The Robust Incentives Group is an Ethereum Foundation research team dedicated to the study of protocol mechanisms with the lens of game theory, mechanism design, crypto-economics, formal methods and data science.

Looking to expand your credentials and participate in Ethereum research?

Check out our current RIG Open Problems (ROPs)!

Watch all Columbia Cryptoeconomics workshop (CCE) 2023 videos, for the latest academic and industry research on

cryptoeconomics. Watch all ETHconomics 2videos, a research gathering at Devconnect for all things Ethereum cryptoeconomics! Subscribe to our Robust communications, and receive a ~monthly summary of what we've been up to! **Posts** All posts By tag Filter Sort Title **Authors** Tags Date published Link Reconsidering the market structure of PBS Barnabé Monnot Proposer-Builder Separation March 1, 2024 mirror.xyz/bar...3mnCOg The more, the less censored: Introducing committee-enforced inclusion sets (COMIS) on Ethereum **Thomas Thiery** Barnabé Monnot Francesco D'Amato Consensus **Protocol Development** February 29, 2024

ethresear.ch/t/t.../18835

Electra: Issuance Curve Adjustment Proposal

Caspar Schwarz-Schilling

Ansgar Dietrichs

Protocol Development

Game Theory / Econ

February 22, 2024

ethereum-magicians.org/t/e.../18825

Endgame Staking Economics: A Case for Targeting Caspar Schwarz-Schilling **Ansgar Dietrichs Protocol Development** Game Theory / Econ February 22, 2024 ethresear.ch/t/e.../18751 Semantics of Staking 3: Advanced constructions Barnabé Monnot Game Theory / Econ **Protocol Development** February 22, 2024 mirror.xyz/bar...Wv8VQo Unbundling staking: Towards rainbow staking Barnabé Monnot Consensus **Protocol Development** February 15, 2024 ethresear.ch/t/u...arnabe The price is right: Realigning builder-proposer incentives with predictive MEV-burn **Thomas Thiery** MEV Proposer-Builder Separation February 12, 2024 ethresear.ch/t/t.../18656 Properties of issuance level (part 1) Α **Anders** Game Theory / Econ **Protocol Development** January 9, 2024 notes.ethereum.org/@an...lgjo_6 Semantics of Staking 2: Re-staking Barnabé Monnot Game Theory / Econ **Protocol Development** January 4, 2024

mirror.xyz/bar...b40o50 **Timing Games: Implications and Possible Mitigations** Caspar Schwarz-Schilling Michael Neuder Consensus MEV December 5, 2023 ethresear.ch/t/t.../17612 Semantics of Staking 1: Liquefaction Barnabé Monnot Game Theory / Econ **Protocol Development** November 28, 2023 mirror.xyz/bar...VAzAL4 MEV burn: Incentivizing earlier bidding in "a simple design" Α Anders Proposer-Builder Separation MEV November 11, 2023 ethresear.ch/t/m.../17389 The Costs of Censorship: A Modeling and Simulation Approach to Inclusion Lists **Thomas Thiery Protocol Development** Game Theory / Econ Simulations November 10, 2023 ethresear.ch/t/t.../17382 Minimum Viable Issuance Α Anders Game Theory / Econ **Protocol Development** October 7, 2023 notes.ethereum.org/@an...suance Fun and games with inclusion lists Barnabé Monnot

Game Theory / Econ
Proposer-Builder Separation
September 6, 2023
ethresear.ch/t/farnabe
Rollups are Real — Rollup Economics 2.0
D
Davide Crapis
Scaling / Rollups
Game Theory / Econ
August 13, 2023
davidecrapis.notion.site/Rola5a3de
Empirical analysis of Builders' Behavioral Profiles (BBPs)
Thomas Thiery
MEV
Data
Proposer-Builder Separation
August 10, 2023
ethresear.ch/t/e/16327
PEPC FAQ
Barnabé Monnot
MEV
Protocol Development
Proposer-Builder Separation
August 3, 2023
efdn.notion.site/PEP?pvs=4
Game-theoretic Model for MEV-Boost Auctions (MMA)
Thomas Thiery
MEV
Game Theory / Econ
Simulations
July 27, 2023
ethresear.ch/t/g/16206
Latency in Blockchains and Ethereum L2 Migration
D
Davide Crapis
Game Theory / Econ
Resource Pricing

