosmology and Astroparticle Physics n. 02, p. 024, 2025*.

K. Berghaus, J. A. Kable, **V. Miranda**, "Quantifying Scalar Field Dynamics with DESI 2024 Y1 BAO measurements", *Phys. Rev. D v.110, no.10, p.103524, 2024*.

J. Gordon, B. F. de Aguiar, J. Rebouças, G. Brando, F. Falciano, **V. Miranda**, K. Koyama, H. A. Winther, "Modeling nonlinear scales with COLA: preparing for LSST-Y1", *Phys. Rev. D v.110, no.8, p.083529, 2024*.

J. A. Kable, **V. Miranda**, "Sound Horizon Independent Constraints on Early Dark Energy: The Role of Supernova Data", *Journal of Cosmology and Astroparticle Physics n. 10, p. 011, 2024*

S. Boruah, T. Eifler, **V. Miranda**, E. Farah, J. Motka, E. Krause, X. Fang, P. Rogozenski, and the LSST Collaboration, "Machine Learning LSST 3x2pt analyses – forecasting the impact of systematics on cosmological constraints using neural networks", *arXiv:2403.11797*

E. Saraivanov, K. Zhong, **V. Miranda**, S. Boruah, T. Eifler, E. Krause, "Attention-Based Neural Network Emulators for Multi-Probe Data Vectors Part II: Assessing Tension Metrics", *Phys. Rev. D v.111, no.12, p.123520, 2025*

K. Zhong, E. Saraivanov, J. Caputi, **V. Miranda**, S. Boruah, T. Eifler, E. Krause, "Attention-based Neural Network Emulators for Multi-Probe Data Vectors Part I: Forecasting the Growth-Geometry split", *Phys. Rev. D v.111, no.12, p.123519, 2025*

J. Xu, T. Eifler, **V. Miranda**, X. Fang, E. Saraivanov, E. Krause, HJ Huang, K. Benabed, K. Zhong, "Constraining Baryonic Physics with DES Y1 and Planck data – Combining Galaxy Clustering, Weak Lensing, and CMB Lensing", *Phys. Rev. D v.110, no.6, p.063532, 2024.*

K. Berghaus, T. Karwal, **V. Miranda** and T. Brinckmann, "The Cosmology of Dark Energy Radiation", *Phys. Rev. D v.110, no.6, p.063557, 2024.*

P. Rogozenski, E. Krause, and **V. Miranda**, "Modeling Neutrino-Induced Scale-Dependent Galaxy Clustering for Photometric Galaxy Surveys", *Journal of Cosmology and Astroparticle Physics n.04, p.076, 2024.*

X. Fang, E. Krause, T. Eifler, S. Ferraro, K. Benabed, Pranjal R. S., E. Ayçoberry, Y. Dubois, **V. Miranda**, "Cosmology from weak lensing, galaxy clustering, CMB lensing and tSZ: I. 10x2pt Modelling Methodology", *Mon. Not. Roy. Astron. Soc., v.527, p.9581–9593, 2023.*

J. Rebouças, J. Gordon, D. H.F. de Souza, K. Zhong, **V. Miranda**, R. Rosenfeld, T. Eifler, E. Krause "Early dark energy constraints with late-time expansion marginalization", *Journal of Cosmology and Astroparticle Physics n. 02, p. 042, 2024.*

K. Zhong, E. Saraivanov, **V. Miranda** , J. Xu, T. Eifler, E. Krause "Growth and geometry split in light of the DES-Y3 survey", *Phys. Rev. D v.107, no.12, p.123529, 2023.*

S. Boruah, T. Eifler, **V. Miranda**, S. Krishanth P. M, "Accelerating cosmological inference with Gaussian processes and neural networks – an application to LSST Y1 weak lensing and galaxy clustering", *Mon. Not. Roy. Astron. Soc., v.518, p.4818–4831, 2022.*

M. Moreira, F. Andrade-Oliveira, X. Fang, H. Huang, E. Krause, **V. Miranda**, R. Rosenfeld, M. Simonovic, "Mitigating baryonic effects with a theoretical error covariance," *Mon. Not. Roy. Astron. Soc., v.505, p.5592-5601, 2021.*

J. Muir, E. Baxter, **V. Miranda** and the DES Collaboration, "DES Y1 results: Splitting growth and geometry to test ΛCDM", *Phys. Rev. D v.103, no.2, 023528, 2021.*

V. Miranda, P. Rogozenski, E. Krause, "Interpreting Internal Consistency of DES Measurements", *Mon. Not. Roy. Astron. Soc., v.509, p.5218-5230, 2021.*

T. Eifler, H. Miyatake, E. Krause, C. Heinrich, **V. Miranda** *et al*, "Cosmology with the Wide-Field Infrared Survey Telescope – Multi-Probe Strategies", *Mon. Not. Roy. Astron. Soc., v.507, p.1746–1761, 2021.*

T. Eifler, M. Simet, E. Krause, C. Hirata, H. Huang, X. Fang, **V. Miranda** *et al.*, "Cosmology with the Wide-Field Infrared Survey Telescope – Synergies with the Rubin Observatory Legacy Survey of Space and Time", *Mon. Not. Roy. Astron. Soc., v.507, p.1514–1527, 2021.*

