

Dr.rer.nat. Jannik Schestag

DOCTOR RERUM NATURALIUM · COMPUTER SCIENCE M.Sc. · ECONOMICAL MATHEMATICS B.Sc.

Postdoctoral researcher in theoretical computer science with a particular a focus on parameterized algorithms, algorithmic phylogenetics, and discrete mathematics.

Experienced in international research collaboration, and interested in higher education teaching.

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Academic Positions and Education

Post-Doctoral Research Position

UNIVERSITETET I BERGEN

August 2026 - presumably July 2028

Bergen, Norway

Post-Doctoral Research Position

TECHNISCHE UNIVERSITEIT DELFT

January 2025 - June 2026

Delft, The Netherlands

Ph.D. Computer Science

FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

May 2022 - January 2025

Jena, Germany

Submitted: July 2024—Defended: January 2025—Final grade: *magna cum laude*

Visiting Researcher

TECHNISCHE UNIVERSITEIT DELFT

April 2023 - September 2023

Delft, The Netherlands

M.Sc. Computer Science

PHILIPPS-UNIVERSITÄT MARBURG

April 2019 - February 2022

Marburg, Germany

Final grade: 14,0 points (of 15); 1,0 grade (1,0 is the best)—Remark: very good

B.Sc. Computer Science

PHILIPPS-UNIVERSITÄT MARBURG

April 2016 - December 2018

Marburg, Germany

Final grade: 13,4 points (of 15); 1,2 grade (1,0 is the best)—Remark: very good

B.Sc. Mathematical Economics

PHILIPPS-UNIVERSITÄT MARBURG

October 2015 - June 2020

Marburg, Germany

Final grade: 11,5 points (of 15); 1,9 grade (1,0 is the best)—Remark: good

Research Funding and Grant Support

NWO

Supported as a postdoctoral researcher by the Dutch Research Council (NWO), project OCENW.GROOT.2019.015 “Optimization for and with Machine Learning (OPTIMAL)”, 2025 and 2026.

DAAD

Principal applicant. Awarded competitive full funding by the German Academic Exchange Service (DAAD), project no. 57556279, for a six-month international research visit at TU Delft, 2023.

Program Committee Member

2027 The 52nd International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2027)

Reviewed Articles for

- 2026** The 20th Scandinavian Symposium on Algorithm Theory (SWAT 2026)
- 2026** The 52nd International Workshop on Graph-Theoretic Concepts in Computer Science (WG 2026); two articles
- 2026** The 24th Symposium on Experimental Algorithms (SEA 2026)
- 2025** The 24th International Workshop on Algorithms in Bioinformatics (WABI 2025)
- 2024** The 23rd International Workshop on Algorithms in Bioinformatics (WABI 2024)
- 2024** Journal of Computer and System Sciences
- 2023** Discrete Mathematics & Theoretical Computer Science

Journal Publications

[1] **A multivariate complexity analysis of the Generalized Noah's Ark Problem**

DISCRETE APPLIED MATHEMATICS (VOL. 382)

2025

Christian Komusiewicz and *Jannik Schestag*

DOI: 10.1016/j.dam.2025.11.037; ArXiv: 2307.03518; Journal version of [16].

[2] **On Critical Node Problems with Vulnerable Vertices** (My Master's Thesis)

JOURNAL OF GRAPH ALGORITHMS AND APPLICATIONS (VOL. 28 NO. 1)

2024

Niels Grüttemeier, Christian Komusiewicz, *Jannik Schestag*, and Frank Sommer

DOI: 10.7155/jgaa.v28i1.2922; Journal version of [17].

[3] **Destroying Bicolored P_3 s by Deleting Few Edges** (My Bachelor's Thesis)

DISCRETE MATHEMATICS & THEORETICAL COMPUTER SCIENCE (VOL. 23 NO. 1)

2021

Niels Grüttemeier, Christian Komusiewicz, *Jannik Schestag*, and Frank Sommer

DOI: 10.46298/dmtcs.6108; ArXiv: 1901.03627; Journal version of [18].

