Remo Burn

Curriculum Vitae

Personal Data

Name	Remo Burn
ORCID	0000-0002-9020-7309
Date of Birth	7.9.1991
Nationality	Switzerland

Education

2016–2020 **PhD in Physics**, *Universität Bern*, Space Research and Planetary Sciences.
Special qualifications in Astronomy, summa cum laude

2014–2016 **Masters of Science in Physics**, *Universität Bern*.
Special qualifications in theoretical physics

2011–2014 **Bachelor of Science in Physics**, *Universität Bern*.
Minor in Computer Science and Mathematics

Employment

2023–present **STRUCTURES Cluster of Excellence, Exploratory Project EP 8.4**, *Max Planck Institute for Astronomy*.
Planet Formation Retrieval using Invertible Neural Networks

2022–2023 **Heidelberg Initiative for the Origins of Life Postdoc**, *Max Planck Institute for Astronomy*.
Compositional imprints on planetary structures

2020–2022 **SNSF Early.Postdoc Mobility Fellow**, *Max Planck Institute for Astronomy*.
Global models of planet formation in the ALMA era

2016–2020 **PhD Student**, *Universtät Bern*.
Formation and Composition of Planets around Stars of Different Masses (link)

Teaching and Mentoring

2023 **Mentoring**, *MPIA*.
Internship Anna Bauernfeind: Embryogenesis and the Emergence of Giant Planets

2023 **Mentoring**, *MPIA*.
Internship Chandana Hegde: Population level effect of the Vertical Shear Instability

2023 **Supervision**, *MPIA*.
Bachelor Project by Raphael Suppmann: Exploring the Interplay of Vertical Shear Instability and Magnetorotational Instability in Shaping Protoplanetary Disk Evolution

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2021 **Co-Supervision**, *MPIA*.
Bachelor Project by Antonia Seifert: Confronting Planetesimal-Based M Dwarf Planet Formation Theory and Radial Velocity Observations

2017–2020 **Teaching Assistant**, *Universität Bern*.
Supervision of laboratory courses Praktikum I and II for Major Physics Bachelor level students

2014–2016 **Teaching Assistant**, *Universität Bern*.
Tutoring and evaluation of exams in Mechanik I, Mathematische Methoden III für Physiker, statistische Thermodynamik and Physik fr̈ Veterinärmediziner

Selected Key Publications

2024 **A radius valley between migrated steam worlds and evaporated rocky cores**, *Nature Astronomy*, **R. Burn**, C. Mordasini, L. Mishra, J. Haldemann, J. Venturini, et al..

2023 **Planetary population synthesis and the emergence of four classes of planetary system architectures**, *The European Physical Journal Plus*, A. Emsenhuber, C. Mordasini, **R. Burn**.

2023 **Planetary population synthesis and the emergence of four classes of planetary system architectures**, *A&A*, A. Emsenhuber, **R. Burn**, et al..

2022 **Toward a population synthesis of disks and planets I. Evolution of dust with entrainment in winds and radiation pressure**, *A&A*, **R. Burn**, A. Emsenhuber, J. Weder, O. Völkel, H. Klahr, et al..

2022 **RV-detected planets around M dwarfs: Challenges for core accretion models**, *A&A*, M. Schlecker, **R. Burn**, S. Sabotta, A. Seifert, Th. Henning, et al..

2021 **The New Generation Planetary Population Synthesis (NGPPS). The New Generation Planetary Population Synthesis (NGPPS). IV. Planetary systems around low-mass stars**, *A&A*, **R. Burn**, M. Schlecker, C. Mordasini, A. Emsenhuber, Y. Alibert, et al..

2021 **The New Generation Planetary Population Synthesis (NGPPS). I. Bern global model of planet formation and evolution, model tests, and emerging planetary systems**, *A&A*, A. Emsenhuber, C. Mordasini, **R. Burn**, Y. Alibert, W. Benz, E. Asphaug.

