

MICHAEL (mike) NEUDER

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🌐 Princeton, New Jersey, USA

EDUCATION

Princeton University

Doctoral student, Computer Science

↳ Under the supervision of Prof. [Matt Weinberg](#).

Aug. 2025 - Present

Princeton, NJ

Harvard University

Master of Science, Computational Science

Aug. 2020 - May. 2021

Cambridge, MA

University of Colorado

Bachelor of Arts, Computer Science

Bachelor of Arts, Mathematics

Aug. 2015 - May. 2020

Boulder, CO

ACADEMIC EXPERIENCE

EconCS Group, Harvard University

Research Assistant supervised by Prof. [David C. Parkes](#)

Aug. 2019 - Aug. 2021

Cambridge, MA

Santa Fe Institute

Undergraduate Research Fellow: Summer 2018 REU

Jun. 2018 - Aug. 2018

Santa Fe, NM

Bradley Lab, University of Colorado

Research Assistant supervised by Prof. [Elizabeth Bradley](#)

Apr. 2017 - Aug. 2021

Boulder, CO

Mozer Lab, University of Colorado

Research Assistant supervised by Prof. [Michael Mozer](#)

Mar. 2017 - May. 2019

Boulder, CO

INDUSTRY EXPERIENCE

The Ethereum Foundation

Researcher – Applied Research Group (ARG)

Mar. 2023 - May. 2025

New York, NY

Google

Software Engineer (L3 → L4) – Cloud Storage

Aug. 2021 - Feb. 2023 (*Cambridge, MA*)

Software Engineering Intern – Network Infrastructure

Summer 2020 (*remote*)

Software Engineering Intern – Flights

Summer 2019 (*Cambridge, MA*)

Software Engineering Intern – Mobile Device Management

Fall 2018 (*Sunnyvale, CA*)

Lockheed Martin & LASP¹

Software Engineering Intern

Feb. 2017 - Oct. 2017

Boulder, CO

JOURNAL AND CONFERENCE PUBLICATIONS (REVERSE CHRONOLOGICAL)

- M. Bahrani, **M. Neuder**, S. M. Weinberg, “Selfish mining under general stochastic rewards,” (2025) *Advances in Financial Technologies (AFT)*.
<https://arxiv.org/pdf/2502.20360>.
- **M. Neuder**, M. Pai, and M. Resnick, “Optimizing Exit Queues for Proof-of-Stake Blockchains: A Mechanism Design Approach,” (2024) *Advances in Financial Technologies (AFT)*.
<https://arxiv.org/pdf/2406.05124>.
- Z. Fan, F. Marmolejo-Cossio, D. J. Moroz, **M. Neuder**, R. Rao, and D. C. Parkes, “Strategic Liquidity Provision in Uniswap v3,” (2023) *Advances in Financial Technologies (AFT)*.
<https://doi.org/10.4230/LIPIcs.AFT.2023.25>.

¹Laboratory of Atmospheric and Space Physics: <https://lasp.colorado.edu/home/>.

- **M. Neuder**, E. Bradley, E. Dlugokencky, J. W. C. White, J. Garland, “Detection of Local Mixing in Time Series using Permutation Entropy,” (2021) *Physical Review E* 103.
<https://doi.org/10.1103/PhysRevE.103.022217>.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, “Defending Against Malicious Reorgs in Tezos Proof-of-Stake,” (2020) *ACM Conference on Advances in Financial Technologies (AFT)*.
<https://doi.org/10.1145/3419614.3423265>.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, “Selfish Behavior in the Tezos Proof-of-Stake Protocol,” (2020) *Cryptoeconomic Systems (CES) Conference*. <https://arxiv.org/pdf/1912.02954>.
- J. Garland, T. Jones, **M. Neuder**, J. W. C. White, E. Bradley, “An information-theoretic approach to extracting climate signals from deep polar ice cores,” (2019) *Chaos: An Interdisciplinary Journal of Nonlinear Science* 29:101105. <https://doi.org/10.1063/1.5127211>.
- J. Garland, T. Jones, **M. Neuder**, V. Morris, J. W. C. White, E. Bradley, “Anomaly Detection in Paleoclimate Records using Information Theory,” (2018) *Entropy* 20(12):931. <https://doi.org/10.3390/e20120931>.

