

CURRICULUM VITAE

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Current position

CNRS MOMENTUM Researcher

Jan/2018 - now CNRS/Laboratoire de Physique de Clermont (LPC)
Université Clermont-Auvergne (UCA), Clermont Ferrand - France

Research experience

Post-Doctoral researcher

Jan/2016 - Dec/2017 Laboratoire de Physique de Clermont (LPC)
Université Clermont-Auvergne (UCA), Clermont Ferrand - France
Jan/2014 - Dec/2015 Max Planck Institute for Astrophysics (MPA), Germany
Sep/2011 - Dec/2013 University of São Paulo (USP), Brazil
Sep/2010 - Aug/2011 Kavli - IPMU
The Institute for the Physics and Mathematics of the Universe, Japan

Education

Mar/2006 - Mar/2010 **PhD** in Physics (Cosmology), UFRJ, Rio de Janeiro, Brazil
Sep/2008 - Aug/2009 - **Exchange PhD student** at UCL, London, UK
Mar/2004 - Feb/2006 **Master** in Sciences (Physics), UFRJ, Rio de Janeiro, Brazil
Mar/1999 - Dec/2003 **Bachelor in Physics**, Universidade Estadual de Campinas - Brazil

Management experience

LSST-DESC duties

Apr/2019 - now Project lead : RESSPECT
REcommendation System for SPECTroscopic follow-up
an official collaboration between LSST-DESC and the Cosmostatistics Initiative
Oct/2018 - now LSST-DESC Collaboration Council member
Dec/2016 - now Photometric LSST Astronomical Time-series Classification Challenge
PLAsTiCC core team

Founding member, logistic manager and leader of Python projects

Apr/2014 - now

The Cosmostatistics Initiative (COIN)

An international working group built under the auspices of the International Astrostatistics Association (IAA), which aims to create an interdisciplinary environment where collaborations between astronomers, statisticians and machine learning experts can flourish. The group utilizes a management model which can only find parallel in technological start-ups. By using a dynamic, non-hierarchical and people-centric approach, it enables innovation in scientific research at the same time that allows its members to fulfil the demands of current academic job market . See complete [COIN website](#).

Participation in Organizing Committees for French and International Events

24-31/Aug/2019 Sixth COIN Residence Program, France

26-29/Jul/2019 ESO Workshop on Artificial Intelligence in Astronomy, Germany

11-12/Jul/2019 Optimizing training samples for SN photometric classification, France

8-10/Jul/2019 COIN-Focus # 1 - RESSPECT, France

1-8/Oct/2018 Journées Informatique de l'IN2P3-IRFU, France

15-22/Sep/2018 Fifth COIN Residence Program, Greece

20-22/May/2018 Astronomical Data Analysis Summer School IX, Spain

20-27/Aug/2017 Fourth COIN Residence Program, France

26-30/Jun/2017 European Week of Astronomy and Space Science 2017
Symposium 14, Czech Republic

Astroinformatics : From Big Data to Understanding the Universe at Large

21-28/Aug/2016 Third COIN Residence Program, Hungary

22-24/May/2016 Astronomical Data Analysis Summer School VIII, Greece

18-25/Oct/2015 Second COIN Residence Program, UK

17-24/Aug/2014 First COIN Summer Residence Program, Portugal

Mentoring experience

Participation in Master Thesis Jury

19/Apr/2016

Renuka Pampana, Dep. of Computer Science - U. of Houston, USA

Thesis title : *A new approach to domain adaptation applied to supernova photometric classification*