S. Dhawan, D. Brout, D. Scolnic, A. Goobar, A.G. Riess, **V. Miranda**, "Cosmological model insensitivity of local H0 from the Cepheid distance ladder", *Phys. Rev. D v.100, no.6, p.063504, 2019.*

A. Rivero, **V. Miranda**, C. Dvorkin, "Observable Predictions for Massive-Neutrino Cosmologies with Model-Independent Dark Energy", *Phys. Rev. D v.100, no.6, p.063504, 2019.*

DES Collaboration (including **V. Miranda**), "First Cosmology Results using Type Ia Supernovae from the Dark Energy Survey: Constraints on Cosmological Parameters", *The Astrophysical Journal* **872***, 2019.*

DES Collaboration (including **V. Miranda**), "First Cosmology Results Using Type Ia Supernovae From the Dark Energy Survey: Analysis, Systematic Uncertainties, and Validation ", *The Astrophysical Journal* **874***, 2019.*

DES Collaboration (including **V. Miranda**), "Dark Energy Survey Year 1 Results: Constraints on Extended Cosmological Models from Galaxy Clustering and Weak Lensing ", *Phys. Rev. D v.99, no.12, p.123505, 2019.*

G. Obied, Cora Dvorkin, Chen Heinrich, Wayne Hu, **V. Miranda**, Inflationary versus Reionization features from Planck 2015 data, *Phys. Rev. D v.98, no.4, p.043518, 2018.*

J. Vega-Ferrero, J.M. Diego, **V. Miranda**, G.M. Bernstein, The Hubble constant from SN Refsdal, *The Astrophysical Journal Letters* **853** *(2018) no.2, L31.*

V. Miranda, C. Dvorkin, "Model-Independent Predictions for Smooth Cosmic Acceleration Scenarios ", *Phys. Rev. D v.98, no.4, p.043537, 2018.*

V. Miranda, C. Gonzalez, E. Krause & M. Trodden, "Finding structure in the dark: coupled dark energy, weak lensing, and the mildly nonlinear regime", *Phys. Rev. D v.97, no.6, p.063511, 2018.*

DES Collaboration (including **V. Miranda**), "Dark Energy Survey Year 1 Results: Cosmological Constraints from Galaxy Clustering and Weak Lensing", *Phys. Rev. D v.98, no.4, p.043526, 2018.*

E. Krause & DES Collaboration (including **V. Miranda**), "Dark Energy Survey Year 1 Results: Multi-Probe Methodology and Simulated Likelihood Analyses", *arXiv:1707.05694*

G. Obied, C. Dvorkin, Chen Heinrich, W. Hu & **V. Miranda** , "Inflationary Features and Shifts in Cosmological Parameters from Planck 2015 Data", *Phys. Rev. D v.96, no.8, p.083526, 2017.*

R. Hounsell, D. Scolnic, R. Foley, R. Kessler & **V. Miranda** and others, "Simulations of the WFIRST Supernova Survey and Forecasts of Cosmological Constraints", *The Astrophysical Journal* **867***, 2018.*

V. Miranda, A. Lidz, C. He & W. Hu, "CMB signatures of metal-free star formation and Planck 2015 polarization data", *Mon. Not. Roy. Astron. Soc., v. 467, p. 4050-4056, 2017.*

C. He, **V. Miranda**, & W. Hu, "Complete Reionization Constraints from Planck 2015 Polarization", *Phys. Rev. D v.95, no.2, p.023513, 2017.*

V. Miranda, W. Hu, C. He & H. Motohashi, "Nonlinear Excitations in Inflationary Power Spectra", *Phys. Rev. D v.93, no.2, p.023504, 2016.*

V. Miranda, W. Hu & C. Dvorkin, "Polarization Predictions for Inflationary CMB Power Spectrum Features", *Phys. Rev. D v.91, no.6, p.063514, 2015.*

V. Miranda, W. Hu & Peter Adshead, "Steps to Reconcile Inflationary Tensor and Scalar Spectra", *Phys. Rev. D v.89, no.10, p.101302, 2014.*

V. Miranda & W. Hu, "Inflationary Steps in the Planck Data", *Phys. Rev. D v.89, no.8, p.083529, 2014.*

Peter Adshead, W. Hu & **V. Miranda**, "Bispectrum in single-field inflation beyond slow-roll", *Phys. Rev. D., v.88, no.2, p.023507, 2013.*

V. Miranda, W. Hu & Peter Adshead, "Warp features in DBI inflation", *Phys. Rev. D v.86, p.063529, 2012.*

V. Miranda, S. Joras, I. Waga & M. Quartin, "Viable Singularity-Free f(R) Gravity without a Cosmological Constant", *Phys. Rev. Lett. v.102, 221101, 2009.*

CONFERENCES (ORGANIZING COMMITTEE)

- *Multifield Cosmology: Inflation, Dark Energy and More*, Simons Center for Geometry and Physics, Stony Brook (USA), February 5-9, 2024
- *Fundamental Physics meets Current and Future Facilities in Cosmology*, ICTP-SAIFR, São Paulo (Brazil), December 2-13, 2024

REFERENCES

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  Department of Physics
  Ohio State University, Columbus, Ohio, U.S.A.
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