WORKSHOP PAPERS AND OTHER LIGHTLY REFEREED PUBLICATIONS

- P. Garimidi, **M. Neuder**, T. Roughgarden, “Tullock Contests in the Wild: Applications in Blockchains,” (2025) *ACM SIGecom Exchanges*, Vol. 23, No. 1.
https://www.sigecom.org/exchanges/volume_23/1/GARIMIDI.pdf.
- **M. Neuder**, D. J. Moroz, R. Rao, D. C. Parkes, “Low-cost attacks on Ethereum 2.0 by sub-1/3 stakeholders,” (2020) *Workshop on Game Theory in Blockchain, Conference on Web and Internet Economics (WINE)*.
<https://arxiv.org/pdf/2102.02247>.

ACADEMIC TALKS

- **Optimizing Exit Queues for Proof-of-Stake Blockchains**
Advances in Financial Technology, *AFT 2024*. [slides](#).
- **Low-cost attacks on Ethereum 2.0 by sub-1/3 stakeholders**
Workshop on Game Theory in Blockchain, *WINE 2020*. [recording](#). [slides](#).
- **Defending Against Malicious Reorgs in Tezos**
ACM Advances in Financial Technology, *AFT 2020*. [recording](#). [slides](#).
- **Selfish Behavior in the Tezos PoS Protocol**
Cryptoeconomic Systems Conference, *CES 2020*. [recording](#). [slides](#).
- **Animal Tracking using Deep Learning**
Santa Fe Institute REU Presentation, *SFI 2018*. [recording](#).

AWARDS

- 2020** Computer Science Discovery Learning Award (University of Colorado).
- 2019** Sieglinde Talbott Haller Scholarship in Mathematics (University of Colorado).
- 2019** Honorable Mention: Computing Research Assoc. Outstanding Undergraduate Researcher. [link](#).
- 2017** Phi Beta Kappa (University of Colorado). [link](#).
- 2015-2020** President Joseph A. Sewall Esteemed Scholar Award (University of Colorado). [link](#).
- 2015-2020** Dean’s List (University of Colorado). [link](#).

PROFESSIONAL SERVICE

- 2026** Symposium On Discrete Algorithms (SODA) Conference. *External Reviewer*.
- 2025** Crypto & Blockchain Economics Research Forum (CBER) Conference. *Program Committee*. [link](#).
- 2023, 2024** Columbia CryptoEconomics Workshop (CCE). *Organizing Committee*. [link](#).
- 2024, 2025** The Latest in DeFi Research (TLDR) Conference. *Program Committee*. [link](#).
- 2024** Crypto Academic Summer School at Edge City. *Organizing Committee*. [link](#).

BLOCKCHAIN ARTICLES (NON-PEER REVIEWED) (BY TOPIC)

Proof-of-StakeETH, the asset

- My (e)thesis: settlement, data availability, execution – in that order.
- Issuance Issues – Tertiary Treatise.
- Issuance Issues – Subsequent Soliloquy.
- Issuance Issues – Initial Issue.

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Ethereum Consensus

- Concurrent Block Proposers in Ethereum, *with Max Resnick*.
- Rollup-Centric Roadmap (2024 version), *with Alex Stokes*.
- A set-theoretic view of Ethereum coteries.
- Time, slots, and the ordering of events in Ethereum, *with Georgios Konstantopoulos*.

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Increase the MAX_EFFECTIVE_BALANCE

- EIP-7251: Increase the MAX_EFFECTIVE_BALANCE.
- A modest proposal, *with Francesco D’Amato, Aditya Asgaonkar, Justin Drake*.
- Slashing penalty analysis; EIP-7251, *with Barnabe Monot*.
- Validator consolidation in EIP-7251, *with Francesco D’Amato, Mikhail Kalinin*.
- FAQ on EIP-7251, *with Francesco D’Amato, Mikhail Kalinin, dAppLion*.

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Exit/Withdrawal queues

- EIP-7922: Dynamic exit queue rate limit, *with Mikhail, Malleesh*.
- Adding flexibility to Ethereum’s exit queue, *with Mikhail Kalinin, Malleesh Pai*.
- ELI5: Ethereum Validator Exits, *with Malleesh Pai*.

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Liquid staking & restaking

- The Risks of LRTs, *with Tarun Chitra*.
- Musings on “two-tiered” staking, a native Liquid Staking Token design.
- Magnitude and direction of Lido attack vectors.

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Data availability/blobs

- Blob gossip and validation before and after PeerDAS.
- On the future of the blob mempool, *with Julian Ma*.

