






Curriculum Vitae

Dominic Bartholomew Singh Samra,
PhD., MSci., ARCS.

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Education and Employment

- Sept. 2024 –  **Postdoctoral Scholar, University of Chicago, USA**
Group Leader: *Prof. Diana Powell*
- Apr. 2022 – Mar. 2024  **Postdoctoral Researcher, Space Research Institute, Austria (IWF)**
Group Leader: *Prof. Christiane Helling*
- Sept. 2021 – Apr. 2022  **Visiting Scientist, Space Research Institute, Austria (IWF)**
Supervisor: *Prof. Christiane Helling*
- Sept. 2018 – Apr. 2022  **PhD, University of St Andrews, UK**
Thesis title: *Mineral Snowflakes in Exoplanet and Brown Dwarf Atmospheres*
Supervisor: *Prof. Christiane Helling*
- Oct. 2014 – June 2018  **MSci, Imperial College of Science, Technology and Medicine, UK**
Dissertation title: *Debris Disks in Herschel Far-Infrared Surveys*
Supervisor: *Dr. David Clements*

Refereed Publications








Total publications: 15 peer-reviewed (3 first author), Current citations: 309, h-index: 10

[NASA-ADS page](#)






- 1 Kiefer, S., Bach-Møller, N., **Samra, D.**, Lewis, D. A., Schneider, A. D., Amadio, F., Lecoq-Molinos, H., Carone, L., Decin, L., Jørgensen, U. G., & Helling, C. (2024). Under the magnifying glass: A combined 3D model applied to cloudy warm Saturn-type exoplanets around M dwarfs. *A&A*, 692, A222.
- 2 Kiefer, S., **Samra, D.**, Lewis, D. A., Schneider, A. D., Min, M., Carone, L., Decin, L., & Helling, C. (2024). Why heterogeneous cloud particles matter: Iron-bearing species and cloud particle morphology affect exoplanet transmission spectra. *A&A*, 690, A244.
- 3 Chubb, K. L., **Samra, D.**, Helling, C., Carone, L., & Stam, D. M. (2024). The dark days are overcast: iron-bearing clouds on HD 209458 b and WASP-43 b can explain low-dayside albedos. *MNRAS*, 533(2), 1503–1524.
- 4 Espinoza, N., Steinrueck, M. E., Kirk, J., MacDonald, R. J., Savel, A. B., Arnold, K., Kempton, E. M. .-, Murphy, M. M., Carone, L., Zamyatina, M., Lewis, D. A., **Samra, D.**, Kiefer, S., Rauscher, E., Christie, D., Mayne, N., Helling, C., Rustamkulov, Z., Parmentier, V., May, E. M., Carter, A. L., Zhang, X., López-Morales, M., Allen, N., Blecic, J., Decin, L., Mancini, L., Molaverdikhani, K., Rackham, B. V., Palle, E., Tsai, S.-M., Ahrer, E.-M., Bean, J. L., Crossfield, I. J. M., Haegeler, D., Hébrard, E., Kreidberg, L., Powell, D., Schneider, A. D., Welbanks, L., Wheatley, P., Brahm, R., & Crouzet, N. (2024). Inhomogeneous terminators on the exoplanet WASP-39 b. *632(8027)*, 1017–1020.
- 5 Chubb, K., Stam, D. M., Helling, C., **Samra, D.**, & Carone, L. (2024). Modelling reflected polarized light from close-in giant exoplanet WASP-96b using PolHEX (Polarization of hot exoplanets). *MNRAS*, 527(3), 4955–4982.
- 6 Helling, C., **Samra, D.**, Lewis, D., Calder, R., Hirst, G., Woitke, P., Baeyens, R., Carone, L., Herbort, O., & Chubb, K. L. (2023). Exoplanet weather and climate regimes with clouds and thermal ionospheres. A model grid study in support of large-scale observational campaigns. *A&A*, 671, A122.