Conference Publications

[4] **PaNDA: Efficient Optimization of Phylogenetic Diversity in Networks**

[Paper accepted for presentation; RECOMB did not publish formal proceedings in 2026]

THE 30TH ANNUAL INTERNATIONAL CONFERENCE ON RESEARCH IN COMPUTATIONAL MOLECULAR BIOLOGY

2026

(RECOMB 2026), THESSALONIKI, GREECE, MAY 2026.

Niels Holtgreffe, Leo van Iersel, Ruben Meuwese, Yukihiro Murakami, and *Jannik Schestag*

DOI: 10.1101/2025.11.14.688467

[5] **Limits of Kernelization and Parametrization for Phylogenetic Diversity with Dependencies**

[Accepted, publication forthcoming]

IN *Proceedings of the 17th Latin American Theoretical Informatics Symposium (LATIN 2026)*,

2026

FLORIANÓPOLIS, BRAZIL, APRIL 2026. LNCS, SPRINGER.

Niels Holtgreffe, *Jannik Schestag*, and Norbert Zeh

ArXiv: 2602.12959

[6] **Weighted Food Webs Make Computing Phylogenetic Diversity So Much Harder**

IN *Proceedings of the 51st International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2026)*, KRAKÓW, POLAND, FEBRUARY 2026. LNCS, SPRINGER.

2026

Jannik Schestag

DOI: 10.1007/978-3-032-17801-5_14; ArXiv: 2510.05911

[7] **Parameterized Algorithms for Diversity of Networks with Ecological Dependencies**

IN *Proceedings of the 20th International Symposium on Parameterized and Exact Computation (IPEC 2025)*,

2025

WARSAW, POLAND, SEPTEMBER 2025. LIPICS, DAGSTUHL.

Mark Jones and *Jannik Schestag*

DOI: 10.4230/LIPIcs.IPEC.2025.11; ArXiv: 2510.09512

[8] **Average-Tree Phylogenetic Diversity of Networks**

IN *Proceedings of the 24th International Workshop on Algorithms in Bioinformatics (WABI 2025)*,

2025

COLLEGE PARK, MARYLAND, USA, AUGUST 2025. LIPICS, DAGSTUHL.

Leo van Iersel, Mark Jones, *Jannik Schestag*, Celine Scornavacca, and Mathias Weller

DOI: 10.4230/LIPIcs.WABI.2025.15; HAL Id: hal-05194249

[9] **Phylogenetic Network Diversity Parameterized by Reticulation Number and Beyond**

IN *Proceedings of the 23rd RECOMB International Workshop on Comparative Genomics (RECOMB-CG 2025)*,

2025

SEOUL, KOREA REPUBLIC, APRIL 2025. LNBI, SPRINGER.

Leo van Iersel, Mark Jones, *Jannik Schestag*, Celine Scornavacca, and Mathias Weller

