

# Maria Elidaiana da Silva Pereira

University of Michigan - 450 Church Street, Ann Arbor, MI 48109, USA

✉ dasilvap@umich.edu • 🌐 mariaelidaiana.github.io

## Education

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

## Employment

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- **Research Fellow**  
*University of Michigan* **Ann Arbor, USA**  
*Sep 2020 – Current*
- **Postdoctoral Fellow**  
*Brandeis University* **Waltham, USA**  
*Oct 2017 – Aug 2020*

## Awards

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- **Dark Energy Survey Builder Status**  
*DES (for 2+ FTE years of infrastructure work)* *Since July 2020*
- **PhD Thesis Award, Honorable Mention**  
*CBPF* *Dec 2017*
- **PhD Fellowship**  
*CNPq (Brazilian federal government funding agency for research)* *Mar 2013 – Feb 2017*
- **Masters Fellowship**  
*CAPES (Brazilian federal government agency for higher education)* *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/SOI (ID:CF2010B-009) - 7h**
  - SOAR Gravitational Arc Survey - SOGRAS (PI: Martin Makler) Apr 2010

## Conference Talks

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- Cluster Cosmology with the Dark Energy Survey Year 3 Data**
  - AAS Virtual Meeting, Invited Virtual, USA  
Jan 2021

<ul style="list-style-type: none"> <li>○ <b>Cosmic Controversies in Galaxy Clusters: Weak Lensing Mass Calibration</b> <i>APS Virtual April Meeting</i></li> </ul>	Virtual, USA  Apr 2020
<ul style="list-style-type: none"> <li>○ <b>Weak-Lensing Mass Calibration of <math>\mu_*</math> at High Redshifts with the Dark Energy Survey Year 1</b> <i>Meeting of the Division of Particles &amp; Fields of the American Physical Society, Northeastern University</i></li> </ul>	Boston, USA  Jul 2019
<ul style="list-style-type: none"> <li>○ <b>Density Profiles of Galaxy Clusters in the CFHT Stripe 82 Survey from Weak Gravitational Lensing</b> <i>GR21, Columbia University</i></li> </ul>	New York, USA  July 2016
<ul style="list-style-type: none"> <li>○ <b>Weak lensing Signal of Voronoi-Selected Galaxy Clusters [un]detected by Red-sequence Algorithm</b> <i>GrACo III, CBPF</i></li> </ul>	Rio de Janeiro, Brazil  Apr 2016
<ul style="list-style-type: none"> <li>○ <b>Measuring Galaxy Morphologies in the CFHT/MegaCam Stripe-82 Survey</b> <i>VI IWARA, CBPF</i></li> </ul>	Rio de Janeiro, Brazil  Oct 2013

## Invited Colloquia and Seminars

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<ul style="list-style-type: none"> <li>○ <b>Weighing and Counting Giants in the Sky</b> <i>Kent State University - colloquium (future, postponed due COVID-19)</i></li> </ul>	Feb 2021
<ul style="list-style-type: none"> <li>○ <b>Weighing and Counting Giants in the Sky</b> <i>University of Michigan - Saturday Morning Physics lecture series (future)</i></li> </ul>	Feb 2021
<ul style="list-style-type: none"> <li>○ <b>Pesando gigantes no céu: Cosmologia com aglomerados de galáxias (in Portuguese)</b> <i>Astrocientistas: I Encontro Brasileiro de Meninas e Mulheres da Astrofísica, Gravitação e Cosmologia – virtual seminar (future)</i></li> </ul>	Feb 2021
<ul style="list-style-type: none"> <li>○ <b>Pesando Gigantes Céu: uma Controvérsia Cósmica? (in Portuguese)</b> <i>URCA (Física Online/YouTube) - virtual seminar</i></li> </ul>	Aug 2020
<ul style="list-style-type: none"> <li>○ <b>Cosmic Controversies in Galaxy Clusters: Weak Lensing Mass Calibration</b> <i>MIT - brown bag seminar</i></li> </ul>	Nov 2019
<ul style="list-style-type: none"> <li>○ <b>Cosmic Controversies in Galaxy Clusters: Weak Lensing Mass Calibration</b> <i>Federal University of Rio de Janeiro (UFRJ) - seminar</i></li> </ul>	Aug 2019
<ul style="list-style-type: none"> <li>○ <b>Galaxy cluster mass measurements in the Dark Energy Survey: The case for a stellar-mass based mass proxy</b> <i>CBPF - seminar</i></li> </ul>	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*

## Responsibilities and Leadership

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- **Developing the Snowmass 2021 Survey**  
*Snowmass Early Career Survey Initiative* *Jul 2020 – current*
- **Co-chair of the Cluster Cosmology and Lensing Subgroup**  
*Dark Energy Survey* *Jun 2020 – current*
- **Co-leader of the Survey Initiative**  
*Snowmass Early Career* *Jul – Sep 2020*
- **Organizer of the Dark Universe Seminars**  
*Brandeis University* *Jan 2018 – Feb 2020*
- **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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### Peer Review

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- **Astronomy & Astrophysics**  
*Reviewer* *Since Oct 2020*

### Teaching

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- **Continuing Education Program for High School Teachers**  
*CBPF* *Jul 2015*  
Set up and present Modern Physics experiments for teachers of public high schools.

