Hannes V. **Jakob**

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Education

Gymnasium Nepomucenum Rietberg　　　　　　　　　　　　　　　*Rietberg, Germany*
ABITUR　　　　　　　　　　　　　　　　　　　　　　　　　　*July 2008 - June 2016*

Albert-Ludwigs-Universität Freiburg　　　　　　　　　　　　　*Freiburg, Germany*
B.SC. IN MATHEMATICS　　　　　　　　　　　　　　　　　　　*Oct. 2017 - Sept. 2020*
- Bachelor's thesis in set theory titled "Cichoń's Maximum"

Albert-Ludwigs-Universität Freiburg　　　　　　　　　　　　　*Freiburg, Germany*
M.SC. IN MATHEMATICS　　　　　　　　　　　　　　　　　　　*Oct. 2020 - Sept. 2022*
- Master's thesis in set theory titled "Generalised Tree Properties"

Albert-Ludwigs-Universität Freiburg　　　　　　　　　　　　　*Freiburg, Germany*
DR. RER. NAT. IN MATHEMATICS　　　　　　　　　　　　　　　　*Oct. 2022 - Jan. 2025*
- Graduated *summa cum laude*
- Thesis titled "Variants of Mitchell Forcing"
- Advisor: Prof. Heike Mildenberger

Positions

Albert-Ludwigs-Universität Freiburg　　　　　　　　　　　　　*Freiburg, Germany*
WISSENSCHAFTLICHER MITARBEITER　　　　　　　　　　　　　　*Oct. 2023 - July 2025*
- Advisor: Prof. Heike Mildenberger

University of North Texas　　　　　　　　　　　　　　　　　*Denton, TX, USA*
VISITING ASSISTANT PROFESSOR　　　　　　　　　　　　　　　　*Starting July 2025*
- Mentor: Prof. John Krueger

Teaching

Lecture: Combinatorics　　　　　　　　　　　　　　　　　　*Winter 2023/2024*
TEACHING ASSISTANT　　　　　　　　　　　　　　　　　　　　*Freiburg, Germany*

Seminar: Prikry-Forcing　　　　　　　　　　　　　　　　　　*Summer 2024*
TEACHING ASSISTANT　　　　　　　　　　　　　　　　　　　　*Freiburg, Germany*

Lecture: Mathematical Logic　　　　　　　　　　　　　　　　*Summer 2024*
TEACHING ASSISTANT　　　　　　　　　　　　　　　　　　　　*Freiburg, Germany*

Lecture: Set Theory　　　　　　　　　　　　　　　　　　　*Winter 2024/2025*
TEACHING ASSISTANT　　　　　　　　　　　　　　　　　　　　*Freiburg, Germany*

Lecture: Topology　　　　　　　　　　　　　　　　　　　　*Summer 2025*
TEACHING ASSISTANT　　　　　　　　　　　　　　　　　　　　*Freiburg, Germany*

Publications and Preprints

Disjoint Stationary Sequences on an Interval of Cardinals

J.

2023

Submitted

We answer a question of Krueger by, from countably many Mahlo cardinals, constructing a model in which there is a disjoint stationary sequence on every $\aleph_n, n \geq 2$. In this model, for any $n \geq 1$ and any $\Theta > \aleph_n$ there are stationarily many $N \in [H(\Theta)]^{\aleph_n}$ which are internally unbounded but not internally club.

Slender Trees and the Approximation Property

J.

2023

Submitted

We prove several compatibility results regarding the ineffable slender property introduced by Christoph Weiss.

Distinguishing Internally Club and Approachable on an Infinite Interval

J., Maxwell Levine

2024

Submitted

We answer a question of Krueger by, from countably many Mahlo cardinals, constructing a model in which for any $n \geq 1$ and $\Theta > \aleph_n$ there are stationarily many $N \in [H(\Theta)]^{\aleph_n}$ which are internally club but not internally approachable.

Cascading Variants of Internal Approachability

J.

2024

Submitted

We show that it is consistent that there exist stationarily many models which are internally approachable of different variants at different levels. We also show that, in general, the approachability property at μ can hold together with the existence of stationarily many $N \in [H(\mu^+)]^\mu$ which are internally stationary but not internally club.

On Friedman's Property

J.

2024

Submitted

We introduce posets which gently add witnesses to the failure of variants of Friedman's property in order to separate many of these principles both at one cardinal and between different cardinals. Along the way we obtain that many known results which hold for κ-strategically closed forcings can fail for $< \kappa$-strategically closed ones.

Invited Talks

On Friedman's Property

Set Theory Seminar at the Czech Academy of Sciences

13.11.2024

Prague, Czech Republic

Strong Distributivity and the Indestructibility of ISP

Workshop: Compactness and Cardinal Invariants II

15.11.2024

Prague, Czech Republic

Seminar Talks

Strong Distributivity and Games on Posets

Oberseminar: Mathematische Logik

25.04.2023

Freiburg, Germany

Forcings with the Approximation Property

Oberseminar: Mathematische Logik

12.12.2023

Freiburg, Germany

Friedman's and other Reflection Properties

Oberseminar: Mathematische Logik

06.04.2024

Freiburg, Germany

Contributed Talks

Cascading Variants of Internal Approachability

European Set Theory Conference

17.09.2024

Münster, Germany