

# Vinicius Miranda

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## EDUCATION

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

## PUBLICATIONS

- Georges Obied, C. Dvorkin, Chen Heinrich, W. Hu & **V. Miranda**, “Inflationary vs. Reionization Features from Planck 2015 Data”, *arXiv:1803.01858*
- J. Vega-Ferrero, J. M. Diego, **V. Miranda**, & G. M. Bernstein, “The Hubble constant from SN Refsdal”, *Astrophys. J.*, 853, 2 (2018)
- **V. Miranda**, & C. Dvorkin, “Model-Independent Predictions for Smooth Cosmic Acceleration Scenarios”, *arXiv::1712.04289*
- **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* 97, 063511 (2018)
- T. Abbott & others (including **V. Miranda** with leading role in the massive neutrino analysis), “Dark Energy Survey Year 1 Results: Cosmological Constraints from Galaxy Clustering and Weak Lensing”, *arXiv:1706.09359*
- E. Krause & others (including **V. Miranda** with leading role in the massive neutrino analysis), “Dark Energy Survey Year 1 Results: Multi-Probe Methodology and Simulated Likelihood Analyses”, *arXiv:1707.05694*
- Georges Obied, C. Dvorkin, Chen Heinrich, W. Hu & **V. Miranda**, “Inflationary Features and Shifts in Cosmological Parameters from Planck 2015 Data”, *Phys. Rev. D* 96, 083526 (2017)

- R. Hounsell, D. Scolnic, R. Foley, R. Kessler & **V. Miranda** (leading role in the statistical analysis and cosmological interpretation) and others, “Simulations of the WFIRST Supernova Survey and Forecasts of Cosmological Constraints”, *arXiv:1702.01747*
- **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”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v. 95, p. 023513, 2017
- **V. Miranda**, W. Hu, C. He & H. Motohashi, “Nonlinear Excitations in Inflationary Power Spectra”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v. 93, p. 023504, 2016
- **V. Miranda**, W. Hu & C. Dvorkin, “Polarization Predictions for Inflationary CMB Power Spectrum Features”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v. 91, p. 063514, 2015
- **V. Miranda**, W. Hu & Peter Adshead, “Steps to Reconcile Inflationary Tensor and Scalar Spectra”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v. 89, p. 101302(R), 2014
- **V. Miranda**, & W. Hu, “Inflationary Steps in the Planck Data”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v. 89, p. 083529, 2014
- Peter Adshead, W. Hu & **V. Miranda** , “Bispectrum in single-field inflation beyond slow-roll”, *Physical Review. D, Particles, Fields, Gravitation, and Cosmology.* , v.88, p.023507 - , 2013
- **V. Miranda**, W. Hu & Peter Adshead, “Warp features in DBI inflation”, *Physical Review. D. Particles, Fields, Gravitation, and Cosmology.* , v.86, p.063529 - , 2012
- **V. Miranda**, S. Joras, I. Waga & M. Quartin, “Viable Singularity-Free f(R) Gravity without a Cosmological Constant”, *Physical Review Letters (Print).* , v.102, p.221101 - , 2009

## Collaborations

- Member of the WFIRST collaboration. Co-I of the Type IA Science Working Group named *Optimizing The WFIRST Type IA supernova survey.*
- Member of the Dark Energy Survey.

## FELLOWSHIPS AND AWARDS

- **Schramm Fellowship**, 2014  
Prestigious Fellowship granted by the University of Chicago.
- **Nathan Sugarman Award for Excellence in Graduate Student Research**, 2014
- **Fulbright/CAPES Fellowship**, 2010-2014  
Fellowship granted by a joint agreement between Fulbright commission and CAPES foundation, which is funded by the Ministry of Education of Brazil.
- **McCormick Fellowship**, 2010-2012  
Awarded to the top ranking candidates by the admission committee.
- **FAPERJ Scholarship Award** (FAPERJ Nota 10), 2009  
A very competitive annual fellowship awarded by the Rio de Janeiro state science agency (FAPERJ).

## PROGRAMMING SKILLS

- **C++**: Proficient, with experience in developing and maintaining large codebases.
- **Fortran**: Proficient, with experience in modifying CosmoMC and CAMB packages.
- **C**: Working knowledge, with experience in modifying CosmoLike and CosmoSiS packages.
- **Parallel Computing**: Proficient in Intel TBB for shared memory. Experience with MPI.
- **Unix/Bash**: Proficient, with working experience in maintaining linux servers.
- **Software Packages**: CosmoMC, CAMB, Minuit2, NAG, Mathematica, CosmoLike, CosmoSiS.

## OUTREACH

- **Brazilian Astronomy Olympiad**, 2004-2009  
Responsible for training the final candidates for the International Astronomy Olympiad.

## ACADEMIC REFERENCES

- **Cora Dvorkin**  
Department of Physics  
Harvard University, Cambridge, Massachusetts, U.S.A.  
Email: cdvorkin@g.harvard.edu

- **Wayne Hu**

Department of Astronomy and Astrophysics  
The University of Chicago, Chicago, Illinois, U.S.A.  
Email: [whu@background.uchicago.edu](mailto:whu@background.uchicago.edu)

- **Mark Trodden**

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