

CURRICULUM VITAE

Name : Emille Eugenia de Oliveira Ishida
Cited as : Ishida, E. E. O.
Date of birth : 24 April 1981
Email : emille.ishida@clermont.in2p3.fr
ORCID : orcid.org/0000-0002-0406-076X
website : <https://www.emilleishida.com>

Current position

CNRS Research engineer

Feb/2019 - 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

Funding obtained

CNRS - IEA

Jan/2021 - Dec/2022 CNRS International Emerging Actions, obtained in a joint application,
also approved by the Russian Foundation for Basic Research (RFBR)
14k EUR

CNRS MOMENTUM

Jan/2018 - Dec/2020 CNRS, France : 180 kEUR

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

Mar/2010 - now	LSST-DESC membership committee member
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 and science coordinator

Apr/2018 - now	Fink - community broker for LSST
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Founding member, logistic manager and leader of Python projects

Apr/2014 - now	The Cosmostatistics Initiative (COIN) <i>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.</i>
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Participation in Organizing Committees for French and International Events

23-30/Nov/2019 COIN-Focus #2 - Toliman, Italy
 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 *Munich Institute for Astro and Particle Physics (MIAPP)*
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
4.5 hours tutorial on Machine Learning
10-16/Dez/2017 11th TRR33 Winter School on Cosmology, Passo del Tonale - Italy
4h tutorial on Statistics in Cosmology
30/Jun/2017 EWASS - SS14 *Astroinformatics*, Prague - Czech Republic
06/Jun/2017 *ATLAS Workshop on Machine Learning* - CERN - Switzerland
20/Jun/2014 *Munich Institute for Astro and Particle Physics (MIAPP)*
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. Kuhn *et al.* (incl. **Ishida, E. E. O.**), *SPICY: The Spitzer/IRAC Candidate YSO Catalog for the Inner Galactic Midplane*, *ApJS*, accepted
2. Möller *et al.* (incl. **Ishida, E. E. O.**), *Fink, a new generation of broker for the LSST community*, *MNRAS*, accepted
3. Feigelson, E. D. *et al.* (incl. **Ishida, E. E. O.**), *21st Century Statistical and Computational Challenges in Astrophysics*, accepted for publication in volume 8 of *Annual Reviews of Statistics and Its Application*, arXiv:astro-ph/2005.13025
4. Moews, B. *et al.* (incl. **Ishida, E. E. O.**), *Ridges in the Dark Energy Survey for cosmic trough identification*, *MNRAS*, 500, Issue 1, p. 859–870, Jan/2021
5. Boucaud, A. *et al.* (incl. **Ishida, E. E. O.**), *Photometry of high-redshift blended galaxies using deep learning*, *MNRAS*, 491 (2), Jan/2020
6. 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
7. 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
8. 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
9. 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
10. 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
11. **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
12. 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

13. 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
14. 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
15. 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, Fev/2017
16. 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
17. 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
18. 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
19. 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
20. 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
21. 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
22. **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
23. 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
24. 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
25. Sasdelli, M. et al. (incl. **Ishida, E. E. O.**), *A metric space for Type Ia supernova spectra*, MNRAS, 447 (2), Feb/2015
26. 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
27. 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
28. 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
29. **Ishida, E. E. O.** and de Souza, R. S., *Kernel PCA for type Ia supernovae photometric classification*, MNRAS, 430 (509), Mar/2013
30. 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

31. **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
32. 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
33. **Ishida, E. E. O.** and de Souza, R. S., *Hubble parameter reconstruction from PCA: minimizing the bias*, Astronomy & Astrophysics, 527 (A49), Mar/2011
34. de Souza, R. S. and **Ishida, E. E. O.**, *An analytical approach to the dwarf galaxies cusp problem*, Astronomy & Astrophysics, 524 (A74), Dec/2010
35. **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
36. **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 Astronomy and Astrophysics, arXiv:astro-ph/1909.13260

Book chapters

1. Delli Veneri, M. *et al.* (incl. **Ishida, E. E. O.**), *Periodic Astrometric Signal Recovery through Convolutional Autoencoders*, In: "Intelligent Astrophysics" of the series "Emergence, Complexity and Computation", Book eds. I. Zelinka, D. Baron, M. Brescia, Springer Nature Switzerland, ISSN: 2194-7287

Refereed Proceedings

1. Acquaviva, V., Lovell, C. and **Ishida, E. E. O.**, *Debunking Generalization Error or: How I Learned to Stop Worrying and Love My Training Set*, 2020 NeurIPS workshop "Machine Learning and the Physical Sciences"
2. Kennamer, N. , **Ishida, E. E. O.** *et al.*, *Active learning with RESSPECT: Resource allocation for extragalactic astronomical transients*, 2020 IEEE Symposium Series on Computational Intelligence, Canberra, Australia, 2020
3. Malanchev, K. *et al.* (incl. **Ishida, E. E. O.**), *Realization of Different Techniques for Anomaly Detection in Astronomical Databases*, In: Elizarov A., Novikov B., Stupnikov S. (eds) Data Analytics and Management in Data Intensive Domains. DAMDID/RCDL 2019. Communications in Computer and Information Science, vol 1223. Springer, Cham, pp. 97-107, 2020, DOI:10.1007/978-3-030-51913-1_7
4. 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
5. 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

6. **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
7. **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
8. **Ishida, E. E. O.**, *Kernel PCA for Supernovae Photometric Classification*, Highlights of Astronomy, 16 (683-684), Mar/2015
9. 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

Research notes

1. Aleo, P.D. *et al.* (incl. **Ishida, E. E. O.**), *The Most Interesting Anomalies Discovered in ZTF DR3 from the SNAD-III Workshop*, Res. Notes AAS, 4, 112, 2020, DOI:10.3847/2515-5172/aba6e8

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)