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 - Present*
- In Progress
- Thesis titled "Variants of Mitchell Forcing"

Experience

Albert-Ludwigs-Universität Freiburg — *Freiburg, Germany*
Tutor — *Oct. 2018 - Aug. 2023*
- Correction and explanation of weekly worksheets
- Various lectures, including "Mathematical Logic", "Topology" and "Set Theory: Independence Proofs"

Albert-Ludwigs-Universität Freiburg — *Freiburg, Germany*
Teaching Assistant — *Oct. 2023 - Present*
- Creation of weekly worksheets and occasional lecturing
- Lectures: "Kombinatorik", "Mathematische Logik", Seminars: "Prikry-Forcing"

Publications and Preprints

Disjoint Stationary Sequences on an Interval of Cardinals — *2023*
J. — *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 — *2023*
J. — *Submitted*
We prove several compatibility results regarding the ineffable slender property introduced by Christoph Weiss.

Distinguishing Internally Club and Approachable on an Infinite Interval — *2024*
J., Maxwell Levine — *Submitted*
We answer a question of Krueger by, from countably many Mahlo cardinals, constructing a model in which the properties of being internally club and approachable are distinct for sets of size $\aleph_n$, $n \geq 1$.

Cascading Variants of Internal Approachability — *2024*
J. — *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 unbounded but not internally approachable.

On Friedman's Property *2024*

J. *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 *13.11.2024*

Set Theory Seminar at the Czech Academy of Sciences *Prague, Czech Republic*

Strong Distributivity and the Indestructibility of ISP *15.11.2024*

Workshop: Compactness and Cardinal Invariants II *Prague, Czech Republic*

Seminar Talks

Forcings with the Approximation Property *12.12.2023*

Oberseminar: Mathematische Logik *Freiburg, Germany*

Strong Distributivity and Games on Posets *25.04.2023*

Oberseminar: Mathematische Logik *Freiburg, Germany*

Friedman's and other Reflection Properties *06.04.2024*

Oberseminar: Mathematische Logik *Freiburg, Germany*

Contributed Talks

Cascading Variants of Internal Approachability *17.09.2024*

European Set Theory Conference *Münster, Germany*