- 7 **Samra, D.**, Helling, C., Chubb, K. L., Min, M., Carone, L., & Schneider, A. D. (2023). Clouds form on the hot Saturn JWST ERO target WASP-96b. *A&A*, 669, A142.
- 8 **Samra, D.**, Helling, C., & Birnstiel, T. (2022). Mineral snowflakes on exoplanets and brown dwarfs. Coagulation and fragmentation of cloud particles with HYLANDS. *A&A*, 663, A47.
- 9 Helling, C., Lewis, D., **Samra, D.**, Carone, L., Graham, V., Herbort, O., Chubb, K. L., Min, M., Waters, R., Parmentier, V., & Mayne, N. (2021). Cloud property trends in hot and ultra-hot giant gas planets (WASP-43b, WASP-103b, WASP-121b, HAT-P-7b, and WASP-18b). *A&A*, 649, A44.
- 10 Helling, C., Worters, M., **Samra, D.**, Molaverdikhani, K., & Iro, N. (2021). Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b. III. Changing ionisation and the emergence of an ionosphere. *A&A*, 648, A80.
- 11 Woitke, P., Herbort, O., Helling, C., Stüeken, E., Dominik, M., Barth, P., & **Samra, D.** (2021). Coexistence of CH₄, CO₂, and H₂O in exoplanet atmospheres. *A&A*, 646, A43.
- 12 Helling, C., Kawashima, Y., Graham, V., **Samra, D.**, Chubb, K. L., Min, M., Waters, L. B. F. M., & Parmentier, V. (2020). Mineral cloud and hydrocarbon haze particles in the atmosphere of the hot Jupiter JWST target WASP-43b. *A&A*, 641, A178.
- 13 **Samra, D.**, Helling, C., & Min, M. (2020). Mineral snowflakes on exoplanets and brown dwarfs. Effects of micro-porosity, size distributions, and particle shape. *A&A*, 639, A107.
- 14 Molaverdikhani, K., Helling, C., Lew, B. W. P., MacDonald, R. J., **Samra, D.**, Iro, N., Woitke, P., & Parmentier, V. (2020). Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b. II. Mapping the effects of gas kinetics. *A&A*, 635, A31.
- 15 Helling, C., Iro, N., Corrales, L., **Samra, D.**, Ohno, K., Alam, M. K., Steinrueck, M., Lew, B., Molaverdikhani, K., MacDonald, R. J., Herbort, O., Woitke, P., & Parmentier, V. (2019). Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b. I. Cloud and chemistry mapping. *A&A*, 631, A79.




Student Supervision and Mentoring

- 2025  **Supervised Bachelors Project: Phoebe Burgis, University of Chicago, "Earth Aerosol Insights for Exoplanet Atmospheres"**
- 2023  **Supervised Bachelors Project: Lorenzo Nadrag, TU Graz, "Exploring Observable Consequences of Mixed-material Clouds in the JWST Era"**
- 2022  **Supervised Masters Project: Julia Knie, ISU Strasbourg, "The Extended Cloud Layers in Gas-giant Exoplanet Atmospheres"**
- 2021  **Co-supervised: Robb Calder, Summer Student, University of St Andrews**
 **Co-supervised: Georgia Hirst, Summer Student, University of St Andrews**
 **Co-supervised: David Lewis, Summer Student, University of St Andrews**
- 2019  **Co-supervised: Victoria Graham, Summer Student, University of St Andrews**

Teaching

- 2021  **2021 Guest Lecture, The Chemistry of the Solar System (ES5014)**
- 2019-2021  **Lab Demonstrator: Computational Astrophysics (AS3013)**
- 2019  **Tutor: Astronomy and Astrophysics 2 (AS2001)**
- 2018-2021  **Lab Demonstrator: Astronomy and Astrophysics (AS1001)**
- 2018-2020  **Supervisor: James Gregory Telescope, University of St Andrews Observatory**

Organisation of Scientific Meetings

- October 4 2023  **Co-Organiser: Graz-Vienna Exoplanet Scientists Meeting III**
- May 5 2023  **Organiser: Graz-Vienna Exoplanet Scientists Meeting II**
- October 21 2022  **Co-Organiser: Graz-Vienna Exoplanet Scientists Meeting I**

Invited Seminars and Colloquia

- July 19 2022  **Seminar at Exocoffee (APEX Department at MPIA)**
- June 15 2022  **Seminar at Institute of Theoretical and Computational Physics, TU Graz**
- February 16 2022  **Oxford SPIMAX Seminar**
- May 04 2021  **Colloquium at: Thuringian State Observatory (TLS)**
- January 25 2021  **Seminar at University of California Santa Cruz, 'PLunch' Talk**
- December 08 2020  **Anton Pannekoek Institute for Astronomy, University of Amsterdam, Exoplanets and Disk Group Meeting**







