

Curriculum Vitae

Roger Blue Stabbins

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Earth Sciences Department
The Natural History Museum
London
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Academic Record

- 2019 – present Earth Sciences Dept., The Natural History Museum, London, UK
PDRA, UK Space Agency Aurora Grant
Project: “*Geochemistry to Geology for ExoMars 2020: Visible to Near-Infrared Spectral Variability*”
Supervised by Dr. P. Grindrod.
- 2015-2019 Mullard Space Science Laboratory, University College London, UK
PhD Planetary Science, UK Space Agency Aurora Studentship
Thesis: “*Spectral Imaging Simulations for Planetary Surface Exploration: Preparing for PanCam on the ExoMars Rover*”
Supervised by Prof. A. Coates.
- 2014-2015 School of Elec. Eng. & Comp. Sci., Queen Mary University London, UK
Media & Arts Technology Centre for Doctoral Training, EPSRC Studentship
- 2010-2014 Dept. Physics & Astronomy, University College London, UK
MSci Physics, 1st Class Honours
Thesis: “*Toward a Thermal Mid-Infrared Double-Fourier Interferometer*”
Supervised by Dr G. Savini.

Research Experience

- 2015 - Present ExoMars PanCam Science Team
Instrument simulation, calibration, operations planning, and image processing.
- 2018 – 2019 ExoFiT – *ExoMars-like Field Trials*
Rover operations, image processing software development, maintenance, and support.
- Autumn 2016 MURFI - *Mars Utah Rover Field Investigation*
Instrument field deployment, instrument operations support and image processing.
- Summer 2015 M&C Saatchi – *Digital Innovations Group*
Rotational haptic feedback for virtual environment interactions.
- Summer 2013 RAL Space – *Autonomous Systems Group*
Electromagnetic thrust mechanisms for nanosatellite formations.

Funding and Awards

- 2019-2022 UK Space Agency Aurora Post-Doctoral Research Assistant
- 2019 Mullard Space Science Laboratory Team Achievement Award
- 2015-2019 UK Space Agency Aurora Studentship
- 2017 ASB Student Travel Award (£100), Astrobiology Society of Britain 7th Conference
- 2017 IUGG Student Travel Award (€700), 1st IUGG Planetary Science Symposium, Berlin
- 2016 1st Prize – Oral Presentation, Wavelength, RSPSoc Early Career Annual Meeting
- 2016 1st Prize – Poster Presentation, UK Planetary Forum 13th Early Career Meeting
- 2013 Space Placement in Industry Network - Summer Internship Grant - RAL Space

Teaching and Supervision

- 2020-present Co-supervisor – PhD Thesis, MSSL/UCL, P. Patel
- 2019-present Co-supervisor – PhD Thesis, NHM/Imperial, S. Motaghian
- 2019 Tutor – A Level Mathematics and Physics
- 2017-2018 Supervisor - MSc Thesis, UCL, D. Bowden (now at Leicester Uni.)
- Summer 2017 Supervisor - Work Experience Group Research Project

Summer 2016 Supervisor - Work Experience Group Research Project
 Spring 2016 Teaching Assistant - Planetary Atmospheres - Coursework Marking
 Autumn 2015 Teaching Assistant - Space Environment & Orbits - Coursework Marking
 2014-2015 Tutor - GCSE Mathematics

Selected Conference Presentations

Poster 52nd Lunar & Planetary Science Conference, The Woodlands, Texas, 15-19/3/2021
 Oral RAS Specialist Discussion Meeting, London, 09/10/2020
 Oral 4th Int. Workshop on Instrumentation for Planetary Missions, TUB Berlin, 12/09/2018
 Poster 49th Lunar & Planetary Science Conference, The Woodlands, Texas, 19-23/3/2018
 Oral 1st IUGG Planetary Science Symposium, DLR, Berlin, 3/7/2017

