

ANDREW VAN PARIDON

PHD, BE (HONS), BSc

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Research Interests – Satellite Thermal Management, Mission Design, Propulsion Systems

EDUCATION

University of Oxford, Oxford, United Kingdom 2011-2016

Doctorate of Philosophy - Engineering Science

Thesis: *'Thermal Modelling and Control of High Pressure Turbine Subsystem'*

Advisors: Peter Ireland, Marko Bacic

University of Queensland, Brisbane, Australia 2006-2010 **GPA: 6.3/7**

Bachelor of Engineering - Mechanical and Aerospace (First Class Honors)

Thesis: *'Aerodynamic Analysis of a Free-Flying Scramjet using CFD'*

Advisor: Russel Boyce

Bachelor of Science – Physics

RESEARCH AND PROFESSIONAL EXPERIENCE

Senior Research Associate – Sibley School of Mechanical and Aerospace Engineering
Cornell University, Ithaca, NY, USA

July 2021 – Present (formerly *Visiting Scientist* from May 2020)

- Co-Principal Investigator on AdVECT; a Space Technology Research Grant for investigating additively manufactured satellite radiators. Awarded through NASA's ESI22.
- Investigator on Space University Research Initiative focusing on self-maintaining satellite communications network. Funded by the Air Force Office of Scientific Research (AFOSR).
- Published survey paper on water powered satellite propulsion systems.
- Submitted NASA COLDTech grant application to investigate laser drilling on Europa.
- Advisor to PhD students on experiment design in the ASTRALab.
- Wrote paper on canonical zero-pole state-space realization.

Senior Lecturer – Sibley School of Mechanical and Aerospace Engineering
Cornell University, Ithaca, NY, USA

July 2021 – Present (formerly *Visiting Lecturer* June 2019 – May 2020)

- Courses taught: **MAE 4730/5730** Intermediate Dynamics, **MAE 4060/5065** Introduction to Spaceflight Mechanics, **MAE 4540/5540** Propulsion of Spacecraft, **MAE 2030** Dynamics, **MAE 5070** Dynamics of Flight Vehicles, **MAE 2020** Statics and Mechanics of Solids, **MATH 2930** Differential Equations for Engineers.
- Launched the Master of Engineering in Aerospace Engineering Distance Learning Program as deputy director.
- Produced and circulated promotional material to support the Master of Engineering programs including professional videos, photos, banners, presentations, and posters.
- Wrote Best Practices in Hybrid Classrooms documentation for faculty training.
- Implemented new technologies and initiatives for recording and uploading classrooms across distance learning program.
- Co-director of the SmallSat Mission Design School.
- Awarded Office of Engagement Initiatives grant for Sciencenter Outreach.
- Awarded New York Space Grant Opportunity Grants in 2023 and 2024
- Conducted research into Effect of Mastery-graded Exams on Student Outcomes.

Postdoctoral Researcher Oxford Thermofluids Institute

University of Oxford, Oxford, UK, - 3 years, November 2015- November 2018

- Project lead for the design of new rotating disc facility for the Oxford Rotor Facility.
- Recommissioned the Oxford Rotor Facility for blowdown experimentation.

Doctoral Candidate Oxford Thermofluids Institute

University of Oxford, Oxford, UK, – 5.5 years, September 2011-March 2016

- Led the design and development of the Transient Heat Transfer Facility.
- Developed the “LPV-POD” reduced order model for online temperature monitoring of aircraft engine subsystems.

TEACHING

Cornell University

MATH 2930 Differential Equations for Engineers (*Summer 2019*)

Sophomore level required course.

Enrollment: 25

MAE 2020 Statics and Mechanics of Solids (*Fall 2019*)

Sophomore level required course.

Enrollment: 137

MAE 2030 Dynamics (*Spring 2022*)

Sophomore level required course.

Enrollment: 173

MAE 4730/5730 Intermediate Dynamics (*Fall 2021/22/23/24*)

Senior and graduate level required course.

Enrollment: 26, 30, 16, 33

MAE 4060/5065 Introduction to Spaceflight Mechanics (*Fall 2022*)

Senior and graduate level elective course.

Enrollment: 47

MAE 4540/5540 Propulsion of Spacecraft (*Fall 2024*)

Senior and graduate level elective course

Enrollment: 35

MAE 5070 Dynamics of Flight Vehicles (*Spring 2020*)

Senior and graduate level elective course.

Enrollment: 38

STUDENT ADVISEES

Cornell University

M.Eng.

