# ROLAND DE PUTTER

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## EDUCATION

**Ph.D. in Physics, University of California, Berkeley** (2010)
Thesis: *Probing Dark Energy with Theory and Observations*
Dissertation Committee: *Eric Linder*, Saul Perlmutter, Chung-Pei Ma, Martin White

**Doctoraal (M.Sc.) in Physics, with Honors, Leiden University, The Netherlands** (2005)
Thesis: *Cosmic String Interactions*
Advisor: Ana Achucarro

## RESEARCH GOALS

**To advance understanding of fundamental physics and of the history and contents of the universe using cosmological data.**

## RESEARCH EXPERIENCE

**Caltech Postdoctoral Scholar at Jet Propulsion Laboratory**
***Galaxy Clustering, Weak Gravitational Lensing***
JPL (September 2012 - present) with **Olivier Doré**

**Participant in BOSS Collaboration**
***Galaxy Clustering Covariance Matrix Estimation, Neutrino Mass Constraints from Galaxy Clustering***

**Postdoctoral Research in Theoretical Cosmology**
***Large Scale Structure Surveys, CMB Lensing, Neutrinos, Dark Energy***
ICC, Barcelona & IFIC, University of Valencia (2010 - 2012) with **Licia Verde, Carlos Peña-Garay, Olga Mena**

**Graduate Research in Theoretical Cosmology**
***Dark Energy, Neutrino Cosmology and Cosmological Surveys***
UC Berkeley (2006 - 2010)
Advisor: **Eric Linder**

**Junior Researcher in Theoretical Cosmology**
***Cosmic Strings Interactions***
Instituut Lorentz, Leiden University, The Netherlands (2005 - 2006)

**M.Sc. Thesis Research in Theoretical Cosmology**
***Cosmic Strings***
Leiden University, The Netherlands (2005)
Advisor: **Ana Achúcarro**

**M.Sc. Research in Theoretical Cosmology**
***Weak Gravitational Lensing***
UC Berkeley (2004)
Advisor: **Martin White**

## TEACHING EXPERIENCE

**Supervised Graduate Student on Galaxy Clustering Analysis**, IFIC-University of Valencia (2010-2011)

**Teaching Assistant**, Physics for Future Presidents (Prof. Richard Muller), *lecturing and leading student acitvities*, UC Berkeley (Fall 2009)

**Supervised Graduate Exchange Student on Supernova PCA and Systematics**, LBNL, Berkeley (Spring 2009)

**Math Tutor, Prison University project,** San Quentin State Prison, CA (2007 - 2008)

**Teaching Assistant**, Introductory Physics, *4 hours/week lecturing + problem sets and 4 hours/week lab*, UC Berkeley (2006 - 2007)

**Teaching Assistant**, Special Relativity, Leiden University, The Netherlands (Fall 2005)

## RESEARCH VISITS

- **University of Michigan, Ann Arbor (May 2009)**
  *Cosmological Structure & Dark Energy Perturbations*
- **Institute for the Early Universe, Seoul, South Korea (March 2010)**
  *Cosmology & High Energy Physics*
- **Institute for the Physics and Mathematics of the Universe, Kashiwa, Japan (April 2010)**
  *Weak Gravitational Lensing*
- **UC Berkeley/Lawrence Berkeley Lab (Nov 2010 – January 2011 & August – September 2011)**
  *Collaboration on BOSS research, Weak Gravitational Lensing of the CMB*