Supervisor : Prof. Ricardo Vilalta

Co-supervision of PhD students

Jun/2012 - Jun/2015

Michele Sasdelli, MPA - Germany

Thesis title : *A new metric space for type Ia supernova spectra*

Supervisor : Prof. Wolfgang Hillebrandt

May/2011 - Aug/2013

Sandra Benitez-Herrera, MPA - Germany

Thesis title : *Cosmological Parameter Estimation from type Ia supernovae*

Supervisor : Prof. Wolfgang Hillebrandt

Selected list of invited talks

25/Apr/2019	Enabling Multi-Messenger Astrophysics in the Big Data Era, Baltimore - USA
21/Mar/2019	Institut Pascal, Paris - France
23/Jan/2019	Rencontre de Physique des Particules RPR2019, Clermont Ferrand - France
23/Oct/2018	National Colloquium on Dark Energy, Paris - France
24/Jun/2018	ABC in Edinburgh - ISBA, Edinburgh - UK
15/Jun/2018	<i>Munich Institute for Astro and Particle Physics (MIAPP)</i> Garching - Germany (invitation-only event)
05,06/Jun/2018	Lomonosov Moscow State University, Moscow - Russia
01/Jun/2018	IN2P3 School of Statistics, La Londe Les Maures - France
20/May/2018	Astronomical Data Analysis Summer School, Valencia - Spain <i>4.5 hours tutorial on Machine Learning</i>
10-16/Dez/2017	11th TRR33 Winter School on Cosmology, Passo del Tonale - Italy <i>4h tutorial on Statistics in Cosmology</i>
30/Jun/2017	EWASS - SS14 <i>Astroinformatics</i> , Prague - Czech Republic
06/Jun/2017	<i>ATLAS Workshop on Machine Learning</i> - CERN - Switzerland
20/Jun/2014	<i>Munich Institute for Astro and Particle Physics (MIAPP)</i> Garching - Germany (invitation-only event)

Emille E. O. Ishida

Publication List

Books

1. Hilbe, J. M., de Souza, R. S. and **Ishida, E. E. O.**, *Bayesian Models for Astrophysical Data: Using R, JAGS, Python and Stan*, Cambridge University Press, Jun, 2017 - PROSE Awards winner in the category "Astronomy and Cosmology"

Published Papers

1. Boucaud, A. et al. (incl. **Ishida, E. E. O.**), *Photometry of high-redshift blended galaxies using deep learning*, MNRAS, 491 (2), Jan/2020
2. Pruzhinskaya, M. V. et al. (incl. **Ishida, E. E. O.**), *Anomaly detection in the Open Supernova Catalog*, MNRAS, 489, Issue 3, p.3591-3608, Nov/2019
3. Malz, A. I. et al. (incl. **Ishida, E. E. O.**), *The Photometric LSST Astronomical Time-series Classification Challenge PLAsTiCC: Selection of a Performance Metric for Classification Probabilities Balancing Diverse Science Goals*, AJ, 158 (5), article id. 171, Nov/2019
4. Kessler, R. et al. (incl. **Ishida, E. E. O.**), *Models and Simulations for the Photometric LSST Astronomical Time Series Classification Challenge (PLAsTiCC)*, PASP, 131 (1003), pp. 094501, Sep/2019
5. Moews, B. et al. (incl. **Ishida, E. E. O.**), *Stress testing the dark energy equation of state imprint on supernova data*, PRD, 99 (12), id.123529, Jun/2019
6. Cantat-Gaudin, T. et al. (incl. **Ishida, E. E. O.**), *Gaia DR2 unravels incompleteness of nearby cluster population: New open clusters in the direction of Perseus*, A&A, 624 (A126), Apr/2019
7. **Ishida, E. E. O.** et al., *Optimizing spectroscopic follow-up strategies for supernova photometric classification with active learning*, MNRAS, 483 (1), p.2-18, Feb/2019
8. González-Gaitán, S. et al. (incl. **Ishida, E. E. O.**), *Spatial field reconstruction with INLA: Application to IFU galaxy data*, MNRAS, 482 (3), p.3880-3891, Jan/2019
9. Beck, R., Lin, C-A, **Ishida, E. E. O.** et al., *On the realistic validation of photometric redshifts, or why Teddy will never be Happy*, MNRAS, 468 (4), p. 4323-4339, Jul/2017
10. Sasdelli, M. et al. (incl. **Ishida, E. E. O.**), *A metric space for type Ia supernova spectra: a new method to assess explosion scenarios*, MNRAS, 466 (4), p.3784-3809, May/2017
11. Henne, V. et al. (incl. **Ishida, E. E. O.**), *The influence of host galaxy morphology on the properties of Type Ia supernovae from the JLA compilation*, New Astronomy, 51, p. 43-50, Feb/2017
12. Sasdelli, M. **Ishida, E. E. O.** et al., *Exploring the spectroscopic diversity of Type Ia supernovae with DRACULA: a machine learning approach*, MNRAS, 461, Issue 2, p.2044-