Invited Talks at Conferences

- March 21 2023  **Symposium: Strange Clouds – from the Earth to Exoplanets, DPG SMuK 2023 (German Physical Society Spring Meeting 2023)**
- June 6-10 2022  **Niels Bohr International Academy, Workshop on Radiation Transfer**



Contributed Talks at Conferences

- September 12 2023  **PLATO Workshop on 3D Climate and Clouds**
- March 31 2023  **Cloud Academy 3**
- October 26 2022  **Graz-Vienna Exoplanet Scientist Meeting I (GVESM I)**
- December 8-10 2021  **PLATO Atmospheres Workshop**
- November 21-25 2021  **Jena Laboratory Astrophysics Workshop**
- August 11 2021  **Cloud Nine Conference**
- April 26 2021  **Scottish Exoplanet and Brown Dwarf Meeting 11**
- March 15-17 2021  **Nordic Society for Aerosol Research 2021 Symposium**
- January 08 2021  **RAS Specialist Discussion Meeting: Exoplanet modelling in the James Webb Era**
- October 21 2020  **Scottish Exoplanet and Brown Dwarf Meeting 10**
- September 12 2019  **Scottish Exoplanet and Brown Dwarf Meeting 9**








Posters and Flash Talks

- April 10-15 2023  **Protostars and Planets VII**
- May 5 2023  **Graz-Vienna Exoplanet Scientist Meeting II (Flash Talk)**
- June 27 - July 2 2022  **European Astronomical Society Annual General Meeting 2022**
- January 11-13 2022  **CHEOPS Science Workshop VI**
- April 19-30 2021  **European Geoscience Union, AGM (vPICO Presentation)**
- April 19-23 2021  **STScI Symposium: Towards the Comprehensive Characterization of Exoplanets: Science at the Interface of Multiple Measurement Techniques**










Posters and Flash Talks (continued)

- September 14-28 2020  **RAS Early Career Poster Exhibition 2020**
- July 27-31 2020  **Exoplanets III, Heidelberg**
- August 12-15 2019  **Exoclimes V, Oxford**

Additional Training, Memberships and Responsibilities

- 2023-  **Referee: Monthly Notices of the Royal Astronomical Society**
 **Member: JWST ERS team on Asymmetric Terminators for WASP-39b**
- 2022-  **Member (Key Personnel): PLATO Work Package 116 700 "Clouds and atmosphere chemistry of exoplanets"**
 **Member: PLATO Working Package 116 800 "3D climate of exoplanets"**
- 2022-2023  **Organiser: Journal Club for Exoplanet Weather and Climate & Protoplanetary Disks and Astrochemistry Joint Working Groups**
- 2018-2020  **Organiser: St Andrews Centre for Exoplanet Science Journal Club**
- March 2-4 2020  **Attended JWST Proposal Planning Workshop, Exeter UK**

Outreach

- 2024-  **Volunteer: Astronomers in Conversation, Adler Planetarium**
- 2022-2023  **Contributor: Steiermarkschau Mobiler Pavillion 2023, "Atmosphären: Kunst, Klima- und Weltraumforschung"**
- February 2023  **Interviewed for *Period. Magazine*: "Mineral Clouds"**
- May 20 2022  **Demonstrator: Lange Nacht der Forschung, IWF, Graz**
- September 29 2021  **Collaboration with Author: Around Distant Suns, Puranen, E. (Ed.)**
- November 25 2020  **Collaboration with Composer: 'Intersections' – Explorathon 2020**
- December 2 2019  **Presenter: Cell Block Science**
- July 1-7 2019  **Presenter: A Message From Afar, Royal Society Summer Science Exhibition 2019**
- 2018-2020  **Presenter: Mobile Planetarium**

Skills and Proficiencies

Languages

English: *Native*

German: *B1*

Programming Languages

Python: *Proficient*

FORTRAN: *Proficient*

Bash: *Proficient*

Ancillary Skills

Microsoft Office: *Proficient*

L^AT_EX: *Proficient*

Git: *Proficient*