

# Curriculum Vitae

Roger Blue Stabbins

rstabbins@rikkyo.ac.jp

Department of Physics

Rikkyo University

Tokyo

171-8501

---

## Academic Record

- 2023 – 2024     Department of Physics, Rikkyo University, Tokyo, Japan  
JSPS Postdoctoral Fellowship for Research in Japan  
Project: *“Performance Optimization of the MMX Remote Sensing Imaging Systems”*  
Hosted by Prof. S. Kameda
- 2019 – 2022     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 – 2022     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, 1<sup>st</sup> Class Honours

## Research Experience

- 2015 – Present     ExoMars PanCam Science Team  
Instrument simulation, calibration, operations planning, and image processing.
- Summer 2022     ENFYS Planetary Surface Infrared Spectrometer Development Team  
Technical lead for defining performance requirements for Mars surface studies.
- Autumn 2021     ESA RSOWG ExoMars Rover Simulation #4  
Observer of rover operations simulation, focusing on PanCam operation.
- 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 VR.
- Summer 2013     RAL Space – *Autonomous Systems Group* – Novel EM nano-sat propulsion.

## Funding and Awards

- 2023 – 2024     JSPS Postdoctoral Fellowship for Research in Japan
- 2019 – 2022     UK Space Agency Aurora Post-Doctoral Research Associate
- 2019             Mullard Space Science Laboratory Team Achievement Award
- 2015 – 2019     UK Space Agency Aurora Studentship
- 2017             ASB Student Travel Award, Astrobiology Society of Britain 7th Conference
- 2017             IUGG Student Travel Award, 1st IUGG Planetary Science Symposium, Berlin
- 2016             1<sup>st</sup> Prize – Oral Presentation, Wavelength, RSPSoc Early Career Annual Meeting
- 2016             1<sup>st</sup> Prize – Poster Presentation, UK Planetary Forum 13<sup>th</sup> Early Career Meeting
- 2013             Space Placement in Industry Network - Summer Internship Grant - RAL Space

## Teaching and Supervision

|             |  |
|-------------|--|
| 2019        | Tutor – A Level Mathematics and Physics                              |
| 2017 – 2018 | Supervisor - MSc Thesis, UCL, D. Bowden (now at Leicester Uni.)      |
| 2016 & 2017 | Supervisor - Work Experience Group Research Project                  |
| Spring 2016 | Teaching Assistant - Planetary Atmospheres - Coursework Marking      |
| Autumn 2015 | Teaching Assistant - Space Environment & Orbits - Coursework Marking |

## Selected Conference Presentations

|        |   |
|--------|---|
| Oral   | American Geophysical Union Fall Meeting, Chicago, 12-16/12/2022                                 |
| Poster | 52 <sup>nd</sup> Lunar & Planetary Science Conference, The Woodlands, Texas, 15-19/3/2021       |
| Oral   | 4 <sup>th</sup> Int. Workshop on Instrumentation for Planetary Missions, TUB Berlin, 12/09/2018 |
| Poster | 49 <sup>th</sup> Lunar & Planetary Science Conference, The Woodlands, Texas, 19-23/3/2018       |
| Oral   | 1st IUGG Planetary Science Symposium, DLR, Berlin, 3/7/2017                                     |

## Selected Outreach

|                  |   |
|------------------|---|
| <i>Media</i>     | Research feature in A&G Magazine, “Hunting for Biosignatures on Mars”, 1/8/2021<br>Radio + Podcast Interview, Radio St Austell Bay, “When was the last time you lay down to look at the sky?”, 19/9/2020  |
| <i>Workshops</i> | Roving-with-Rosalind, interactive kids activity, Great Exhibition Road Festival, 2022<br>Mission to Mars, Sutton Scholars, workshops for disadvantaged children, 2016–2018<br>Mars Rover Mission Control Workshop, produced and presented team board game for simulating a Mars rover mission for A-Level students, 2016–2018 |
| <i>Talks</i>     | Skype-a-Scientist, presentations/Q&A’s with international classrooms, Summer 2021<br>London International Youth Science Forum, 2/8/2016   |

