Valeriu_Predoi_CV.md

Maintained? yes

Curriculum Vitae Dr. Valeriu Predoi

Table of Contents

- Personal
- Work
- Education
- Honors
- Skills
- Papers

Personal

- Address: Harry Pitt 103, Meteorology, University of Reading, Reading RG6 6BB, UK
- E-mail: valeriu.predoi@ncas.ac.uk
- GitHub: https://github.com/valeriupredoi
- orcid: https://orcid.org/0000-0002-9729-6578
- LinkedIN: https://uk.linkedin.com/in/valeriu-predoi-phd-29547240
- Google Scholar: https://scholar.google.co.uk/citations?user=n4GXtW4AAAAJ&hl=en
- 500px: https://500px.com/p/valeriupredoi

Work

- **04/2017 - present Research Scientist**
  - Institution: NCAS-CMS, University of Reading, Reading, UK
  - Role:
    - scientific software engineer
    - UKESM core developer https://ukesm.ac.uk/
    - ESMValTool core developer https://github.com/ESMValGroup and https://www.esmvaltool.org/
    - description: providing advanced scientific software solutions in the service of climate scientists
  - Project management: core technical lead ESMValCore software package, core technical lead ESMValTool software package, core developer in the ESMValGroup project, IPCC AR6 corresponding author, UKESM core developer, Met Office Climate Data Dissemination System developer, CEDA/JASMIN group workspace administrator, Met Office collaborator on evaluation tools for climate models (Autoassess), various developments of analysis tools for NCAS scientists
  - Other tasks: provide continuous support for ESMValTool's integration as the standard for climate model evaluation (online tutorials, in-situ tutorials and seminars); support for NCAS colleagues at Reading; helpdesk mailing list administrator; work on

emergency software issues (e.g. work on COVID-19 computational models in 2020)
    - Projects: MAGIC (past), CRESCENDO and ISENES3 (current)
    - Line manager: Dr. G. M. S. Lister
- **04/2014 - 11/2016 Senior Postdoctoral Research Associate**
    - Institution: School of Physics and Astronomy, Cardiff University, Cardiff, UK
    - Role: scientific and computational research in gravitational waves
    - Project management: project co-lead, detection of long gravitational wave bursts with X-Pipeline's Spherical Radiometer ('XSphRad'); project lead, detection of gravitational wave bursts associated with gamma-ray triggers during Advanced LIGO first observation run (O1)
    - Postgraduate students supervised: Dr. Maxime Fays (Cardiff University, PhD)
    - Undergraduate students supervised: Elen Golightly (University of Leicester, PhD), Virginia D'Emilio (University of Oxford, PhD)
    - Academic roles: Cardiff University Board of Studies (2015-2016); project student lecturer; postdoctoral representative for the School of Physics and Astronomy
    - Line manager: Prof. Patrick S. Sutton
- **02/2013 - 02/2014 Postdoctoral Research Fellow**
    - Institution: Ryerson University, Toronto, Ontario, Canada
    - Role: mathematical and computational modelling of viral infections
    - Research: theoretical viral model characterization with non-linear ordinary differential systems, parameter estimation with Monte Carlo methods
    - Line manager: Dr. Catherine Beauchemin
- **06/2012-02/2013 Postdoctoral Research Associate**
    - Institution: Cardiff University, Cardiff, UK
    - Role: scientific and computational research in gravitational waves
    - Project management: project lead, gravitational waves signals associated with gamma-ray bursts detected by the InterPlanetary Network (IPN)
    - Line manager: Prof. Stephen Fairhurst

Education

- **09/2008 - 09/2012 PhD**, Cardiff University, Cardiff, UK, supervisor: Prof. S. Fairhurst Research: gravitational waves astrophysics and data analysis. Thesis title: "Gravitational waves and short gamma ray bursts". Formal defense: September 5, 2012 (defense result: pass with minimum corrections)
- **03/2007 - 09/2008 MSc**, Université de Montréal, Montréal, Canada, supervisor: Prof. P. Bastien Research: Polarimetry and Submillimetre Astronomy with SCUBA-2/POL camera
- **09/2003 - 12/2006 BSc**, Jacobs University, Bremen, Germany, tutor: Dr. S. Rosswog Major: Geosciences and Astrophysics; Minor: Physics (GPA: B+ or 2.0(=B+)/1.0(=A+), reverse US scale)

Honors

- BigDat 2021 workshop on data science invited lecturer
- Employee excellence award, University of Reading
- Breakthrough Prize (together with the entire LIGO Collaboration)
- Cardiff University Vice-chancellor Award for excellence in research
- Ad Astra award for excellence in research
- Postdoctoral Research Fellowship Award, the Indian Institute of Science, Education and Research (IISER), Trivandrum, India
- Research Endorsement Postdoctoral Fellowship University of Balearic Islands, Spain
- 8th "Edoardo Amaldi" Conference on Gravitational Waves, Columbia University, New York City, USA - invited plenary talk