DOI: 10.1007/978-3-031-94928-9_7; ArXiv: 2405.01091

- [10] Maximizing Phylogenetic Diversity under Ecological Constraints: A Parameterized Complexity Study**
 IN *Proceedings of the 44th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2024)*, GANDHINAGAR, INDIA, DECEMBER 2024. LIPICS, DAGSTUHL. 2024
 Christian Komusiewicz and *Jannik Schestag*
 DOI: 10.4230/LIPIcs.FSTTCS.2024.28; ArXiv: 2405.17314
- [11] Protective and Nonprotective Subset Sum Games: A Parameterized Complexity Analysis**
 IN *Proceedings of the 8th International Conference on Algorithmic Decision Theory (ADT 2024)*, PISCATAWAY, NEW JERSEY, UNITED STATES, OCTOBER 2024. LNCS, SPRINGER. 2024
 Jaroslav Garvardt, Ber Lorke, Christian Komusiewicz, and *Jannik Schestag*
 DOI: 10.1007/978-3-031-73903-3_6
- [12] On the Complexity of Finding a Sparse Connected Spanning Subgraph in a Non-Uniform Failure Model**
 IN *Proceedings of the 18th International Symposium on Parameterized and Exact Computation (IPEC 2023)*, AMSTERDAM, THE NETHERLANDS, SEPTEMBER 2023. LIPICS, DAGSTUHL. 2023
 Matthias Bentert, *Jannik Schestag*, and Frank Sommer
 DOI: 10.4230/LIPIcs.IPEC.2023.4; ArXiv: 2308.04575; Conference version of [19].
- [13] How Can We Maximize Phylogenetic Diversity? Parameterized Approaches for Networks**
 IN *Proceedings of the 18th International Symposium on Parameterized and Exact Computation (IPEC 2023)*, AMSTERDAM, THE NETHERLANDS, SEPTEMBER 2023. LIPICS, DAGSTUHL. 2023
 Mark Jones and *Jannik Schestag*
 DOI: 10.4230/LIPIcs.IPEC.2023.30; TU Delft repository
- [14] Finding Degree-Constrained Acyclic Orientations**
 IN *Proceedings of the 18th International Symposium on Parameterized and Exact Computation (IPEC 2023)*, AMSTERDAM, THE NETHERLANDS, SEPTEMBER 2023. LIPICS, DAGSTUHL. 2023
 Jaroslav Garvardt, Malte Renken, *Jannik Schestag*, and Mathias Weller
 DOI: 10.4230/LIPIcs.IPEC.2023.19; TU Delft repository
- [15] On the Complexity of Parameterized Local Search for the Maximum Parsimony Problem**
 IN *Proceedings of the 34th Annual Symposium on Combinatorial Pattern Matching (CPM 2023)*, MARNE-LA-VALLÉE, FRANCE, JUNE 2023. LIPICS, DAGSTUHL. 2023
 Christian Komusiewicz, Simone Linz, Nils Morawietz, and *Jannik Schestag*
 DOI: 10.4230/LIPIcs.CPM.2023.18
- [16] A Multivariate Complexity Analysis of the Generalized Noah's Ark Problem**
 IN *Proceedings of the 19th Cologne-Twente Workshop on Graphs and Combinatorial Optimization (CTW 2023)*, GARMISCH-PARTENKIRCHEN, GERMANY, JUNE 2023. LNCS, SPRINGER. 2023
 Christian Komusiewicz and *Jannik Schestag*
 DOI: 10.1007/978-3-031-46826-1_9; ArXiv: 2307.03518; Conference version of [1].
- [17] On Critical Node Problems with Vulnerable Vertices** (My Master's Thesis)
 IN *Proceedings of the 33rd International Workshop on Combinatorial Algorithms (IWCOA 2022)*, TRIER, GERMANY, JUNE 2022. LNCS, SPRINGER. 2022
 Niels Grüttemeier, Christian Komusiewicz, *Jannik Schestag*, and Frank Sommer
 DOI: 10.1007/978-3-031-06678-8_36; Conference version of [2].
- [18] Destroying Bicolored P_3 s by Deleting Few Edges** (My Bachelor's Thesis)
 IN *Proceedings of the 15th Conference on Computability in Europe (CiE 2019)*, DURHAM, UNITED KINGDOM, JULY 2019. LNCS, SPRINGER. 2019
 Niels Grüttemeier, Christian Komusiewicz, *Jannik Schestag*, and Frank Sommer
 DOI: 10.1007/978-3-030-22996-2_17; ArXiv: 1901.03627; Conference version of [3].

Submitted Journal Articles

[19] Finding a Sparse Connected Spanning Subgraph in a non-Uniform Failure Model

ALGORITHMICA

Matthias Bentert, *Jannik Schestag*, and Frank Sommer

ArXiv: 2308.04575; Journal version of [12].

[20] Maximizing Phylogenetic Diversity under Time Pressure: Planning with Imminent Extinctions

JOURNAL OF COMBINATORIAL OPTIMIZATION

Mark Jones and *Jannik Schestag*

ArXiv: 2403.14217; A preliminary version was presented at ECCO '25 which had no precedings.