## Training

|                |   |
|----------------|---|
| <i>Field</i>   | UKSA ExoMars Ancient Lake Sediments Field Training, Thurso, 16-19/09/2019<br>UKSA ExoMars Field Training Workshop, Pembrokeshire, 18-21/09/2017<br>UKSA/MURFI Remote Field Instruments Training, Aberystwyth, 19-20/10/2016 |
| <i>AI/ML</i>   | STFC Machine Learning & A.I. Summer School, UCL, 17-25/07/2018  |
| <i>Imaging</i> | Europlanet Planetary Mapping Winter School, Online, 7-11/2/2022<br>Europlanet RPIF 3D Training Workshop, MSSL, 7-9/6/2016   |

## Technical Skills

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

---

## References

Dr. Peter Grindrod  
PDRA Supervisor  
*Earth Sciences Dept.*  
Natural History Museum, London  
[p.grindrod@nhm.ac.uk](mailto:p.grindrod@nhm.ac.uk)

Prof. Andrew Coates  
PhD Supervisor  
*Dept. Space & Climate Physics*  
Mullard Space Science Laboratory  
University College London  
[a.coates@ucl.ac.uk](mailto:a.coates@ucl.ac.uk)

## Journal Publications & Conference Proceedings

“Choosing and Using Multispectral Filters for Data-Limited Dynamic Planetary Surface Exploration with Linear Discriminant Analysis”, **R. B. Stabbins**, P. M. Grindrod, S. Motaghian, E. J. Allender, and C. R. Cousins, *AGU Fall Meeting 2022*, P23A-08, Chicago, (12-16/12/2022)

“Optimizing Exomars 2022 Rover Remote Sensing Multispectral Science: Cross-Rover Comparison using Laboratory and Orbital Data” P.M. Grindrod, **R. Stabbins**, S. Motaghian, E.J. Allender, C.R. Cousins, M.S. Rice, and K. Stephan. *Earth & Space Science*, 9, e2022EA002243 (2022)  
Contributions as Co-author: Software development, data processing, data analysis, and manuscript preparation.

“Optimizing Exomars PanCam Multispectral Science: Investigating the Limits of Material Classification” **R. B. Stabbins**, P. M. Grindrod, S. Motaghian, E. J. Allender, and C. R. Cousins. *52nd Lunar and Planetary Science Conference 2021* (LPI Contrib. No. 2548), (15-19/3/2021)

“Optimizing Exomars PanCam Multispectral Science: Cross-Rover Mission Comparison” P. M. Grindrod, **R. B. Stabbins**, S. Motaghian, E. J. Allender, and C. R. Cousins. *52nd Lunar and Planetary Science Conference 2021* (LPI Contrib. No. 2548), (15-19/3/2021)  
Contribution as Co-Author: Data curation, data processing, data analysis, and manuscript preparation.

“Martian Meteorites Through the Eyes of the ExoMars Rover: Preparing For PanCam On Mars” S. Motaghian, P. M. Grindrod, **R. B. Stabbins**, E. J. Allender, C. R. Cousins, M. D. Gunn, A. Ladegaard, M. R. Balme. *51st Lunar and Planetary Science Conference 2020* (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. B. Stabbins**, C. R. Cousins, M. R. Balme, M. D. Gunn, The PanCam and ExoFiT Teams. *50th Lunar and Planetary Science Conference 2019* (LPI Contrib. No. 2132), (18-19/3/2019)  
Contribution as Co-author: Data processing, data analysis, and manuscript preparation.