2020 **Pebbles versus Planetsimals: The outcomes of population synthesis models**, *A&A*, N. Brügger, **R. Burn**, G. A. L. Coleman, Y. Alibert and W. Benz.

2019 **Radial drift and concurrent ablation of boulder-sized objects**, *A&A*, **R. Burn**, U. Marboeuf, Y. Alibert, W. Benz.

2019 **A water budget dichotomy of rocky protoplanets from 26Al-heating**, *Nature Astronomy*, T. Lichtenberg, G.J. Golabek, **R. Burn**, M. R. Meyer, Y. Alibert, et al..

2018 **The formation of Jupiter by hybrid pebble–planetesimal accretion**, *Nature Astronomy*, Y. Alibert, J. Venturini, R. Helled, S. Ataiee, **R. Burn**, et al..

Selected Conferences and Talks

2024 **Exoplanets V**, Leiden, Netherlands, Upcoming contributed plenary talk.

2024 **Density Matters 2024**, *Ringberg Workshop*, Kreuth, Germany, Co-Chair and Organizer.

2023 **Rencontres du Vietnam**, Quy Nhon, Vietnam, Review talk and proceedings chapter.

2022 **Origins seminar**, *University of Arizona*, Tucson, USA, Invited talk, recording: youtube.

2021 **Exoplanets and Stars seminar**, *Yale University*, New Haven, USA, Invited talk.

2020 **Annual meeting of the German Astronomical Society**, virtual, Review talk.

2020 **Exoplanets III**, virtual, Contributed Talk.

2020 **Pebbles, Planetesimals and Planetary Embryos**, *Max-Planck Gesellschaft*, Ringberg Castle, Germany, Conference talk.

2020 **Space Science & Astrophysics Seminar**, *NASA JPL*, Pasadena,USA, Invited talk.

2020 **ExoPAG 21**, *NASA*, Honolulu, USA., Invited talk.

2019 **EPSC-DPS**, Geneva, Switzerland, Conference talk and published abstract.

2019 **discs2planets**, *Max-Planck Gesellschaft*, Ringberg Castle, Germany, Conference talk.

2019 **Colloque Trappist-1**, Liège, Belgium, Conference talk.

Funding

2023 **Exploratory Project**, *STRUCTURES Cluster of Excellence, Heidelberg*, 24 Months.

2020 **Early Postdoc.Mobility Fellowship**, *Swiss National Science Foundation*, 71650 CHF, 18 Months.

2018 **Young Scientist Support**, *Swiss Society for Astronomy and Astrophysics*, 1300 CHF.

Service

Membership	Swiss Society for Astronomy and Astrophysics, European Astronomical Society
Referee for	A&A (2 papers), ApJ (1), MNRAS (4), PASA (1)
Committee	JWST Cycle 3 Time Allocation Committee, Exoplanets Discussion Panel
Outreach	Presentation at MPIA open house day
Outreach	Talk at Faszination Astronomie Online, virtual
Outreach	Co-Organizer of Astronomy on Tap, Bern
Outreach	Talk at Astronomy on Tap, Bern
Outreach	Fantasy Basel

Computer skills

Experience with long-term development of high performance computing code in Fortran 77/90. Trained in object oriented programming. Practical Data Analysis skills including modern statistical approaches such as neural networks.

Basic	Ruby, Linux
Intermediate	ROOT, LaTeX, Mathematica, Matlab
Advanced	Fortran 77/90, Python (libraries: e.g. matplotlib, pandas, Tensorflow), C++, C, JAVA

Schools

2021 **Saas Fee Course: Astronomy in the Era of Big Data**, *virtual.*

2019 **NCCR PlanetS Workshop on Machine Learning**, *Geneva, Switzerland.*

2018 **University of Bern, Machine Learning course**, *Bern, Switzerland.*

Languages

German	**Mothertongue**	
English	**Fluent**	
French	**Intermediate**	*High School level*
Italian	**Basic**	*Basic words and phrases*