## PROFESSIONAL AND TECHNICAL SKILLS

- ***Computer:*** **C, C++, Fortran, Python, IDL, Supermongo, Linux, HTML**
- ***I have refereed articles for:*** **The Astrophysical Journal, Monthly Notices of the Royal Astronomy Society and Journal of Cosmology and Astroparticle Physics**
- ***Numerical Techniques:*** **Extensive experience with CAMB and COSMOMC, Markov Chain Monte Carlo, Fisher Matrix Calculations, Principal Component Analysis, Cosmological Perturbation Power Spectrum Calculations, Large 3D Field Theory Simulations of Cosmic Strings, Evolution of Dark Energy Models, Boltzmann Codes, Supernova, BAO, CMB, WL and Galaxy Clustering Forecasts; Figure of Merit Calculations (including work done for SNAP/JDEM mission), Cosmological Perturbation Theory**
- ***Languages:*** **Fluent in Dutch and English, some proficiency in Spanish, French, Italian and German**
- **Delegate of Physics Department to Graduate Assembly, UC Berkeley (2008 - 2010)**
- **On Board of Governors of UC Berkeley Recreational Sports Facility (2008 - 2010)**

## REFERENCES

**Prof. Eric V. Linder**, Lawrence Berkeley National Laboratory
Email: *evlinder@lbl.gov*

**Prof. Masahiro Takada**, Institute for the Physics and Mathematics of the Universe (IPMU) , Japan
Email: *masahiro.takada@ipmu.jp*

**Prof. Licia Verde**, Institute of Cosmological Sciences (ICC), University of Barcelona
Email: *liciaverde@icc.ub.edu*

## PUBLICATIONS

*30. Testing LTB Void Models without the Cosmic Microwave Background or Large Scale Structure: New Constraints from Galaxy Ages,*
***R. de Putter*, L. Verde & R. Jimenez**,
Submitted to JCAP, arXiv:1208.4534.

*29. The Baryon Oscillation Spectroscopic Survey of SDSS-III,*
**K. S. Dawson *et al***,
arXiv:1208.0022.

*28. The Ninth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-III Baryon Oscillation Spectroscopic Survey,*
**SDSS-Collaboration: C.P. Ahn *et al***,
arXiv:1207.7137

*27. The Clustering of Galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Measurements of the Growth of Structure and Expansion Rate at z=0.57 from Anisotropic Clustering,*
**B. A. Reid *et al***,
arXiv:1203.6641.

*26. The Clustering of Galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: a Large Sample of Mock Galaxy Catalogues,*
**M. Manera *et al***,
arXiv:1203.6609.

*25. The Clustering of Galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Baryon Acoustic Oscillations in the Data Release 9 Spectroscopic Galaxy Sample,*
**L. Anderson *et al***,
arXiv:1203.6594.

*24. New Neutrino Mass Bounds from Sloan Digital Sky Survey-III Data Release 8 Photometric Luminous Galaxies,*
***R. de Putter*, O. Mena, E. Guisarma, S. Ho, A. Cuesta, H.-J. Seo *et al***,
Accepted for publication in the Astrophysical Journal, arXiv:1201.1909.

*23. Acoustic Scale from the Angular Power Spectra of SDSS-III DR8 Photometric Luminous Galaxies,*
**H.-J. Seo *et al***,
Accepted for publication in the Astrophysical Journal, arXiv:1201.2172.

*22. Clustering of Sloan Digital Sky Survey III Photometric Luminous Galaxies: The Measurement, Systematics and Cosmological Implications,*
**S. Ho *et al,***
Accepted for publication in the Astrophysical Journal, arXiv:1201.2137.

*21. Sterile Neutrino Models and Nonminimal Cosmologies,*
**E. Giusarma, M. Archidiacono, *R. de Putter*, A. Melchiorri, O. Mena**,
Physical Review D 85, 083522 (2012), arXiv:1112.4661.

*20. Information Content in CMB Lensing Estimators,*
**O. Zahn, *R. de Putter*, S. Das, A. Yadav *et al***,
In preparation.

*19. Thinking Outside the Box: Effects of Modes Larger than the Survey on Matter Power Spectrum Covariance,*
***R. de Putter*, C. Wagner, O. Mena, L. Verde, W. Percival**,
JCAP 04, id. 019 (2012), arXiv:1111.6596.