“ExoFiT: ExoMars-Like Field Trials – a Mission Simulation.” Hall, A.; Dobke, B.; Lisle, M.; Shilton, M.; Allouis, E.; Waugh, L.; Carroll, J.; Doignon, G.; Azkarate, M.; van Winnendael, M.; Duvet, L.; Martin, D.; Delfa, J.; Vago, J.; Schwenzer, S. P.; Balme, M.; Fawdon, P.; Turner, S.; Bedford, C.; Sargeant, Hannah; Pegg, D.; Mirino, M.; Barrett, T.; Ladegaard, A.; Rull, F.; Veneranda, M.; Bontognali, T.; Josset, T.; Josset, J.-L.; Josset, M.; Ciarletti, V.; Plettemeier, D.; Le Gall, A.; Hervé, Y.; Corbel, C.; Vieau, A.-J.; Oudart, N. R.; Trainer, V.; Benedix, W.-S.; Hegler, S.; Lopez, G.; Saiz, J.; Preston, L.; Cousins, C.; Allender, E.; Banham, S.; Barnes, R.; Northwood-Smith, G.; Sangwan, K.; Grindrod, P.; Davis, J.; Motaghian, S.; Dickeson, Z.; Boazman, S.; Schroder, C.; Hauber, E.; Schmitz, N.; Parkes-Bowen, A.; Bahir, R.; Barcenilla, R.; Leff, C.; Persaud, D.; Coates, A.; Griffiths, A.; **Stabbins, R.**; Bohacek, E.; Kuhn, N. and Westall, F. *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**, Griffiths A.D., Gunn M., Coates A.J., 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**, Griffiths A.D., Gunn M., Coates A.J., 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.B. 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.B. Stabbins**, Griffiths A.D., Coates A.J., Gunn M., Huntly C., Trauthan F., Schmitz N. and the PanCam Science Team. *49th Lunar and Planetary Science Conference 2018* (LPI Contrib. No. 2083), Houston, (19-23 March, 2018)

"The 2016 UK Space Agency Mars Utah Rover Field Investigation (MURFI)" Balme, M.R., Curtis-Rouse M.C., Banham S., Barnes D., Barnes R., Bauer A., Bedford C., Bridges J., Butcher F. E. G., Caballo P., Caldwell A., Coates A., Cousins C., Davis J., Dequaire J., Edwards P., Fawdon P., Furuya K., Gadd M., Get P., Griffiths A., Grindrod P.M., Gunn M., Gupta S., Hansen R., Harris J.K., Hicks L.J., Holt J., Huber B., Huntly C., Hutchinson I., Jackson L., Kay S., Kybert S., Lee J., Lerman H.N., McHugh M., McMahon W., Muller J.-P., Ortner T., Osinski G., Paar G., Preston L.J., Schwenzer S., **Stabbins R.**, Tao Y., Traxler C., Turner S., Tyler L., Venn S., Walker H., Wilcox T., Wright J., and Yeomans B. *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, Jaumann R., Griffiths A.D., Leff C.E., Schmitz N., Josset J.-L., Paar G., Gunn M., Hauber E., Cousins C.R., Cross R.E., Grindrod P., Bridges J.C., Balme M., Gupta S., Crawford I.A., Irwin P., **Stabbins R.**, Tirsch D., Vago J.L., Theodorou T., Caballo-Perucha M., Osinski G.R. *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." Balme, M.R., Curtis-Rouse M.C., Banham S., Barnes D., Barnes R., Bauer A., Bedford C., Bridges J., Butcher F. E. G., Caballo P., Caldwell A., Coates A., Cousins C., Davis J., Dequaire J., Edwards P., Fawdon P., Furuya K., Gadd M., Get P., Griffiths A., Grindrod P.M., Gunn M., Gupta S., Hansen R., Harris J.K., Holt J., Huber B., Huntly C., Hutchinson I., Jackson L., Kay S., Kybert S., Lerman H.N., McHugh M., McMahon W., Muller J.-P., Paar G., Preston L.J., Schwenzer S., **Stabbins R.**, Tao Y., Traxler C., Turner S., Tyler L., Venn S., Walker H., Wright J., and Yeomans B. *48th Lunar and Planetary Science Conference*, Houston, (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, Savini G., Juanola-Parramon R., **Stabbins R.** 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, Juanola-Parramon R., **Stabbins R.**, Baccichet N., Donohoe A., Murphy A., O'Sullivan C.

Proc. SPIE 9146, *Optical and Infrared Interferometry IV*, 91462N (24 July 2014)

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