

# Maria Elidaiana da Silva Pereira

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## Education

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- **Doctor of Philosophy in Physics** **Rio de Janeiro, Brazil**  
*Brazilian Center for Research in Physics (CBPF)* *Mar 2013 – Sep 2017*
- **Bachelor of Education in Physics** **Rio de Janeiro, Brazil**  
*Rio de Janeiro State University (UERJ)* *Mar 2011 – Jul 2015*
- **Master of Science in Physics** **Rio de Janeiro, Brazil**  
*CBPF* *Mar 2010 – Dec 2012*
- **Bachelor of Science in Physics** **Rio de Janeiro, Brazil**  
*UERJ* *Mar 2005 – Dec 2009*

## Employment

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- **Postdoctoral Fellow**  
*Brandeis University* *Oct 2017 – Current*

## Awards

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- **PhD Thesis Award, Honorable Mention**  
*CBPF* *Dec 2017*
- **PhD Fellowship**  
*CNPq (Brazilian federal government funding agency for research)* *Mar 2013 – Feb 2017*
- **Masters Fellowship**  
*CNPq* *Mar 2010 – Feb 2012*
- **Undergraduate Research Fellowship**  
*CNPq* *Aug 2006 – Jan 2010*

## Grants

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- **NSF Support PHY-1607611**  
*To attend the workshop "Astrophysics in the LIGO/Virgo Era" at the Aspen Center for Physics* *Aug – Sep 2019*
- **MMWSS Scholarship**  
*Kenan Institute of Engineering, Technology and Science (Maria Mitchell Women in Science Symposium)* *Oct 2018*

- **IUPAP Women in Physics Travel Grant Program**  
*International Union of Pure and Applied Physics* Aug 2016
- **GR21 Travel Grant**  
*Columbia University (21st International Conference on General Relativity and Gravitation)* Jul 2016
- **Astro Hack Week Travel Grant**  
*LSST Corporation and GitHub Inc.* Sep – Oct 2015
- **Les Houches School of Physics Fellowship**  
*Les Houches School of Physics (Post-Planck Cosmology)* Jul – Aug 2013

## Approved proposals

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- **SOAR/Goodman (ID:2020A-0371) - NOAO observing time**  
*SOAR Spectroscopy of LIGO/Virgo O3 Transients (PI: Charles Kilpatrick )* Dec 2019
- **SOAR/Goodman (ID:SO2020A-022) - 20h**  
*SOAR Spectroscopy of LIGO/Virgo O3 Transients (PI: Martin Makler)* Dec 2019
- **CTIO/DECam (ID:2019B-0372)**  
*The DECam Search & Discovery Program for Optical Signatures of Gravitational Wave Events (DESGW) (PI: Marcelle Soares-Santos)* Apr 2019
- **SOAR/Goodman (ID:SO2019A-021 - Brazilian observing time)**  
*SOAR Spectroscopy of LIGO/Virgo O3 Transients (PI: Martin Makler)* Dec 2018
- **SOAR/Goodman (ID:2019A-0307 - NOAO observing time)**  
*SOAR Spectroscopy of LIGO/Virgo O3 Transients (PI: Douglas Tucker)* Dec 2018
- **CTIO/DECam (ID:2018A-0914) - 25.5h**  
*Blanco i-band Kilo-degree Survey - BlinK (PI: Martin Makler)* Nov 2017
- **SOAR/Goodman (ID:SO2017B-018) - 16h**  
*Einstein Rings in the CFHT Stripe 82 Survey: from gravitational telescopes to probing Einstein's theory (PI: Martin Makler)* Apr 2017
- **Gemini/NIFS (ID:GN2016B-015) - 8.5h**  
*Integral Field Spectroscopy of Arcs - Unveiling the hundreds pc of a star-forming galaxy at redshift  $\sim 0.9$  (PI: Damian Mast)* Jun 2016
- **CFHT/WIRCam (ID:CF2012B-003) - 7.2h**  
*Completing the WIRCam SDSS Equatorial Region Survey (PI: Martin Makler)* May 2012
- **CFHT/WIRCam (ID:CF2011B-008) - 7.16h**  
*WISER: the WIRCam SDSS Equatorial Region Survey (PI: Martin Makler)* May 2011

**Gemini/GMOS-S (ID:GS-2011B-Q-54) - 4h**

- *Gemini follow-up of strong lensing systems discovered on the CFHT Stripe-82 survey (PI: Martin Makler)* Apr 2011

**SOAR/MegaCam (ID:SO2010B-023) - 38.5h**

- *CFHT/Megacam High-Resolution Imaging of the SDSS Stripe 82: Measuring the Mass Distribution of Structures from Clusters to Galaxy Scale (PI: Martin Makler)* Apr 2011