Research Interests

Fixed-Parameter Tractability

Algorithmic Lower Bounds

Phylogeny

Number-Theoretic Problems

Administrative Information

Citizenship EU Citizen and Passport Holder

Languages German (Native), English (Fluent), Dutch (Proficient),
Norwegian (Intermediate), Swedish (Intermediate), French (Intermediate)

Teaching Languages English, German, and Dutch

Availability Upon agreement

Held Scientific Conference Talks

Limits of Kernelization and Parametrization for Phylogenetic Diversity with Dependencies

April 2026

THE 17TH LATIN AMERICAN THEORETICAL INFORMATICS SYMPOSIUM (LATIN 2026)

Florianópolis, Brazil

Presentation of [5].

Generalizing Phylogenetic Diversity to Networks

March 2026

INTERNATIONAL WORKSHOP ON PROBABILISTIC, COMBINATORIAL, AND ALGORITHMIC PHYLOGENETICS

Taipei, Taiwan

Weighted Food Webs Make Computing Phylogenetic Diversity So Much Harder

February 2026

THE 51ST INTERNATIONAL CONFERENCE ON CURRENT TRENDS IN THEORY AND PRACTICE OF COMPUTER SCIENCE (SOFSEM 2026)

Kraków, Poland

Presentation of [6].

Parameterized Algorithms for Diversity of Networks with Ecological Dependencies

September 2025

THE 20TH INTERNATIONAL SYMPOSIUM ON PARAMETERIZED AND EXACT COMPUTATION (IPEC 2025)

Warsaw, Poland

Presentation of [7].

Average-Tree Phylogenetic Diversity of Networks

August 2025

THE 25TH INTERNATIONAL WORKSHOP ON ALGORITHMS IN BIOINFORMATICS (WABI 2025)

College Park, MD, United States

Presentation of [8].

Maximizing Phylogenetic Diversity under Time Pressure: Planning with Imminent Extinctions

May 2025

THE 38TH CONFERENCE OF THE EUROPEAN CHAPTER OF COMBINATORIAL OPTIMIZATION (ECCO 2025)

Marrakesh, Morocco

Presentation of [20].

Phylogenetic Network Diversity Parameterized by Reticulation Number and Beyond

April 2025

THE 23RD RECOMB INTERNATIONAL WORKSHOP ON COMPARATIVE GENOMICS (RECOMB-CG 2025)
Presentation of [9].

Seoul, Korea Republic

Maximizing Phylogenetic Diversity under Ecological Constraints: A Parameterized Complexity Study

December 2024

THE 44TH IARCS ANNUAL CONFERENCE ON FOUNDATIONS OF SOFTWARE TECHNOLOGY AND THEORETICAL COMPUTER SCIENCE (FSTTCS 2024)
Presentation of [10].

Gandhinagar, India

How can we Maximize Phylogenetic Diversity? Parameterized Approaches for Networks

September 2023

THE 18TH INTERNATIONAL SYMPOSIUM ON PARAMETERIZED AND EXACT COMPUTATION (IPEC 2023)
Presentation of [13].

Amsterdam, The Netherlands

Finding Degree-Constrained Acyclic Orientations

September 2023

THE 18TH INTERNATIONAL SYMPOSIUM ON PARAMETERIZED AND EXACT COMPUTATION (IPEC 2023)
Presentation of [14].

Amsterdam, The Netherlands

A Multivariate Complexity Analysis of the Generalized Noah's Ark Problem

June 2023

THE 19TH COLOGNE-TWENTE WORKSHOP ON GRAPHS AND COMBINATORIAL OPTIMIZATION (CTW 2023)
Presentation of [16,1].

Garmisch-Partenkirchen, Germany

On Critical Node Problems with Vulnerable Vertices

June 2022

THE 33RD INTERNATIONAL WORKSHOP ON COMBINATORIAL ALGORITHMS (IWCA 2022)
Presentation of [17,2].

Trier, Germany