### Outreach

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- **Science Communication Fellow**  
*University of Michigan Museum of Natural History* *Sep 2020 – current*

- **Contributor of a Brazilian Science Communication Blog**  
*Blog Cientistas Feministas* Mar 2020 - current  
 Writing Sci-Comm articles about Astrophysics and Cosmology.
- **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.
- **Brazilian 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 (A2).

## Affiliations

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- **The Cosmic Explorer Consortium**  
*Membership* Oct 2020 – Current
- **LSST Dark Energy Science Collaboration (LSST-DESC)**  
*DESC Membership* Jan 2018 – Current
- **Dark Energy Survey**  
*Collaboration Builder (Permanent Data Access)* Oct 2017 – Current
- **American Physical Society**  
*ECS Membership* June 2017 – Current

## Selected Publications

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For full list: <https://orcid.org/0000-0002-7131-7684>

### Refereed journal articles.....

- **21)** E. J. Gonzalez, M. Makler, D. Garcia Lambas, M. Chalela, **M. E. S. Pereira**, L. Van Waerbeke, H. Shan and T. Erben. *Measuring the surface mass density ellipticity of redMaPPer galaxy clusters using weak-lensing*. MNRAS, staa3570, Dec 2020. [ [arXiv](#) | [ADS](#) ]
- **20)** **M. E. S. Pereira** et al.  $\mu_*$  Masses: Weak Lensing Calibration of the Dark Energy Survey Year 1 redMaPPer Clusters using Stellar Masses. MNRAS, 498: 5450-5467, Sep 2020. [ [arXiv](#) | [ADS](#) ]
- **19)** A. Palmese, J. de Vicente, **M. E. S. Pereira** et al. *A statistical standard siren measurement of the Hubble constant from the LIGO/Virgo gravitational wave compact object merger GW190814*

and Dark Energy Survey galaxies. *ApJL*, 900, 2-L33, Sep 2020. [ [arXiv](#) | [ADS](#) ]

- **18)** A. Palmese, J. Annis, J. C. Burgad, H. Lin, **M. E. S. Pereira** and the DES Collaboration. *Stellar mass as a galaxy cluster mass proxy: application to the Dark Energy Survey redMaPPer clusters*. *MNRAS*, 493: 4591-4606, Apr 2020. [ [arXiv](#) | [ADS](#) ]
- **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.....

- E. J. Gonzalez, F. Rodriguez, M. Merchán, D. García Lambas, M. Makler, **M. E. S. Pereira**, B. Moraes and H. Shan. *On the weak lensing masses of a new sample of galaxy groups*. Submitted to MNRAS, Jan 2021.
- C. To, E. Krause, E. Rozo, H. Wu, D. Gruen, R. H. Wechsler, T. F. Eifler, E. S. Rykoff, M. Costanzi, M. R. Becker, G. M. Bernstein, J. Blazek, S. Bocquet, S. L. Bridle, R. Cawthon, A. Choi, M. Crocce, C. Davis, J. DeRose, A. Drlica-Wagner, J. Elvin-Poole, X. Fang, A. Farahi, O. Friedrich, M. Gatti, E. Gaztanaga, T. Giannantonio, W. G. Hartley, B. Hoyle and M. Jarvis, N. MacCrann, T. McClintock, V. Miranda, **M. E. S. Pereira** et al. *Dark Energy Survey Year 1 Results: Cosmological Constraints from Cluster Abundances, Weak Lensing, and Galaxy Correlations*. Submitted to PRL, Oct 2020. [ [arXiv](#) | [ADS](#) ]
- C. To, E. Krause, E. Rozo, H. Wu, D. Gruen, J. DeRose, E. S. Rykoff, R. H. Wechsler, M. R. Becker, M. Costanzi, T. Eifler, **M. E. S. Pereira** and N. Kokron. *Combination of cluster number counts and two-point correlations: Validation on Mock Dark Energy Survey*. Submitted to MNRAS, Sep 2020. [ [arXiv](#) | [ADS](#) ]