**SOAR/SOI (ID:CF2010B-009) - 7h**

- *SOAR Gravitational Arc Survey (PI: Martin Makler)* Apr 2010

## Conference talks

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**Weak-Lensing Mass Calibration of  $\mu_*$  at High Redshifts with the Dark Energy Survey Year 1**

**Boston, USA**

- *Meeting of the Division of Particles & Fields of the American Physical Society, Northeastern University* Jul 2019

**Density profiles of galaxy clusters in the CFHT Stripe 82 survey from weak gravitational lensing**

**New York, USA**

- *GR21, Columbia University* July 2016

**Weak lensing signal of Voronoi-selected galaxy clusters [un]detected by red-sequence algorithm**

**Rio de Janeiro, Brazil**

- *GrACo III, CBPF* Apr 2016

**Measuring galaxy morphologies in the CFHT/MegaCam Stripe-82 Survey**

**Rio de Janeiro, Brazil**

- *VI IWARA, CBPF* Oct 2013

## Invited colloquia and seminars

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**Weighing Giants in the Sky - a Cosmic Controversy**

- *Kent State University - colloquium* Apr 2020

**Cosmic Controversies in Galaxy Clusters: Weak Lensing Mass**

◦ **Calibration**

*MIT - seminar* Nov 2019

**Cosmic Controversies in Galaxy Clusters: Weak Lensing Mass**

◦ **Calibration**

*Federal University of Rio de Janeiro (UFRJ) - seminar* Aug 2019

**Galaxy cluster mass measurements in the Dark Energy Survey:**

◦ **The case for a stellar-mass based mass proxy**

*CBPF - seminar* Aug 2019

**Weighing galaxy clusters in wide area imaging surveys**

- *Fermilab - seminar* Feb 2018

- **Weighing galaxy clusters on Stripe 82 through weak gravitational lensing**  
*UFRJ - seminar*

Sep 2017

## Other talks

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- **Weak lensing mass calibration of the DES Y1 redMaPPer clusters using the  $\mu_*$  mass proxy**  
*DES Collaboration Meeting, University of Pennsylvania*  
Philadelphia, USA  
Jun 2019
- **Weak lensing calibration of  $\mu_*$**   
*Cosmology Group Meeting, Flatiron Institute*  
New York, USA  
Mar 2019
- **Weighing giants in the sky**  
*APS Local Links*  
Boston, USA  
Feb 2019
- **The  $\mu_*$  mass-proxy: calibration of the weak lensing mass in DES Y1**  
*DES Collaboration Meeting, Unicamp*  
Campinas, Brazil  
Dec 2018
- **Weak Lensing Mass Calibration of  $\mu_*$  at High Redshifts**  
*DES Collaboration Meeting, TAMU*  
Texas, USA  
May 2018
- **Weak-lensing mass calibration of redMaPPer and Voronoi Tessellation clusters in SDSS Stripe 82**  
*School on Open Problems in Cosmology, ICTP-SAIFR*  
São Paulo, Brazil  
Jul 2017
- **Density profile-fitting from cluster weak lensing**  
*Astro Hack Week 2016, University of California*  
Berkeley, USA  
Aug 2016
- **Bayesian inference 4 dummies**  
*Astro Hack Week 2015, New York University*  
New York, USA  
Sep 2015
- **Galaxy morphology on CS82 survey**  
*Post-Planck Cosmology, École de Physique des Houches*  
Les Houches, France  
Jul 2013

## Responsibilities and leadership

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- **Producer of the galaxy cluster's data-vector for DES Y3**  
*Dark Energy Survey*  
Since Jun 2019
- **Organizer of the Dark Universe Seminars**  
*Brandeis University*  
Since Jan 2018
- **Organizer of the meeting to celebrate the "International Day of Women and Girls in Science" at CBPF**  
*CBPF*  
Feb 2017
- **Organizer of the "Survey of scientific working environment in the Brazilian astronomical Community" - LACAN**  
*CBPF*  
May 2015 – Jun 2016

- **Member of the graduate student association**  
CBPF

Sep 2013 – Sep 2015

## Other professional activities

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### Teaching.....

- **Continuing Education Program for High School Teachers**  
CBPF

Jul 2015

Set up and present Modern Physics experiments for teachers of public high schools.

### Outreach.....

- **Cultural Tourism in the Imperial district of São Cristóvão**  
*Museum of Astronomy and Related Sciences (MAST)*

May 2015, 2017

An annual exhibition of Basic Physics experiments for the general public.

- **National Science and Technology Week**  
*Itinerant event*

Oct 2013, 2014, 2016

Set up and present Basic Physics experiments to the general public during a week.