2059, Sep/2016

13. Sasdelli, M., **Ishida, E. E. O.** et al., *Breaking the color-reddening degeneracy in type Ia supernovae*, MNRAS, 461 (2), p.2044-2059, Jul/2016
14. Tartaglia, L. et al. (incl. **Ishida, E. E. O.**), *The supernova impostor PSN J09132750+7627410 and its progenitor*, ApJ 823 (2), article id. L23, Jun/2016
15. Bhardwaj, A. et al. (incl. **Ishida, E. E. O.**), *Large Magellanic Cloud Near-Infrared Synoptic Survey - III. A statistical study of non-linearity in the Leavitt Laws*, In: MNRAS, 457 (2), p.1644-1665, Apr/2016
16. Pastorello, A. et al. (incl. **Ishida, E. E. O.**), *Massive stars exploding in a He-rich circumstellar medium - VIII. PSN J07285387+3349106, a highly reddened supernova Ibn*, In: MNRAS, 454 (4), p.4293-4303, Dez/2015
17. Pastorello, A. et al. (incl. **Ishida, E. E. O.**), *Massive stars exploding in a He-rich circumstellar medium - VII. The metamorphosis of ASASSN-15ed from a narrow line Type Ibn to a normal Type Ib Supernova*, In: MNRAS, 453 (4), p.3649-3661, Nov/2015
18. **Ishida, E. E. O.** et al., *cosmoabc: Likelihood-free inference via Population Monte Carlo Approximate Bayesian Computation*, In: Astronomy & Computing, 13 (1-11), Nov/2015
19. de Souza, R. S. et al. (incl. **Ishida, E. E. O.**), *The Overlooked Potential of Generalized Linear Models in Astronomy-III: Bayesian Negative Binomial Regression and Globular Cluster Populations*, MNRAS, 453 (2), Oct/2015
20. Elliot, J., et al. (incl. **Ishida, E. E. O.**), *The overlooked potential of Generalized Linear Models in astronomy-II: Gamma regression and photometric redshifts*, Astronomy & Computing, 10 (961-72), April/2015
21. Sasdelli, M. et al. (incl. **Ishida, E. E. O.**), *A metric space for Type Ia supernova spectra*, MNRAS, 447 (2), Feb/2015
22. Krone-Martins, A., **Ishida, E. E. O.**, de Souza, R. S., *The first analytical expression to estimate photometric redshifts suggested by a machine*, MNRASL, 443, L34-L38, Sep/2014
23. de Souza, R. S., **Ishida, E. E. O.**, Johnson, J. L., Whalen, D. J. and Messinger, A., *Detectability of the first cosmic explosions*, MNRAS, 436 (1555), Dez/2013
24. Benitez-Herrera, S., **Ishida, E. E. O.** et al., *Cosmological Parameter Estimation from SN Ia data: a Model-Independent Approach*, MNRAS, 436 (854), Nov/2013
25. **Ishida, E. E. O.** and de Souza, R. S., *Kernel PCA for type Ia supernovae photometric classification*, MNRAS, 430 (509), Mar/2013
26. de Souza, R. S. et al. (incl. **Ishida, E. E. O.**), *Looking for the first stars with Gaia mission*, Astronomy & Astrophysics, 545 (A102), Sep/2012
27. **Ishida, E. E. O.**, de Souza, R. S. and Ferrara, A., *Probing cosmic star formation up to $z = 9.4$ with GRBs*, MNRAS, 418 (500), Nov/2011
28. de Souza, R. S. et al. (incl. **Ishida, E. E. O.**), *The Effect of a Single Supernova Explosion on the Cuspy Density Profile of a Small-Mass Dark Matter Halo*, MNRAS, 415 (2969-2973), Aug/2011
29. **Ishida, E. E. O.** and de Souza, R. S., *Hubble parameter reconstruction from PCA: minimizing the bias*, Astronomy & Astrophysics, 527 (A49), Mar/2011
30. de Souza, R. S. and **Ishida, E. E. O.**, *An analytical approach to the dwarf galaxies cusp problem*, Astronomy & Astrophysics, 524 (A74), Dec/2010

31. **Ishida, E. E. O.** et al., *When did cosmic acceleration start? How fast was the transition?*, *Astroparticle Physics*, v. 28 (6), 547-552, Jan/2008
32. **Ishida, E. E. O.**, *Statefinder Revisited*, *Brazilian Journal of Physics*, v.35 (4B), Dec/2005

Submitted Papers

1. **Ishida, E. E. O.** et al., *Active Anomaly Detection for time-domain discoveries*, submitted to MNRAS, arXiv:astro-ph/1909.13260