Scaling / Rollups
July 21, 2023
davidecrapis.notion.site/Latb14ed3
Cascading Network Effects on Ethereum's Finality
Thomas Thiery
Consensus
Data
June 13, 2023
ethresear.ch/t/c/15871
Bid cancellations considered harmful
Thomas Thiery
Proposer-Builder Separation
MEV
Data
May 5, 2023
ethresear.ch/t/b/15500
Seeing Like a Protocol
Barnabé Monnot
Protocol Development
MEV
April 10, 2023
barnabe.substack.com/p/sotocol
Estimating inclusion delays for censored transactions
Thomas Thiery
Proposer-Builder Separation
Data
March 22, 2023
ethresear.ch/t/e/15115
MEV Resilient Ethereum
D
Davide Crapis
MEV
Protocol Development
Proposer-Builder Separation
Data
March 20, 2023
notes.ethereum.org/@RMcq8Co

EIP-4844 Fee Market Analysis
D
Davide Crapis
Resource Pricing
March 16, 2023
ethresear.ch/t/e/15078
Latency arms race concerns in blockspace markets
D
Davide Crapis
MEV
March 3, 2023
ethresear.ch/t/l/14957
Approximating User Welfare and Surplus with Transaction Data
D
Davide Crapis
Game Theory / Econ
Resource Pricing
Data
February 6, 2023
ethresear.ch/t/a/14766
Guide to Ethereum Economics: Introduction
D
Davide Crapis
Game Theory / Econ
Protocol Development
January 12, 2023
medium.com/@dc873d09
Block vs. Slot Auction PBS
J
Julian
Proposer-Builder Separation
December 14, 2022
mirror.xyz/0x09GXBrQ
Notes on Proposer-Builder Separation
Barnabé Monnot
Proposer-Builder Separation
MEV

Protocol Development
November 8, 2022
barnabe.substack.com/p/pbs
Structuring Blockspace Derivatives
J
Julian
Resource Pricing
Game Theory / Econ
October 21, 2022
mirror.xyz/0x0dHNKs
Next-Block Base Fee Options: Towards a Practical Implementation
J
Julian
Resource Pricing
Game Theory / Econ
October 21, 2022
mirror.xyz/0x0Q89aFc
Timing games in Proof-of-Stake
Barnabé Monnot
Consensus
Game Theory / Econ
October 20, 2022
ethresear.ch/t/t/13980
Unbundling PBS: Towards protocol-enforced proposer commitments (PEPC)
Barnabé Monnot
Proposer-Builder Separation
MEV
October 8, 2022
ethresear.ch/t/uarnabe
Visualising the 7-block reorg on the Ethereum beacon chain
Barnabé Monnot
Consensus
Data
May 29, 2022
barnabe.substack.com/p/preorg
Understanding rollup economics from first principles

Barnabé Monnot

Resource Pricing
Scaling / Rollups
February 24, 2022
barnabe.substack.com/p/us-from
Change fork choice rule to mitigate balancing and reorging attacks
Caspar Schwarz-Schilling
Francesco D'Amato
С
Carl Beekhuizen
Consensus
October 28, 2021
ethresear.ch/t/c/11127
beaconrunner: Agent-based simulations of Proof-of-Stake Ethereum
Barnabé Monnot
Consensus
Simulations
June 1, 2021
ethereum.github.io/beaunner/
abm1559: Agent-based simulations of EIP 1559
Barnabé Monnot
Resource Pricing
Simulations
Game Theory / Econ
June 1, 2021
ethereum.github.io/abm1559/
A data-driven view of the beacon chain incident
Barnabé Monnot
Consensus
Data
April 30, 2021
barnabe.substack.com/p/abeacon
The road to Ethereum
Barnabé Monnot
Consensus
Scaling / Rollups
April 20, 2021
barnabe.substack.com/p/eth2

barnabe.substack.com/p/bip1559
Understanding fees in eip1559
Barnabé Monnot
Resource Pricing
February 26, 2021
barnabe.substack.com/p/uip1559
Congestion control and eip1559
Barnabé Monnot
Resource Pricing
February 17, 2021
barnabe.substack.com/p/cip1559
EIP 1559 simulations
Barnabé Monnot
Resource Pricing
April 15, 2020
ethresear.ch/t/es/7280
Papers
Open item for links to papers.
Gallery
Filter
Sort
Drag image to repositionRepositionThe Cost of Permissionless Liquidity Provision in Automated Market Makers@Julian@Davide CrapisMEVGame Theory2024
Drag image to repositionRepositionStrategic Bidding Wars in On-chain AuctionsFei Wu,@Thomas Thiery, Stefanos Leonardos, Carmine VentreMEVGame TheoryDataSimulations2023
Drag image to repositionRepositionCooperative AI via Decentralized Commitment DevicesXinyuan Sun,@Davide Crapis, Matt Stephenson,@Barnabé Monnot,@Thomas Thiery, Jonathan Passerat-PalmbachGame TheoryAIMEV2023MASEC workshop@ NeurIPS 2023
<u>Drag image to repositionRepositionEIP-4844 Economics and Rollup Strategies@Davide Crapis, Edward W. Felten, Akaki MamageishviliResource PricingScaling / Rollups2023</u>