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Maximal Extractable Value (MEV)Enshrined Proposer-Builder Separation (ePBS)

- Why enshrine Proposer-Builder Separation, *with Justin Drake*.
- Payload-timeliness committee (PTC), *with Francesco D’Amato*.
- Equivocation attacks in mev-boost and ePBS, *with Francesco D’Amato*.
- Relays in a post-ePBS world, *with Jon, Hasu, Tomasz, Chris, Toni*.
- ePBS – the infinite buffet.
- Consider the ePBS.
- Decoupling ExecutionPayload validity from Data Availability.

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Censorship resistance

- EIP-7547: Inclusion lists.
- No free lunch – a new inclusion list design, *with Vitalik Buterin*.
- Unconditional inclusion lists, *with Toni Wahrstatter*.
- Resistance is not futile; CR in mev-boost.
- Inclusion lists: execution, consensus, & engine spec overview.
- Inclusion Lists PoC Specification.
- The Case for ILECTRA.

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Relays

- Optimistic Relay Proposal, *with Justin Drake*.

[link](#).

- An optimistic weekend. [link.](#) [tweet.](#)
- Towards enshrined PBS – an optimistic roadmap. [link.](#)
- Optimistic relays and where to find them, *with Ankit Chiplunkar.* [link.](#) [tweet.](#)
- Bid cancellations considered harmful, *with Thomas Thiery.* [link.](#) [tweet.](#)

Miscellanea

- Overnight reverse repurchases and the Fed's balance sheet. [link.](#) [tweet.](#)
- On Ethereum Prover Market Design, *with Maryam Bahrani.* [link.](#) [tweet.](#)
- On incentivizing anonymous participation, *with Maryam Bahrani.* [link.](#) [tweet.](#)
- Mechan-stein (alt. Franken-ism). [link.](#) [tweet.](#)
- On block-space distribution mechanisms, *with Pranav Garimidi, Tim Roughgarden.* [link.](#) [tweet.](#)
- Execution Tickets, *with Justin Drake.* [link.](#) [tweet.](#)
- How I learned to stop worrying and love mev-burn, *with Justin Drake, Toni Wahrstatter.* [link.](#) [tweet.](#)
- Timing Games: Implications and Possible Mitigations, *with Caspar Schwarz-Schilling.* [link.](#) [tweet.](#)

BLOCKCHAIN PRESENTATIONS, PODCASTS, & PANELS

Presentations

- Revisiting Ethereum's Exit Queue – *Beam Chain Call #4. April 2025.* [recording.](#) [slides.](#)
- Validator incentives – *Oxford-Harvard Conference on DeFi. January 2025.* [slides.](#)
- Neutrality in Ethereum – *Harvard Club of New York City. October 2024.* [slides.](#)
- Separating MEV and Staking Rewards – *CBER Webinar. September 2024.* [recording.](#) [slides.](#)
- More slides about Ethereum Blockspace – *Scroll Protocol Symposium. August 2024.* [recording.](#) [slides.](#)
- More slides about PBS – *MEV Workshop, Stanford Blockchain Conference. August 2024.* [recording.](#) [slides.](#)
- Postmodern Staking – *9th Annual IC3 Blockchain Camp. June 2024.* [slides.](#)
- Is restaking the new staking? – *CBER Forum Annual Conference. May 2024.* [recording.](#) [slides.](#)
- State of the Ethereum Union (1/N perspective) – *ETHBoston. April 2024.* [slides.](#)
- No Free Lunch – *Columbia CryptoEconomics Working Session. December 2023.* [recording.](#) [slides.](#)
- Enshrining PBS – *Center for Digital Finance & Technologies. December 2023.* [slides.](#)
- Why it's hard to enshrine PBS – *Archetype MEV Lunch. November 2023.* [recording.](#) [slides.](#)
- Reorgs in PoS – *MEV Roast; Reorg Edition. August 2021.* [recording.](#) [slides.](#)

EthCC[8] (July 2025) – Cannes, France

- Blobs and the future of the blob mempool – *EthCC main event.* [recording.](#) [slides.](#)
- Blob futures and the blob mempool – *Blockspace Futures Day.* [recording.](#) [slides.](#)

DEVCON 7 (November 2024) – Bangkok, Thailand

- ETH is permissionless money – *DEVCON Main stage.* [recording.](#) [slides.](#)
- The ticker is ETH – *Bankless Summit.* [recording.](#) [slides.](#)

ETHDenver (March 2024) – Denver, USA

- Execution Tickets – *Beyond the Block (Titan Builder & Hashkey Capital).* [recording.](#) [slides.](#)
- The Risks of LRTs – *Research Day (SevenX Ventures).* [recording.](#) [slides.](#)