Selected Outreach

Media Research feature in A&G Magazine, “Hunting for Biosignatures on Mars”, 1/8/2021
 Radio + Podcast Interview, Radio St Austell Bay, “When was the last time you lay down to look at the sky?”, 19/9/2020
Workshops Mission to Mars, Sutton Scholars, interactive workshops for disadvantaged 12-14 year olds, 2016 – 2018
 Mars Rover Mission Control Workshop, produced and presented team board game for simulating a Mars rover mission for A-Level students, 2016 – 2018
Talks Skype-a-Scientist, presentations/Q&A’s with international classrooms, Summer 2021
 London International Youth Science Forum, 2/8/2016

Training

Field UKSA ExoMars Field Training Workshop on Ancient Lake Sediments, Thurso, 16-19/09/2019
 UKSA ExoMars Field Training Workshop, Pembrokeshire, 18-21/09/2017
 UKSA/MURFI Remote Field Instruments Training, Aberystwyth, 19-20/10/2016
AI/ML STFC Machine Learning & Artificial Intelligence Summer School, UCL, 17-25/07/2018
Imaging Europlanet RPIF 3D Training Workshop, MSSL, 7-9/6/2016

Technical Skills

Field Multispectral imaging, using the *Aberystwyth University PanCam Emulator (AUPE)*.
 Mineralogical IR Spectral reflectance, using the *ASD FieldSpec 3*.
Laboratory Spectral BRDF soil and bulk rock measurements, using the *Refllet Goniophotometer*.
 Radiometric and geometric camera calibration and characterisation.
 Electronics experience with microcontrollers, oscilloscopes, and ESD Safety.
Computing Software development with *Python*, *IDL*, and *ENVI*
 Programming experience in *MATLAB*, *PBRT (Physically Based Rendering)*, and *C++*
 User experience with *Microsoft Office*, *github*, *Adobe Suite*, and *UNIX*

References

Dr. Peter Grindrod
 PDRA Supervisor
Earth Sciences Dept.
 Natural History Museum, London
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Prof. Andrew Coates
 PhD Supervisor
Dept. Space & Climate Physics
 Mullard Space Science Laboratory
 University College London
a.coates@ucl.ac.uk

Journal Publications & Conference Proceedings

“Optimizing ExoMars PanCam Multispectral Science: The Spectral Parameters Toolkit.”
R. Stabbins, P. M. Grindrod, S. Motaghian, E. J. Allender, and C. R. Cousins. In prep. (2022).

“Optimizing ExoMars PanCam Multispectral Science: Investigating the Limits of Material Classification”
R. Stabbins, P. M. Grindrod, S. Motaghian, E. J. Allender, and C. R. Cousins. 52nd Lunar and Planetary Science Conference 2021, Abstract #1912, (15-19/3/2021)

“Optimizing ExoMars PanCam Multispectral Science: Cross-Rover Mission Comparison”
P. M. Grindrod, **R. Stabbins**, S. Motaghian, E. J. Allender, and C. R. Cousins. 52nd Lunar and Planetary Science Conference 2021, Abstract #1340, (15-19/3/2021)
Contribution as Co-Author: Data curation, data processing, data analysis, and manuscript preparation.

“End-to-End Hyperspectral Radiometric Simulations of the PanCam Instrument for the ExoMars Rover.”
R. Stabbins, A.D. Griffiths, M. D. Gunn, and A.J. Coates. In prep. (2022)

“A Parametric Model of the Nonlinear Response of the CMOS Sensors of PanCam for the ExoMars Rosalind Franklin Rover.”
R. Stabbins, A.D. Griffiths, M. D. Gunn, and A.J. Coates. In prep. (2022)

“Martian Meteorites Through the Eyes of the ExoMars Rover: Preparing For PanCam On Mars”
S. Motaghian, P. M. Grindrod, **R. Stabbins**, E. J. Allender, C. R. Cousins, M. D. Gunn, A. Ladegaard, M. R. Balme. 51st Lunar and Planetary Science Conference 2020, Abstract #1898, (16-20/3/2020)
Contribution as Co-author: Data processing, data analysis, and manuscript preparation.

