

# Pablo Lemos, Ph.D.

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✉ p.lemos@sussex.ac.uk  
☎ +44 (0) 7761 888 787  
🌐 <https://pablo-lemos.github.io>

🐦 @PabloLemosP  
🌐 <http://www.linkedin.com/in/plemosp/>  
🆔 <https://orcid.org/0000-0002-4728-8473>

## WORK EXPERIENCE

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**Postdoctoral Research Scientist**, University of Sussex Jan 2021 — Present

- Focus on new application of Artificial Intelligence and Machine Learning to Astrophysics
- Use state of the art Bayesian Methods to perform parameter estimation from observations by the Simons Observatory
- Work on Bayesian Neural Networks applied to cosmology in Collaboration with the cosmology group at Flatiron Institute
- Organization of weekly journal club that analyses and discusses relevant papers every week
- Multiple contributions to open source repositories through GitHub
- Extensive outreach and teaching activities

**Postdoctoral Research Scientist**, University College London Oct 2018 — Jan 2021

- Development of new Bayesian Framework to quantify consistency between data sets, that has now been widely adopted by the cosmology community
- Pioneering work on using Graph Neural Networks and Deep Learning to and solar system observations for automated scientific discovery with artificial intelligence
- Novel application of Gaussian Mixture Density Networks and Masked Autoregressive Flows to estimate the mass of the local group of galaxies
- Organization of weekly seminars with top speakers from all over the world
- Leadership of working group in Bayesian methods at the Dark Energy Survey leading to two publications
- Mentorship and management of Masters and PhD students, including data science projects with industry programs
- Named UCL Honorary Research Fellow at the end of the appointment

## EDUCATION

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**Ph.D., Astrophysics**, University of Cambridge 2015 — 2018

**Master of Science, Physics**, University of Chicago, GPA: 3.98/4.00 2013 — 2015

**Bachelor, Physics**, Universidad Complutense de Madrid, Top 1% 2009 — 2013

## PROFESSIONAL SKILLS

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- Excellent coding skills in Python, C++, Fortran
- Proven experience in developing and training Machine Learning models using TensorFlow and PyTorch
- Extensive communication and presentation skills, including presenting to non-expert audiences, proven by multiple presentation awards
- Experience working in clusters, such as NERSC
- Demonstrable experience maintaining and developing open source code through GitHub
- Leadership and organizational skills
- Fluency in English, Spanish and Galician
- Problem-solving skills and adaptability to new problems, proven by extensive publication record

## SELECTED PUBLICATIONS

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1. **Lemos, Pablo et al.** Rediscovering Newton's gravity and Solar System properties using deep learning and inductive biases. *ICLR 2021 SimDL Workshop* (2021).
2. **Lemos, Pablo et al.** The sum of the masses of the Milky Way and M31: a likelihood-free inference approach. arXiv: 2010.08537 [astro-ph.GA] (Oct. 2020).
3. Handley, W. & **Lemos, Pablo**. Quantifying tensions in cosmological parameters: Interpreting the DES evidence ratio. *Phys. Rev. D* **100**, 043504. arXiv: 1902.04029 [astro-ph.CO] (2019).
4. **Lemos, Pablo et al.** Model independent  $H(z)$  reconstruction using the cosmic inverse distance ladder. *Mon. Not. Roy. Astron. Soc.* **483**, 4803–4810. arXiv: 1806.06781 [astro-ph.CO] (2019).
5. **Lemos, Pablo**, Challinor, A. & Efstathiou, G. The effect of Limber and flat-sky approximations on galaxy weak lensing. *JCAP* **05**, 014. arXiv: 1704.01054 [astro-ph.CO] (2017).

(Full publication list available at <https://orcid.org/0000-0002-4728-8473>)