

Charles H. Minns

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EDUCATION

University College London, London, UK

September 2024

M.Sc. in Planetary Science with distinction (part-time)

Princeton University, Princeton, NJ, USA

June 2020

A.B. in Physics, Certificates in Planets and Life and Applications of Computing

Wallingford School, Wallingford, OXON, UK

August 2016

A-levels: Maths A*, Further Maths A*, Physics A, Chemistry (AS-level) A

PUBLICATIONS

[Spore Survival During Abrasive Saltation on Mars: A Comment on Bak et al.](#)

Charles H. Minns, Emma M.C. Loudon, and Christopher F. Chyba. *Astrobiology* 2022 22:9, 1029-1031

RESEARCH EXPERIENCE

The Effects of the Martian Climate on Spectral Biosignatures

Oct 2023 - Sep 2024

- M.Sc. Thesis, Dr. Louisa Preston, University College London
- Reviewing the limitations in analyzing the spectra of organics entombed in minerals
- Summarising spectroscopic techniques used to identify organics and their use in current and future missions
- Investigating methods for incorporating climate effects in spectral analysis
- Taking measurements using IR and Raman spectroscopy and studying the effects of heating and freezing organic-hosting minerals
- Interpreting results in the context of planetary bodies and current missions, focusing on the implications for habitability

Automated Trainable Data Clustering with Applications in Astronomy

Oct 2019 - May 2020

- Undergraduate Senior Thesis, Prof. Peter Melchior, Princeton University
- Reviewed existing clustering methods and analysed the results of contemporary algorithms
- Processed hyperspectral data from CRISM; produced spectra and a mapping of the surface composition of the Nili Fossae region, obtaining clustering results that corroborated existing literature
- Developed greater autonomy for detecting clusters in simulated extragalactic multi-band images

The Effects of Impact Erosion on the Early Lunar Atmosphere

Feb 2019 - May 2019

- Undergraduate Research Paper, Prof. Christopher Chyba, Princeton University
- Applied calculations done on Mars to analyse impact erosion effects on the Moon shortly after the period of heavy bombardment
- Concluded that these effects were negligible compared to other atmospheric loss rates
- Validated the potential for a transient atmosphere to have persisted on the Moon during this period

Photon Detection Efficiency in Photomultiplier Tubes and Silicon Photomultipliers

Oct 2018 - Jan 2019

- Undergraduate Research Paper, Prof. Cristiano Galbiati, Princeton University
- Devised an experiment to compare two instruments for photon detection at the single-photon level
- Obtained a measurement for the relative photon detection efficiency
- Produced results that justified integrating new photon detection technology into DarkSide-20k

WORK EXPERIENCE

Full-Stack Developer and Product Manager, OnTheMove Software Ltd.

Dec 2020 - current

- Team lead for the Core Product Team
- Developing generic software for integration into offline-first, mobile friendly enterprise applications
- Producing a Content Management System using React and Express to simplify website configuration and automate hosting
- Building dynamic front-end components in React and a back-end to manage authentication and data synchronisation
- Working with clients through the production life-cycle
- Writing automated unit, integration, and end-to-end tests with Jasmine and Jest frameworks for quality assurance

Swim England Diving Coach, Albatross Diving Club Reading

Sep 2023 - current

- Coaching divers aged 5 – 17 from learn-to-dive through to our competitive Skills and Age Groups squads
- Level 1 Diving Judge for judging at club, county, and regional events

Software Engineer Summer Intern, ESO (Santiago, Chile)

Jun - Aug 2019

- Processed calibration data for ALMA and developed a Python programme to improve the visualisation and efficiency of analysis
- Created a time-variable interactive figure displaying 5 calibration results for up to 528 sources
- Optimised program to display up to 4 figures on 1 monitor for real-time observations
- Created a report and presentation to summarise my work to the engineers and astronomers
- Integrated the program into the existing software to reduce time spent analysing calibration data

Individual and Peer Tutor, Princeton University

Sep 2016 - Jun 2020

- Tutored Princeton University students in college-level physics and maths classes
- Tutored middle-school and high-school students in physics, maths, and chemistry

Student Coordinator and Social Chair, Butler-Wilson Dining Hall, Princeton University

Sep 2016 - Jun 2020

- Managed the set-up and breakdown of meals with a team of university staff and students
- Performed administrative tasks: recruiting, scheduling, and payroll
- Promoted to highest ranking student position; liaison between professional managers and student workers
- Elected as Social Chair to coordinate weekly social events to improve worker camaraderie

RELEVANT COURSEWORK

Astronomical Spectroscopy	Topics in Modern Astronomy	Classical Mechanics
Physics of Exoplanets	Life in the Universe	Quantum Mechanics
Physics of the Earth	Cosmology	Statistical Mechanics
Planetary Atmospheres	Global Geophysics	Thermal Physics
Solar Physics	Data Structures and Algorithms	Electromagnetism
Space Science, Environment & Satellite Missions	Computing and Optimisation	Experimental Physics

SKILLS AND ACHIEVEMENTS

Technical Skills

Python, LaTeX, MATLAB, JavaScript, HTML, CSS, React, Svelte, Jasmine, Jest, Node, Express, AWS, MongoDB, Git, SQL, Java, JIRA, Confluence

Athletics

British Diving National Finalist; Princeton Varsity Swimming and Diving Team (Team Captain 2019-2020); NCAA Qualifier; Scholar All-American; Ivy League Career High Point Diver; War Memorial Swimming Trophy for diligence to studies and athletics; Black belt in Karate; Competitor at KUGB National Championships; Edinburgh Marathon 2024; Maverick Jurassic Coast 100 km Ultra 2024

Languages

Conversational proficiency in Spanish and French

Music

Grade 8 saxophone (Trinity); Grade 5 piano (ABRSM); Grade 5 guitar (Rockschool)