Skills

- Computational skills:
    - full software package cycle:
        - design: scientific software specifications and standards
        - development (Python (with Dask, sci- and numerical libraries, MPI), C, Matlab, R, julia) with coding standards (PEP8/Pylint) on shared dev platforms (mostly `git` , also `svn`)

        - environment integration and dependency tree automation (Anaconda, PyPi)
        - testing and CI (Pytest, Github Actions, CircleCI, TravisCI)
        - automation (workflows, schedulers, Github Actions, Docker containers)
        - performance analysis (debuggers, serial and parallel optimiziation, I/O optimization)
        - deployment (on HPC's as modules, release schedules and actual releases)
    - software package support: Github issues, pull requests, HPC helpdesk, tutorials, workshops
    - maintenance of HPC cluster workspaces
- Mathematical/statistical skills:
    - non-linear models, mathematical models with stiff ordinary differential systems
    - Bayesian parameter estimation methods, Monte Carlo
    - maximum likelihood estimators for non-linear systems
    - waveform models and signal extraction from noise using matched filters
    - statistical tests
- Languages: English (first language since 2003), Romanian (mother tongue), French (fluent-ish), Italian (reading well, basic spoken), German (can order a beer)

Papers

- Righi, M., Andela, B., Eyring, V., Lauer, A., Predoi, V., Schlund, M., Vegas-Regidor, J., Bock, L., Brötz, B., de Mora, L., Diblen, F., Dreyer, L., Drost, N., Earnshaw, P., Hassler, B., Koldunov, N., Little, B., Loosveldt Tomas, S., and Zimmermann, K. "ESMValTool v2.0 - Technical overview" Geosci. Model Dev., 13, 1179-1199 doi: 10.5194/gmd-13-1179-2020, 2020 https://gmd.copernicus.org/articles/13/1179/2020/
- Eyring, V., Bock, L., Lauer, A., Righi, M., Schlund, M., Andela, B., Arnone, E., Bellprat, O., Brötz, B., Caron, L.-P., Carvalhais, N., Cionni, I., Cortesi, N., Crezee, B., Davin, E., Davini, P., Debeire, K., de Mora, L., Deser, C., Docquier, D., Earnshaw, P., Ehbrecht, C., Gier, B. K., Gonzalez-Reviriego, N., Goodman, P., Hagemann, S., Hardiman, S., Hassler, B., Hunter, A., Kadow, C., Kindermann, S., Koirala, S., Koldunov, N., Lejeune, Q., Lembo, V., Lovato, T., Lucarini, V., Massonnet, F., Müller, B., Pandde, A., Pérez-Zanón, N., Phillips, A., Predoi, V., Russell, J., Sellar, A., Serva, F., Stacke, T., Swaminathan, R., Torralba, V., Vegas-Regidor, J., von Hardenberg, J., Weigel, K., and Zimmermann, K. "Earth System Model Evaluation Tool (ESMValTool) v2.0 - an extended set of large-scale diagnostics for quasi-operational and comprehensive evaluation of Earth system models in CMIP" Geosci. Model Dev., 13, 3383-3438 doi: 10.5194/gmd-13-3383-2020, 2020 https://gmd.copernicus.org/articles/13/3383/2020/
- Weigel, K., Bock, L., Gier, B. K., Lauer, A., Righi, M., Schlund, M., Adeniyi, K., Andela, B., Arnone, E., Berg, P., Caron, L.-P., Cionni, I., Corti, S., Drost, N., Hunter, A., Lledó, L., Mohr, W. C., Paçal, A., Pérez-Zanón, N., Predoi, V., Sandstad, M., Sillmann, J., Sterl, A., Vegas-Regidor, J., von Hardenberg, J., and Eyring, V. "Earth System Model Evaluation Tool (ESMValTool) v2.0 - diagnostics for extreme events, regional and impact evaluation and analysis of Earth system models in CMIP" Geosci. Model Dev. Discuss. doi: 10.5194/gmd-2020-244 (in review) https://gmd.copernicus.org/preprints/gmd-2020-244/
- Bock, Lauer, A., Schlund, M., Barreiro, M., Bellouin, N., Jones, C., Meehl, G. A., Predoi, V., Roberts, M. J., and Eyring, V. "Quantifying progress across different CMIP phases with the ESMValTool" J. Geophys. Res., 125, e2019JD032321 doi: 10.1029/2019JD032321, 2020 https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019JD032321
- B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) “Search for gravitational waves associated with gamma-ray bursts during the First Advanced LIGO Observing Run and implications for the Origin of GRB 150906B” The Astrophysical Journal, Volume 841, Number 2, 2017 https://iopscience.iop.org/article/10.3847/1538-4357/aa6c47
- Sellar, Alistair; Jones, Colin G.; Mulcahy, Jane; Tang, Yongming; Yool, Andrew; Wiltshire, Andy; O'Connor, Fiona; Stringer, Marc; Hill, Richard; Palmieri, Julien; Woodward, Stephanie; de Mora, Lee; Kuhlbrodt, T.; Rumbold, Steven T.; Kelley, Douglas I.; Ellis, Rich; Johnson, Colin E.; Walton, Jeremy; Abraham, NL; Andrews, Martin B.; Andrews, Timothy; Archibald, A. T.; Berthou, Ségolène; Burke, Eleanor; Blockley, Ed; Carslaw, Ken; Dalvi, Mohit; Edwards, John; Folberth, Gerd A.; Gedney, Nicola; Griffiths, Paul; Harper, Anna B.; Hendry, Maggie A.; Hewitt, Alan J.; Johnson, Ben T.; Jones, Andy; Jones, Chris D.; Keeble, James; Liddicoat, Spencer; Morgenstern, Olaf; Parker, Rob J.; Predoi, Valeriu; Robertson, Eddy; Siahaan, Antony; Smith, Robin S.; Smith, Robin; Woodhouse, Matthew T.; Zengast, Guang; Zerroukat, Mohamed "UKESM1: Description and Evaluation of the U.K. Earth System Model" Journal Of Advances In Modeling Earth Systems, 11 (12), 4513-4558 doi:10.1029/2019ms001739 2019 https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019MS001739
- B.P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) “Observation of Gravitational Waves from a Binary Black Hole Merger” Phys. Rev. Lett., 116, 061102 Published 11 February 2016 http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.116.061102
- A.R. Williamson, C. Biwer, S. Fairhurst, I.W. Harry, E. Macdonald, D. Macleod, and V. Predoi “Improved methods for detecting gravitational waves associated with short gamma-ray bursts” Phys. Rev. D, 90, 122004, 2014 http://journals.aps.org/prd/abstract/10.1103/PhysRevD.90.122004