Matthieu Boyer – Optimized Thermal Modelling for Ceramic Heat Pipes

Mirian Vargas – Thermal Vacuum Chamber Commissioning

Zekai Chen – Thermal Modelling of TALN SHO Satellite

John Kappelmeier – Orbital Planning of TALN SHO Satellite

Daniel Koshy – Mission and Subsystems for TALN SHO Satellite

Jacob Long - Mission and Subsystems for TALN SHO Satellite

Siddarth Rao – Thermal Modelling for TALN SHO Satellite

TEACHING ASSISTANT

University of Queensland

ENGG1050 Fundamentals of Thermodynamics (*Sem 1&2, 2009, Sem 1&2, 2010*)

Engineering First Year Learning Centre Multiple Courses (*Sem 1, 2008*)

University of Oxford

B5.4 Waves and Compressible Flow Lab Demonstration of Supersonic Flow (*Hilary 2014*)

AWARDS

Rolls-Royce Civil Large Engines Best Patent 2015

Academic scholarship to University of Nottingham 2008

PROFESSIONAL AFFILIATIONS

Member of American Institute of Aeronautics and Astronautics (AIAA)

Member of American Society of Mechanical Engineers (ASME)

PRESENTATIONS AND LECTURES

June 18th 2014 *ASME Turbo Expo*, Dusseldorf, Germany

June 15th 2015 *ASME Turbo Expo*, Montreal, Canada

June 16th 2016 *ASME Turbo Expo*, Seoul, South Korea

November 29th 2018 *Seminar - Boston University*, Boston, MA, USA

August 29th 2024 *NASA TFAWS*, Cleveland, OH, USA

June 24th 2024 *Seminar - Oxford University*, UK

May 13th 2024 *Seminar - Pennsylvania State University*, PA, USA

April 12th 2024 *Guest Lecture - Cornell University*, NY, USA

January 7th 2025 *AIAA SciTech*, Orlando, FL, USA

PUBLICATIONS

Google Scholar

Works Indexed	Citations	h-index
14	44	4

Journal Articles

1. *On the Real-Time Estimation of Disk Temperature Spatial Distributions in Aeroengines* (with M Bacic, PT Ireland, R Daniel) In *ASME. J. Eng. Gas Turbines Power*, 2017.

Proceedings

1. *Development and Testing of Grooved Ceramic Heat Pipes for Intermediate Temperature Systems* (with G D'Orazio, EM Petro, S Sobhani) presented at *AIAA SCITECH 2025 Forum*.
2. *Design and Analysis of Ceramic-Halide Heat Pipes for Intermediate Temperature Systems* (with M Boyer, G D'Orazio, S Sobhani) presented at *AIAA SCITECH 2025 Forum*.
3. *Intermediate Temperature Ceramic Heat Pipe Modeling and Optimization* (with G D'Orazio, WR Sixel, S Sobhani) presented at *NASA TFAWS 2024*.
4. *A SmallSat mission study for STARLITE: superluminous tomographic atmospheric reconstruction with laser-beacons for imaging terrestrial exoplanets* (AB Johnson, A Padres, R Hughes, C Buonagura, Z Chapman, A Kubas, V Hegelein, I Mishra, A Smith, AT Tahsin, A Parashar, R Bendimerad, D Chen, Q Lu, AA Kounios, D Desilva, V Padres, J Lloyd, D Savransky, J Umansky-Castro, and E Petro) *Space Telescopes and Instrumentation 2024: Optical, Infrared, and Millimeter Wave*.

5. *SIZLE: Smallsat to Image Zodiacal Light Above Ecliptic* (with M Buys, EH Feinberg, J Gabriel, C Pett, A Sikka, S Aslam, A Shastry, D Loudermilk, JD Crespo, A Yonas, S Miller, M Yasgur, A Herz, Y Chen, A Aradhya, D Svransky, J Lloyd, and E Petro) presented at ASCEND 2023.
6. *Survey of water powered propulsion systems* (with E Petro) presented at AIAA Propulsion and Energy 2021 Forum.
7. *Effect of Mastery-graded Exams on Student Outcomes in Statics and Mechanics of Solids Course* (with H Ritz and K Dimiduk) presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual On line.
8. *Kalman Filter Development for Real Time Proper Orthogonal Decomposition Disc Temperature Model* (with M Bacic, PT Ireland) In ASME Turbo Expo 2016.
9. *Disc Temperature Modelling Using Reduced Order Proper Orthogonal Decomposition Models* (with M Bacic, PT Ireland, R Daniel) In ASME Turbo Expo 2015.
10. *Design And Development Of A Full-Scale Generic Transient Heat Transfer Facility (THTF) For Air System Validation* (with A Dann, PT Ireland, M Bacic) In ASME Turbo Expo 2015.
11. *Reduced Order Transient Disc Temperature Models For Online Health Monitoring* (with M Bacic, PT Ireland, C Barnes, LV Lewis) In ASME Turbo Expo 2014.

Thesis

1. *Thermal modelling and control of high pressure turbine subsystems*, University of Oxford, 2016.

In Progress

- *TREx: A Temporarily-Captured Orbiter Rendezvous Explorer & In-Situ Characterization Mission*
- *Design and Optimization of Ceramic-Halide Heat Pipes for Intermediate Temperature Systems* – Journal Version
- *Investigation of Optimized Ceramic-Halide Heat Pipes Radiators*
- *The Cornell SmallSat Mission Design School - Development and Long Term Vision*
- *Pathfinder Mission for Elastomer-Based Gripper for Satellite Rendezvous Tasks*
- *Zero-Pole-Gain State-Space Realization for Single-Input-Single-Output Transfer Functions*

Peer Review

- ASME Turbo Expo
- Cambridge University Press