Refereed Proceedings

1. Vilalta, R., **Ishida, E. E. O.** et al., *Photometric Redshift Estimation: An Active Learning Approach*, IEEE Symposium on Computational Intelligence and Data Mining (CIDM-17), Hawaii, USA, 2017, pp. 1-8. doi: 10.1109/SSCI.2017.8285192
2. Gupta, K. D. et al. (incl. **Ishida, E. E. O.**), *Automated Supernova Ia Classification Using Adaptive Learning Techniques*, 2016 IEEE Symposium Series on Computational Intelligence (SSCI), Athens, Greece, 2016, pp. 1-8. doi: 10.1109/SSCI.2016.7849951
3. **Ishida, E. E. O.** et al., *Exploring the spectroscopic diversity of type Ia supernovae with Deep Learning and Unsupervised Clustering*, IAU Symposium 325 - Astroinformatics, Sorrento - Italy, Nov/2016
4. **Ishida, E. E. O.**, Abdalla, F. B. and de Souza, R. S., *Improved KPCA for Supernova Photometric Classification*, Proceedings of the International Astronomical Union, Volume 10, Symposium S306, pp 326-329, published Jul/2015
5. **Ishida, E. E. O.**, *Kernel PCA for Supernovae Photometric Classification*, Highlights of Astronomy, 16 (683-684), Mar/2015
6. Elliot, J., de Souza, R. S., Krone-Martins, A., Cameron, E., **Ishida, E. E. O.**, Hilbe, J., *Using gamma regression for photometric redshifts of survey galaxies*, "The Universe of Digital Sky Surveys" conference held at the INAF - Observatory of Capodimonte, Naples, on 25th-28th Nov/2014

Magazines

1. **Ishida, E. E. O.**, *Machine learning and the future of supernova cosmology*, *Nature Astronomy*, Volume 3, p. 680-682, Aug/2019
2. de Souza, R. S. and **Ishida, E. E. O.**, *Making sense of massive unknowns*, In: *Significance Magazine*, vol 11 issue 5, Dez/2014

Softwares

1. **Ishida, E. E. O.**, *ActSNClass: Active learning for supernova photometric classification*, ascl:1908.003 - documentation available at Readthedocs, Bibcode: 2019ascl.soft08003I
2. Agüena, M. et al. (incl. **Ishida, E. E. O.**), *DRACULA: Dimensionality Reduction And Clustering for Unsupervised Learning in Astronomy*, ascl:1512.009, Bibcode: 2015ascl.soft12009A
3. **Ishida, E. E. O.**, *cosmoabc*, ascl:1505.013 - documentation available at Readthedocs,

Bibcode: 2015ascl.soft05013I

4. de Souza, R. S., Elliott, J., Krone-Martins, A., **Ishida, E. E. O.**; Hilbe, J., Cameron, E., *CosmoPhotoz*, ascl:1408.018, Bibcode: 2014ascl.soft08018D

Astronomer's Telegram

1. Elias-Rosa, N. *et al.* (incl. **Ishida, E. E. O.**), *Spectroscopic classification of PSN J13215756 + 3843229 in NGC 5112 at the Nordic Optical Telescope*, In: The Astronomer's Telegram, #7223, Mar/2015
2. Ochner, P. *et al.* (incl. **Ishida, E. E. O.**), *Asiago classification of PSN J08593491+4555343*, In: The Astronomer's Telegram, #7222, Mar/2015
3. Noebauer, U., *et al.* (incl. **Ishida, E. E. O.**), *Asiago classification of PS15mb and ASASSN-15ed*, In: The Astronomer's Telegram, #7219, Mar/2015

Data Catalogs

1. Cantat-Gaudin, T. *et al.* (incl. **Ishida, E. E. O.**), *VizieR Online Data Catalog: New open clusters in Perseus direction*, In: VizieR On-line Data Catalog: J/A+A/624/A126

Outreach

1. **Ishida, E. E. O.**, *Plutão ainda tem muito a nos revelar*, Cientistas descobriram que ..., November 3rd, 2015 - in Portuguese
2. **Ishida, E. E. O.**, *Pesquisadores brasileiros investigam a estrutura da Via-Láctea*, Cientistas descobriram que ..., July 7th, 2015 - in Portuguese
3. **Ishida, E. E. O.**, *Planetas semelhantes a Terra existiram por quase toda história do Universo*, Cientistas descobriram que..., March 10th, 2015 - in Portuguese
4. **Ishida, E. E. O.**, *Laniakea: um super-aglomerado para chamar de lar*, Cientistas descobriram que ..., October 21st, 2014 - in Portuguese
Ishida, E. E. O., *The Lutheran Church and the birth of Modern Astronomy*, The British Lutheran, ELCE, October 2009, London, UK

Others

1. *LACAN - Survey of scientific working environment in the Brazilian astronomical Community*, de Souza, R. S., **Ishida, E. E. O.**, Trevisan, M., Rua, J., Pereira, M.E.S., Jul/2015 - statistical results and proposed preventive actions can be found in <http://lacanastro.wix.com/lacan2015-english>
2. Portuguese translation of Richard Murphy's poem *Sailing to an Island*, de Souza, R. S. and **Ishida, E. E. O.**, *Navengando rumo à Ilha*, Art i Literatura, v. 47, serie ALPHA, Valencia, Spain, September 2010 (ISSN 1989-3590)