“The ExoMars-Like Field Trials (ExoFiT): PanCam Emulator Multispectral Observations”
S. Motaghian, P. M. Grindrod, E. J. Allender, **R. Stabbins**, C. R Cousins, M. R. Balme, M. D. Gunn, The PanCam and ExoFiT Teams. 50th Lunar and Planetary Science Conference 2019, Abstract #1539, (18-19/3/2019)
Contribution as Co-author: Data processing, data analysis, and manuscript preparation.

“ExoFiT: ExoMars-Like Field Trials – a Mission Simulation.”
A. Hall, B. Dobke, M. Lisle, M. Shilton, E. Allouis, L. Waugh, J. Carroll, G. Doignon, M. Azkarate, M. van Winnendael, L. Duvet, D. Martin, J. Delfa, J. Vago, S. P. Schwenzer, M. Balme, P. Fawdon, S. Turner, C. Bedford, H. Sargeant, D. Pegg, M. Mirino, T. Barrett, A. Ladegaard, F. Rull, M. Veneranda, T. Bontognali, T. Josset, J.-L. Josset, M. Josset, V. Ciarletti, D. Plettemeier, A. Le Gall, Y. Hervé, C. Corbel, A.-J. Vieau, N. R. Oudart, V. Trainer, W.-S. Benedix, S. Hegler, G. Lopez, J. Saiz, L. Preston, C. Cousins, E. Allender, S. Banham, R. Barnes, G. Northwood-Smith, K. Sangwan, P. Grindrod, J. Davis, S. Motaghian, Z. Dickeson, S. Boazman, C. Schroder, E. Hauber, N. Schmitz, A. Parkes-Bowen, R. Bahir, R. Barcenilla, C. Leff, D. Persaud, A. Coates, A. Griffiths, **R. Stabbins**, E. Bohacek, N. Kuhn, and F. Westall. 15th Symposium on Advanced Space Technologies in Robotics and Automation, ESA-ESTEC, Noordwijk, the Netherlands. (27-28 May 2019)
Contribution as Co-author: Data processing and data analysis.

"Applications of the ExoMars 2020 PanCam Wide Angle Camera Simulator: Optimising Image Acquisition and Post-Processing"
R. Stabbins, A.D. Griffiths, M. Gunn, A.J. Coates, and the PanCam Science Team. European Planetary Science Congress 2018, Berlin, Germany, (16-21 September 2018)

“Spectral Imaging System Simulation: Preparations for the ExoMars 2020 Rover PanCam Wide Angle Cameras”

R. Stabbins, A.D. Griffiths, M. Gunn, A.J. Coates, and the PanCam Science Team. 4th International Workshop on Instrumentation for Planetary Missions, Berlin, Germany, (16-21 September 2018)

“The ExoMars Spectral Tool (ExoSpec): an image analysis tool for ExoMars 2020 PanCam imagery”
E.J. Allender, **R. Stabbins**, M.D. Gunn, C.R. Cousins, A.J. Coates. Proc. SPIE 10789, Image and Signal Processing for Remote Sensing XXIV, 107890I (9 October 2018)

Contribution as Co-author: Software development, data processing, and manuscript preparation.

"Simulating The Image Chain Of The Exomars 2020 Rover PanCam Wide Angle Cameras."

R. Stabbins, A.D. Griffiths, A.J. Coates, M. Gunn, C. Huntly, F. Trauthan, N. Schmitz and the PanCam Science Team. 49th Lunar and Planetary Science Conference 2018, Abstract #2099, Houston, (19-23 March, 2018)

"The 2016 UK Space Agency Mars Utah Rover Field Investigation (MURFI)"

M.R. Balme, M.C. Curtis-Rouse, S. Banham, D. Barnes, R. Barnes, A. Bauer, C. Bedford, J. Bridges, F. E. G. Butcher, P. Caballo, A. Caldwell, A. Coates, C. Cousins, J. Davis, J. Dequaire, P. Edwards, P. Fawdon, K. Furuya, M. Gadd, P. Get, A. Griffiths, P.M. Grindrod, M. Gunn, S. Gupta, R. Hansen, J.K. Harris, L.J. Hicks, J. Holt, B. Huber, C. Huntly, I. Hutchinson, L. Jackson, S. Kay, S. Kybert, J. Lee, H.N. Lerman, M. McHugh, W. McMahon, J.-P. Muller, T. Ortner, G. Osinski, G. Paar, L.J. Preston, S. Schwenzer, **R. Stabbins**, Y. Tao, C. Traxler, S. Turner, L. Tyler, S. Venn, H. Walker, T. Wilcox, J. Wright, and B. Yeomans. Planetary & Space Science, Volume 165, January 2019, Pages 31-56 (2019)