- V. Predoi “Estimating viral infection parameters using Markov Chain Monte Carlo simulations”, http://arxiv.org/abs/1501.07850
- J. Aasi et al., (for LIGO Scientific Collaboration and Virgo Collaboration, the IPN and NASA/Fermi Gamma-ray Telescopes collaborations) “Search for Gravitational Waves Associated with γ-ray Bursts Detected by the Interplanetary Network”, Phys. Rev. Lett., 113, 011102, 2014 http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.113.011102
- V. Predoi “Gravitational Waves and Short Gamma Ray Bursts”, Ph.D. thesis Cardiff University, Cardiff, UK, November 2012 http://orca.cf.ac.uk/39987/
- V. Predoi for LIGO Scientific Collaboration and Virgo Collaboration and K. Hurley, “Search for gravitational waves associated with the InterPlanetary Network short gamma ray bursts”, Journal of Physics: Conference Series, Volume 363, Number 1, 2012, http://stacks.iop.org/1742-6596/363/i=1/a=012034
- V. Predoi et al., “Prospects for joint radio telescope and gravitational-wave searches for astrophysical transients”, Classical and Quantum Gravity, Volume 27, Number 8, 2010, http://iopscience.iop.org/0264-9381/27/8/084018
- B. Abbott et al. (LIGO Scientific Collaboration, Virgo Collaboration), “Search for gravitational-wave inspiral signals associated with short Gamma-Ray Bursts during LIGO’s fifth and Virgo’s first science run”, The Astrophysical Journal, Volume 715, Number 2, 2010. http://iopscience.iop.org/0004-637X/715/2/1453/
- Briggs, M.S. et al. (LIGO Scientific Collaboration, Virgo Collaboration), “Search for gravitational waves associated with gamma-ray bursts during LIGO science run 6 and Virgo science runs 2 and 3”, The Astrophysical Journal, Volume 760, Number 1, 2012, http://iopscience.iop.org/0004-637X/760/1/12/
- Abadie, J. et. al. (LIGO Scientific Collaboration, Virgo Collaboration) “Search for Gravitational Waves from Low Mass Compact Binary Coalescence in LIGO’s Sixth Science Run and Virgo’s Science Runs 2 and 3” Phys.Rev. D, 85, 082002, 2012 http://journals.aps.org/prd/abstract/10.1103/PhysRevD.85.082002