## Technical skills

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- **Programming Languages:** Python, Fortran95 and C.
- **Open Source Coding:** Jupyter Notebooks, Docker, Git and Anaconda.
- **Astronomy and Cosmology Codes:** TXpipe, xpipe, TreeCorr, WLpipe, Cosmofit, emcee, xshear, PSFEx, SExtractor, Imcat and Automask.
- **Languages:** Portuguese (native speaker), English (fluent) and German (beginner).

## Affiliations

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- **LSST Dark Energy Science Collaboration (LSST DESC)**  
*DESC membership*

Jan 2018 – Current

- **Dark Energy Survey**  
*Collaboration membership*

Oct 2017 – Current

- **American Physical Society**  
*ECS membership*

June 2017 – Current

## Publications

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### Refereed journal articles.....

- **17)** The DES Collaboration, the LIGO Scientific Collaboration, the Virgo Collaboration, M. Soares-Santos, A. Palmese, W. Hartley, J. Annis, J. Garcia-Bellido, O. Lahav, Z. Doctor, H. Lin, M. Fishbach, **M. E. S. Pereira** and others. *First measurement of the Hubble constant from a*

*dark standard siren using the Dark Energy Survey galaxies and the LIGO/Virgo binary-black-hole merger GW170814.* ApJL, 876, 1-L7, Apr 2019. [ [arXiv](#) | [ADS](#) ]

- **16)** E. J. Gonzalez, F. Rodriguez, D. G. Lambas, M. Makler, V. Mesa, S. Alonso, F. Duplancic, **M. E. S. Pereira** and H. Shan. *Weak lensing analysis of galaxy pairs using CS82 data.* A & A, 621, A90, Nov 2018. [ [arXiv](#) | [ADS](#) ]
- **15)** M. Chalela, E. J. Gonzalez, M. Makler, D. G. Lambas, **M. E. S. Pereira**, A. O'mill and H. Shan. *Compact Groups analysis using weak gravitational lensing II: CFHT Stripe82 data.* MNRAS, 479: 1170-1179, Sep 2018. [ [arXiv](#) | [ADS](#) ]
- **14)** T. H. Diehl and the DES Collaboration. *The Dark Energy Survey and Operations: Years 4 and 5.* Jul 2018. [ [inSPIRE HEP](#) | [Fermilab Library Server](#) ]
- **13)** A. Niemiec , E. Jullo, A. D. Montero-Dorta, F. Prada, S. Rodriguez-Torres, E. Perez, A. Klypin, T. Erben, M. Makler, B. Moraes, **M. E. S. Pereira** and H. Shan. *Probing galaxy assembly bias with LRG weak lensing observations.* MNRAS, 477: L1-L5, Jun 2018. [ [arXiv](#) | [ADS](#) ]
- **12)** C. Wang, R. Li, L. Gao, H. Shan, J.-P. Kneib, W. Wang, G. Chen, M. Makler, **M. E. S. Pereira**, L. Wang, M. Maia and T. Erben. *Do satellite galaxies trace matter in galaxy clusters?* MNRAS, 475: 4020-4026, Apr 2018. [ [arXiv](#) | [ADS](#) ]
- **11)** J. Y. H. Soo , B. Moraes, B. Joachimi, W. Hartley, O. Lahav, A. Charbonnier, M. Makler, **M. E. S. Pereira**, J. Comparat, T. Erben, A. Leauthaud, H. Shan and L. Van Waerbeke. *Morpho-z: improving photometric redshifts with galaxy morphology.* MNRAS 475: 3616-3632, Apr 2018. [ [arXiv](#) | [ADS](#) ]
- **10)** **M. E. S. Pereira**, M. Soares-Santos, M. Makler, J. Annis, G. B. Caminha, T. Erben, H. Lin, B. Moraes, A. Palmese, H. Shan, A. Z. Vitorelli and B. Welch. *Weak-lensing calibration of a stellar mass-based mass proxy for redMaPPer and Voronoi Tessellation clusters in SDSS Stripe 82.* MNRAS, 474: 1361-1372, Feb 2018. [ [arXiv](#) | [ADS](#) ]
- **9)** A. Z. Vitorelli, E. S. Cypriano, M. Makler, **M. E. S. Pereira**, T. Erben and B. Moraes. *On mass concentrations and magnitude gaps of galaxy systems in the CS82 survey.* MNRAS, 474: 866-875, Feb 2018. [ [arXiv](#) | [ADS](#) ]
- **8)** A. Niemiec, E. Jullo, M. Limousin, C. Giocoli, T. Erben, H. Hildebrandt, J-P. Kneib, A. Leauthaud, M. Makler, B. Moraes, **M. E. S. Pereira**, H. Shan, E. Rozo, E. Rykoff and L. Van Waerbeke. *Stellar-to-halo mass relation of cluster galaxies.* MNRAS, 471: 1153-1166, Oct 2017. [ [arXiv](#) | [ADS](#) ]
- **7)** A. Charbonnier, M. H. Company, T. S. Gonçalves, K. Bundy, K. Menéndez-Delmestre, E. Galliano, B. Moraes, **M. E. S. Pereira**, M. Makler, T. Erben, H. Hildebrandt, H. Shan, G. B. Caminha, M. Grossi and L. Riguccini. *The abundance of compact quiescent galaxies since  $z \sim 0.6$ .* MNRAS, 469: 4523-4536, Aug 2017. [ [arXiv](#) | [ADS](#) ]
- **6)** J. Geach, Y-T. Lin, M. Makler, J-P. Kneib, N. Ross, W-H. Wang, B-C. Hsieh, A. Leauthaud, K. Bundy, H. McCracken, J. Comparat, G. Caminha, P. Hudelot, L. Lin, L. Van Waerbeke, **M. E. S. Pereira** and D. Mast. *VICS82: the VISTA-CFHT Stripe 82 near-infrared survey.* ApJ, 231: 7, Jul 2017. [ [arXiv](#) | [ADS](#) ]
- **5)** H. Shan, J-P. Kneib, R. Li, J. Comparat, T. Erben, M. Makler, B. Moraes, L. Van Waerbeke, J. E. Taylor, A. Charbonnier and **M. E. S. Pereira**. *The Mass-Concentration Relation and the*