Contribution as Co-author: Data processing, data analysis, and manuscript preparation.

"The PanCam instrument for the ExoMars rover"

A.J. Coates, R. Jaumann, A.D. Griffiths, C.E. Leff, N. Schmitz, J-L. Josset, G. Paar, M. Gunn, E. Hauber, C.R. Cousins, R.E. Cross, P. Grindrod, J.C. Bridges, M. Balme, S. Gupta, I.A. Crawford, P. Irwin, **R. Stabbins**, D. Tirsch, J.L. Vago, T. Theodorou, M. Caballo-Perucha, G.R. Osinski. Astrobiology, 17, 6-7, (2017)

Contribution as Co-author: Manuscript preparation.

"UK Space Agency “Mars Utah Rover Field Investigation 2016” (MURFI 2016): overview of mission, aims and progress."

M.R. Balme, M.C. Curtis-Rouse, S. Banham, D. Barnes, R. Barnes, A. Bauer, C. Bedford, J. Bridges, F. E. G. Butcher, P. Caballo, A. Caldwell, A. Coates, C. Cousins, J. Davis, J. Dequaire, P. Edwards, P. Fawdon, K. Furuya, M. Gadd, P. Get, A. Griffiths, P.M. Grindrod, M. Gunn, S. Gupta, R. Hansen, J.K. Harris, J. Holt, B. Huber, C. Huntly, I. Hutchinson, L. Jackson, S. Kay, S. Kybert, H.N. Lerman, M. McHugh, W. McMahon, J.-P. Muller, G. Paar, L.J. Preston, S. Schwenzer, **R. Stabbins**, Y. Tao, C. Traxler, S. Turner, L. Tyler, S. Venn, H. Walker, J. Wright, and B. Yeomans. 48th Lunar and Planetary Science Conference 2017, Abstract #1837, (20-24 March 2017)

Contribution as Co-author: Data processing and data analysis.

"Performance Requirements for a Spectral-Spatial Calibration Source for DFM Interferometers"

N. Baccichet, G. Savini, R. Juanola-Parramon, **R. Stabbins**. in Fourier Transform Spectroscopy and Hyperspectral Imaging and Sounding of the Environment, OSA Technical Digest (online) (Optical Society of America, 2015), paper JM3A.10 (1 March 2015)

Contribution as Co-author: Data processing and data analysis.

"A Thermal Spectral-Spatial Interferometric Test-bed"

G. Savini, R. Juanola-Parramon, **R. Stabbins**, N. Baccichet, A. Donohoe, A. Murphy, C. O'Sullivan. Proc. SPIE 9146, Optical and Infrared Interferometry IV, 91462N (24 July 2014)

Contribution as Co-author: Data processing, data analysis, and manuscript preparation.

Conference and Workshop Presentations, Attendance, and Organisation

Invited Oral – ExoMars PanCam Science Team Meeting, Online, 04/01/2022

Oral – Mars: A New Geological Frontier, The Geological Society, Online, 04/11/2021

Oral – ExoMars PanCam Working Group 6 Cartography & 3D Vision Meeting, 03/06/2021

Invited Oral – ExoMars PanCam Science Team Meeting, Online, 05/05/2021

Invited Oral – ExoMars PanCam Seminar Series, Online, 28/04/2021

Poster – 52nd Lunar and Planetary Science Conference, Online, 16-19/03/2021

Attendance – ExoMars PanCam Science Team Meeting, Online, 16-17/09/2020

Oral – RAS Specialist Discussion Meeting, Biosignature Identification in Habitable Martian Environments, 09/10/2020