Better bidding with eip1559

Barnabé Monnot

Resource Pricing

March 5, 2021

Drag image to repositionRepositionTime is Money: Strategic Timing Games in Proof-of-Stake Protocols@Caspar Schwarz-Schilling, Fahad Saleh,@Thomas Thiery, Jennifer Pan, Nihar Shah,@Barnabé MonnotConsensusGame TheoryMEVData2023AFT 2023

<u>Drag image to repositionRepositionOptimal Dynamic Fees for Blockchain Resources@Davide Crapis, Ciamac C. Moallemi,</u>

<u>Drag image to repositionRepositionAgent-Based Modelling of Ethereum ConsensusBenjamin Kraner, Nicolò Vallarano,</u>

Claudio J. Tessone.@Caspar Schwarz-SchillingConsensusSimulations2023IEEE ICBC 2023

Shouqiao WangResource PricingSimulationsData2023

<u>Drag image to repositionRepositionOptimality Despite Chaos in Fee MarketsStefanos Leonardos, Daniël</u> Reijsbergen,@Barnabé Monnot, Georgios PiliourasResource Pricing2022FC 2023

<u>Drag image to repositionRepositionThree Attacks on Proof-of-Stake Ethereum@Caspar Schwarz-Schilling, Joachim</u> Neu,@Barnabé Monnot, Aditya Asgaonkar, Ertem Nusret Tas, David TseConsensusMEV2021FC 2022

Drag image to repositionTransaction Fees on a Honeymoon: Ethereum's EIP-1559 One Month LaterDaniël Reijsbergen, Shyam Sridhar,@Barnabé Monnot, Stefanos Leonardos, Stratis Skoulakis, Georgios PiliourasResource PricingSimulationsData2021IEEE Blockchain 2021

PricingSimulationSData2021TEEE Blockchain 2021
Drag image to repositionPepositionDynamical Analysis of the EIP-1559 Ethereum Fee MarketStefano Leonardos,@Barnabé Monnot, Daniël Reijsbergen, Stratis Skoulakis, Georgios PiliourasResource PricingSimulations2021AFT 2021
Talks
Open item for videos and slides.
Table
Filter
Sort
Name
Speaker
Location
Date
ASSA Annual Meeting 2024
Caspar Schwarz-Schilling
San Antonio, Texas, USA
January 5, 2024
Columbia Cryptoeconomics workshop (CCE) 2023
Caspar Schwarz-Schilling
D
Davide Crapis
Thomas Thiery
Columbia University, New York, US
December 6, 2023 → December 8, 2023
Devconnect Istanbul
D
Davide Crapis
Barnabé Monnot
Istanbul
November 13, 2023 → November 18, 2023
Scaling Ethereum: Rollup Economics

Barnabé Monnot

CBER Forum Webinar

November 2, 2023

PBS ME(V)etup
J
Julian
Amsterdam, the Netherlands
October 25, 2023
AFT '24: Time is Money: Strategic Timing Games in PoS Protocols
Caspar Schwarz-Schilling
Princeton University, Princeton, USA
October 23, 2023
The Blockspace Expo
Barnabé Monnot
Protocol Berg, Berlin
September 15, 2023
SBC'23
Barnabé Monnot
Caspar Schwarz-Schilling
D
Davide Crapis
J
Julian
Stanford, Palo Alto, US
August 28, 2023 → August 31, 2023
EthCC[6]
Barnabé Monnot
Caspar Schwarz-Schilling
Thomas Thiery
Paris, France
July 17, 2023
Aligning like a protocol
Barnabé Monnot
crediblecommitments.wtf
May 31, 2023
3 reasons why the 'MEV Problem' is a Protocol Designer's Dream/Nightmare
J
Julian
ETHDam BloXroute event
May 20, 2023