DevConnect (November 2023) – Istanbul, Turkey

- Increase the MAX_EFFECTIVE_BALANCE – *EthStaker Staking Gathering.* [recording.](#) [slides.](#)
- A set theoretic view of Ethereum coteries – *LidoConnect.* [recording.](#) [slides.](#)

EthCC[6] (July 2023) – Paris, France

- Towards Enshrined Proposer-Builder Separation – *EthCC main event.* [recording.](#) [slides.](#)
- Ethereum PBS R&D Roadmap – *Modular Summit.* [recording.](#) [slides.](#)
- Increase the MAX_EFFECTIVE_BALANCE – *Kiln Rendez-vous.* [recording.](#) [slides.](#)

Podcasts

- Pectra Explained – *Coinbase Institutional Webinar. May 2025.* [recording.](#)
- ETH is Permissionless Money – *Cryptoria. December 2024.* [English.](#) [Chinese.](#)
- Ethereum's North Star – *The Gwart Show. October 2024.* [recording.](#)
- The Future of Ethereum: Is This The Right Track? – *Bankless. October 2024.* [recording.](#)
- The Ethereum Roadmap is NOT Off Track! – *Bankless. September 2024.* [recording.](#)

- ETH Insights: Discussing MaxEB – *Coinbase Webinar*. April 2024.
- PeepAnEIP: EIP-7547 – *Ethereum Cat Herders*. April 2024.
- Endgame 2.0: A Guide to Vitalik’s Ethereum Roadmap – *Bankless*. February 2024.
- We’re Pretty Sure Mike and Max Can Fix MEV – *The Gwart Show*. February 2024.
- PeepAnEIP: EIP-7251 – *Ethereum Cat Herders*. February 2024.
- Eigenlayer In 2024 (co-host) – *Bankless*. December 2023.
- An Incomplete Guide to PBS – *Uncommon Core 2*. September 2023.

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Panels

- Restaking Panel – *Staking Rewards: Staking Summit*. November 2024.
- Decentralization Panel – *Espresso: Beyond the Baselayer*. March 2024.
- Decentralize or Bust – *bloXroute & ETHStaker*. March 2024.
- Alignment Panel – *EigenLayer Restaking Summit*. November 2023.
- PBS & Beyond – *MEVDay Paris*. July 2023.

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OPEN SOURCE CONTRIBUTIONS

EIP-7547: Inclusion Lists (python) (repo)

- EIP (Ethereum Improvement Proposal).
- Spec Overview (Consensus, Execution, and Engine API specifications).
- Proof-of-Concept Specification.
- Compilation of Related Work.

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[link](#).
[link](#).
[link](#).

EIP-7251: Increase the MAX_EFFECTIVE_BALANCE (python) (repo)

- EIP (Ethereum Improvement Proposal).
- Minimal Spec Change (Consensus specifications).
- Compilation of Related Work.

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MEV-boost Relay: Optimistic Processing (golang) (repo)

- Main pull request & design documentation.
- Header-only parsing optimization.
- Pull request list.
- Proposal.
- Builder Onboarding.

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Erigon (Ethereum Execution Layer Client) (golang) (repo)

- Refactored req/resp domain network encoding.
- Consensus spec implementation.
- Pull request list.

[link](#).
[link](#).
[link](#).

Prysm (Ethereum Consensus Layer Client) (golang) (repo)

- Keymanager code-health refactor.
- Pull request list.

[link](#).
[link](#).

STRUMPACK (High-performance matrix math package) (C++) (repo)

- Mixed-precision (float64 & float32) iterative refinement.
- Pull request list.
- Write-up.

[link](#).
[link](#).
[link](#).

OptRBC (Optimal solutions in 2D Rayleigh-Benard Convection) (FORTAN) (repo)

- Multiprocessor implementation using [openmp](#).
- Write-up.

[link](#).
[link](#).

Image quality convolutional neural networks. (python) (repo)

- Write-up.
- Example network.

[link](#).
[link](#).

MISCELLANEA: FUN WRITING & SOFTWARE

Writing

- Tattoo probabilistic analysis.
- Solo-staking rig.
- NBA draft probabilistic analysis.
- Shakespeare Zipf-ian analysis.

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Software

- Monte Carlo numerical demonstrations. (**python**)
- Connect Four PyQT application. (**python**)
- Terminal implementation of games. (**perl**)
- Rubik's cube solver. (**C++**)

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