Attendance – ExoMars PanCam Science Team Meeting, MSSL, 6-7/02/2020

Poster – 2nd British Planetary Science Congress, Oxford, UK, 13-15/01/2020

Attendance – UK Space Agency ExoMars Field Training Workshop on Ancient Lake Sediments, Thurso, Scotland, 16-19/09/2019

Attendance – PanCam Science Team Meeting, MSSL, 13/06/2019

Attendance – Workshop on 3D visualisation of Mars rover-derived stereo-image datasets for quantitative geological analysis, Imperial College London, 26-27/03/2019

Invited Oral – Imaging Group Seminar, MSSL, 25/01/2019

Oral – Plasma & Planetary Group Seminar, MSSL, 8/01/2019

Poster – European Planetary Science Congress, TUB Berlin, 16-21/09/2018

Oral – 4th International Workshop on Instrumentation for Planetary Missions, TUB Berlin, 12/09/2018

Organiser – Building Habitable Worlds IV, Astrobiology Early Careers Meeting, MSSL, 6/08/2018

Attendance – Machine Learning & Artificial Intelligence Summer School, UCL, 17-25/07/2018

Invited Oral - PanCam Science Team Meeting, MSSL, 24/4/2018

Invited Oral - Solar System Seminar, MSSL, 23/4/2018

Attendance - 3D & Visualisation for Planetary Surface Science Workshop, Vienna, 6-7/4/2018

Poster - 49th Lunar & Planetary Science Conference, The Woodlands, Texas, 19-23/3/2018

Attendance – UK Space Agency ExoMars Field Training Workshop, Pembrokeshire, Wales, 18-21/09/2017

Poster - 1st British Planetary Science Congress, Glasgow, 4-6/12/2017

Poster - 7th Astrobiology Society of Britain Conference, The Open University, 13/9/2017

Oral - RSPSOC2017: Earth & Planets, Imperial College London, 6/9/2017

Invited Oral - PanCam Science Team Meeting, MSSL, 4-5/9/2017

Oral - Centre for Planetary Sciences Summer Meeting, UCL-Birkbeck, 17/7/2017

Oral - 1st IUGG Planetary Science Symposium, DLR, Berlin, 3/7/2017

Attendance - Review of MURFI Image Processing, Imperial College London, 31/3/2017

Attendance - Computational and Statistical Aspects of Topological Data Analysis, The Alan Turing Institute, 23-24/3/2017

Oral - Building Habitable Worlds 3 - Early Career Scientists Meeting, UK Centre for Astrobiology,

Uni. Edinburgh, 21/2/2017

Invited Oral - Plasma & Planetary Science Seminar, MSSL, 31/1/2017

Oral - UK Planetary Forum 14th Early Career Scientists' Annual Meeting, Uni. Manchester, 23/1/2017

Oral - Astrobiology & Space Exploration Seminar, UCL & Birkbeck CPS, 2/12/2016

Oral - Instrument Simulation, PanCam Science Team Meeting, Joanneum Research, Graz, 21/9/2016

Oral - Planetary Science in the 21st Century, London International Youth Science Forum, 2/8/2016

Oral - An Introduction to Planetary Sciences, MSSL Work Experience, 13/7/2016

Attendance - Europlanet RPIF 3D Training Workshop, MSSL, 7-9/6/2016

Oral - Centre for Planetary Sciences Summer Festival, UCL & Birkbeck CPS, 20/6/2016

Invited Oral - Plasma & Planetary Science Seminar, MSSL, 16/5/2016

Oral - Wavelength, RSPSoc Early Career Annual Meeting 2016, MSSL, 22/2/2016

Poster - UK Planetary Forum 13th Early Career Scientists' Annual Meeting, Uni. Leicester, 22/1/2016

Attendance - Introductory Solar Systems Plasmas Summer School, Uni. Glasgow, 13-18/9/2015

Attendance - ASB6: The Origin, Distribution & Detection of Life in the Universe, UCL & Birkbeck CPS, 2-4/9/2015