*18. New Limits on Early Dark Energy from the South Pole Telescope,*
**C. Reichardt, *R. de Putter*, O. Zahn & Zhen Hou**,
Astrophysical Journal 749 (2012) L9, arXiv:1110.5328.

*17. Weak Lensing Science, Surveys, and Systematics,*
**S. Das, *R. de Putter*, E. Linder and R. Nakajima**,
arXiv:1102.5090.

*16. Constraints on Massive Sterile Neutrino Species from Current and Future Cosmological Data,*
**E. Giusarma, M. Archidiacono, *R. de Putter*, A. Melchiorri, O. Mena and S. Pandolfi**,
Physical Review D 83, 115023 (2011), arXiv:1102.4774.

*15. Future CMB Constraints on Early, Cold and Stressed Dark Energy,*
**E. Calabrese, *R. de Putter*, D. Huterer, E. Linder and Alessandro Melchiorri**,
Physical Review D 83, 023011 (2011), arXiv:1010.5612.

*14. Induced Gravity and the Attractor Dynamics of Dark Energy,*
**J. Cervantes-Cota, *R. de Putter* and E. Linder,**
JCAP 12 (2010) 019, arXiv:1010.2237.

*13. Halo-Galaxy Lensing: A Full-Sky Approach,*
***R. de Putter* and M. Takada,**
Physical Review D 82, 103522 (2010), arXiv:1007.4809.

*12. The Herschel-SPIRE Legacy Survey (HSLS): the Scientific Goals of a Shallow and Wide Submillimeter Imaging Survey with SPIRE,*
**A. Cooray *et al***
arXiv:1007.3519.

*11. Measuring the Speed of Dark: Detecting Dark Energy Perturbations,*
***R. de Putter*, D. Huterer and E. V. Linder,**
Physical Review D 81, 103513 (2010), arXiv:1002.1311.

*10. CMB Lensing Constraints on Neutrinos and Dark Energy,*
***R. de Putter*, O. Zahn and E. V. Linder**,
Physical Review D 79, 065033 (2009), arXiv:0901.0916.

*9. Being PC: Principal Components and Dark Energy,*
***R. de Putter* and E. V. Linder,**
arXiv:0812.1794.

*8. Calibrating Dark Energy,*
***R. de Putter* and E. V. Linder,**
Journal of Cosmology and Astroparticle Physics 0810, 042 (2008), arXiv:0808.0189.

*7. Field Flows of Dark Energy,*
**R. N. Cahn, *R. de Putter* and E. V. Linder,**
Journal of Cosmology and Astroparticle Physics 0811, 015 (2008), arXiv:0807.1346.

*6. Kinematic Constraints on Formation of Bound States of Cosmic Strings – Field Theoretical Approach,*
**P. Salmi, A. Achucarro, E. J. Copeland, T. W. B. Kibble, *R. de Putter* and D. A. Steer,**
Physical Review D 77, 041701 (2008), arXiv:0712.1204.

*5. To Bin or not to Bin: Decorrelating the Cosmic Equation of State,*
***R. de Putter* and E. V. Linder,**
Astroparticle Physics 29, 424 (2008), arXiv:0710.0373.

*4. Kinetic K-Essence and Quintessence,*
***R. de Putter* and E. V. Linder,**
Astroparticle Physics 28, 263 (2007), arXiv:0705.0400.

*3. Effective Non-Intercommutation of Local Cosmic Strings at High Collision Speeds,*
**A. Achucarro and *R. de Putter*,**
Physical Review D 74, 121701 (2006), arXiv:hep-th/0605084.

*2. Cosmic String Interactions*,
***R. de Putter*,**
M.Sc. Thesis, http://www.lorentz.leidenuniv.nl/~rdeputter .

*1. Using Weak Lensing to Find Halo Masses*,
***R. de Putter* and M. White,**
New Astronomy 10, 676 (2005), arXiv:astro-ph/0412497.