MEV 2.0 - Order Flow Auctions & Privacy Barnabé Monnot **Bell Curve Podcast** May 16, 2023 Ethereum: Designing the Infinite Economic Machine Barnabé Monnot NYU Stern April 21, 2023 Blockchain Mechanism Design Barnabé Monnot D **Davide Crapis** Institute for Mathematical Sciences, NUS Singapore April 14, 2023 ROP-5 Ethereum Supply Network Health **Thomas Thiery** Online April 5, 2023 Fireside Chat: ETHconomics meets MEVconomics D Davide Crapis Barnabé Monnot mevconomics.wtf March 24, 2023 (Re-)Drawing Ethereum economics Barnabé Monnot Ethereum Engineering Group March 22, 2023 **MEV Resilient Ethereum Davide Crapis ETHDenver** March 4, 2023 Time in Ethereum Caspar Schwarz-Schilling Berlin Ethereum Meetup February 23, 2023

Economic Organisation of Block-Building Barnabé Monnot Berlin Ethereum Meetup February 23, 2023 **ETHconomics** D **Davide Crapis** Web3 London Hub February 22, 2023 **Economic Organisation of Block Building** Barnabé Monnot IC3 Winter Retreat January 16, 2023 Proposer-Builder Separation — PeepAnEIP Barnabé Monnot PeepAnEIP December 19, 2022 Economic Organisation in the Ethereum Protocol Barnabé Monnot Columbia University December 5, 2022 Columbia Cryptoeconomics workshop (CCE) 2022 Barnabé Monnot J Julian Columbia University, New York, US December 1, 2022 → December 3, 2022 Alt View Ep #1: Yaoqi Jia speaks to Barnabé Monnot, Ethereum Foundation on the Layer2 ecosystem Barnabé Monnot **AltView** October 31, 2022 Ethereum gas market & How gas really works Julian ETHVietnam (Online) October 24, 2022 Time in Ethereum (Devcon)

Caspar Schwarz-Schilling
Devcon 6
October 12, 2022
Updates on Proposer-Builder Separation
Barnabé Monnot
Devcon 6
October 11, 2022
ELI5 Cryptoeconomics
J
Julian
Devcon 6
October 11, 2022
Making sense of rollup economics
Barnabé Monnot
EthCC[5]
July 20, 2022
Ethereum: Consensus, The Merge & Governance
Caspar Schwarz-Schilling
University of Zurich, Blockchain Summer School
July 18, 2022
Modelling blockchain protocols: Consensus and fee markets
Barnabé Monnot
SMGT Erice
May 14, 2022
Let me in! Let me IIINNNN! A longitudinal study of the transaction supply chain from CryptoKitties to MEV-Boost to PBS
Barnabé Monnot
mev.day
April 22, 2022
Notes on Ethereum's circulating supply equilibrium and the prospect of perpetual deflation via minimum viable issuance under proof of stake
A
Anders
ETHconomics
April 21, 2022
<u>ETHconomics</u>
A
Anders
Barnabé Monnot

Caspar Schwarz-Schilling **ETHconomics** April 21, 2022 Three Attacks on PoS Ethereum Caspar Schwarz-Schilling FC 2022 April 19, 2022 Proposer-Builder Separation (PBS) Barnabé Monnot Protocol R&D Workshop @ Devconnect April 19, 2022 Robust incentives testing at the Robust Incentives Group Barnabé Monnot Workshop on Incentive Mechanism Validation (WIMV)@ Devconnect April 18, 2022 The road to Ethereum (2022 version) Barnabé Monnot SUTD Guest Lecture April 11, 2022 **Protocol Cryptoeconomics** Barnabé Monnot NTU Blockchain workshop December 20, 2021 Economics of EIP-1559 Barnabé Monnot Berlin Ethereum Meetup November 4, 2021 The Game of Reorgs in PoS Ethereum Caspar Schwarz-Schilling LisCon 2021 October 20, 2021 Employing a reinforcement learning-based framework to analyze incentive mechanism attacks on Ethereum blockchain **EDCON 2021** August 28, 2021 Post-London EIP-1559 Assessment Barnabé Monnot EIP-1559 breakout call #12

August 13, 2021 Protocol cryptoeconomics with the RIG Barnabé Monnot EthCC[4] July 20, 2021 Ethereum: Un protocole en mutation Barnabé Monnot EthCC[4] July 20, 2021 PEEPanEIP #37: EIP-1559: Fee market change with Tim Beiko, Barnabé Monnot, Micah Zoltu Barnabé Monnot Ethereum Cat Herders June 21, 2021 The road to Ethereum Barnabé Monnot SUTD April 9, 2021 En route pour eip1559

Barnabé Monnot

November 10, 2020

Load more

Ethereum France, in French