*Stellar-to-Halo Mass Ratio in the CFHT Stripe 82 Survey*. ApJ, 840: 104, May 2017. [ [arXiv](#) | [ADS](#) ]

- **4)** A. Leauthaud, S. Saito, S. Hilbert, A. Barreira, S. More, M. White, S. Alam, P. Behroozi, K. Bundy, J. Coupon, T. Erben, C. Heymans, H. Hildebrandt, R. Mandelbaum, B. Moraes, **M. E. S. Pereira**, S. A. Rodríguez-Torres and H. Shan. *Lensing is Low: Cosmology, Galaxy Formation, or New Physics?*. MNRAS, 467: 3024-3047, Feb 2017. [ [arXiv](#) | [ADS](#) ]
- **3)** B. Nord, E. Buckley-Geer, H. Lin, H. T. Diehl, J. Helsby, N. Kuropatkin, A. Amara, T. Collett, S. Allam, G. B. Caminha, C. De Bom, S. Desai, H. Dúmet-Montoya, **M. E. S. Pereira**, and The DES Collaboration. *Observation and Confirmation of Six Strong-lensing Systems in the Dark Energy Survey Science Verification Data*. ApJ, 827: 51, Aug 2016. [ [arXiv](#) | [ADS](#) ]
- **2)** J. Comparat, E. Jullo, J.-P. Kneib, C. Schimd, H. Shan, T. Erben, O. Ilbert, J. Brownstein, A. Ealet, S. Escoffier, B. Moraes, N. Mostek, J. A. Newman, **M. E. S. Pereira**, F. Prada, D. J. Schlegel, D. P. Schneider, and C. H. Brandt. *Stochastic bias of colour-selected BAO tracers by joint clustering-weak lensing analysis*. MNRAS, 433: 1146-1160, Aug 2013. [ [arXiv](#) | [ADS](#) ]
- **1)** C. Furlanetto, B. X. Santiago, M. Makler, E. S. Cypriano, G. B. Caminha, **M. E. S. Pereira**, A. F. Neto, J. Estrada, H. Lin, J. Hao, T. A. McKay, L. N. da Costa and M. A. G. Maia. *The SOAR Gravitational Arc Survey - I. Survey overview and photometric catalogues*. MNRAS, 432: 73-88, Jun 2013. [ [arXiv](#) | [ADS](#) ]

#### Submitted articles.....

- A. Palmese, J. Annis, J. C. Burgad, H. Lin, **M. E. S. Pereira**, M. Soares-Santos, B. Welch, A. Farahi, A. Bermeo, S. Bhargava, J. DeMastri, J. DeRose, D. Gruen, P. Giles, W. Hartley, D. Hollowood, O. Lahav, B. Leistedt, T. Jeltelma, T. McClintock, P. Melchior, A. K. Romer, E. Rozo, E. S. Rykoff, T. N. Varga, R. Wechsler, Y. Zhang and the DES Collaboration. *Stellar mass as a galaxy cluster mass proxy: application to the Dark Energy Survey redMaPPer clusters*. Submitted to MNRAS, Mar 2019. [ [arXiv](#) | [ADS](#) ]

#### In review.....

- **M. E. S. Pereira** and the DES Collaboration.  $\mu_*$  Masses: Weak Lensing Calibration of the Dark Energy Survey Year 1 redMaPPer Clusters using Stellar Masses. In Collaboration Review, Oct 2019.