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) 2023videos, for the latest academic and industry research on

economics!

watch all <u>Columbia Cryptoeconomics workshop (CCE) 2023</u> videos, for the latest academic and indus cryptoeconomics.
Watch all ETHconomics 2 videos, a research gathering at Devconnect for all things Ethereum cryptoed
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
Properties of issuance level (part 1)
A
Anders
Game Theory / Econ
Protocol Development
January 9, 2024
notes.ethereum.org/@anlqjo_6
Semantics of Staking 2: Re-staking
Barnabé Monnot
Game Theory / Econ
Protocol Development
January 4, 2024
mirror.xyz/barb40o50
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/f...arnabe 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/s...otocol 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/@RM...\_cq8Co 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

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/0x0...-dHNKs Next-Block Base Fee Options: Towards a Practical Implementation J Julian Resource Pricing Game Theory / Econ October 21, 2022 mirror.xyz/0x0...Q89aFc 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/u...arnabe Visualising the 7-block reorg on the Ethereum beacon chain Barnabé Monnot Consensus Data May 29, 2022 barnabe.substack.com/p/p...-reorg Understanding rollup economics from first principles Barnabé Monnot Resource Pricing Scaling / Rollups February 24, 2022

barnabe.substack.com/p/u...s-from

Change fork choice rule to mitigate balancing and reorging attacks

Caspar Schwarz-Schilling

Francesco D'Amato

С

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
Better bidding with eip1559
Barnabé Monnot
Resource Pricing
March 5, 2021
barnabe.substack.com/p/bip1559
Understanding fees in eip1559
Barnabé Monnot
Resource Pricing

Carl Beekhuizen

Congestion control and eip1559 Barnabé Monnot Resource Pricing February 17, 2021 barnabe.substack.com/p/c...ip1559 EIP 1559 simulations Barnabé Monnot Resource Pricing April 15, 2020 ethresear.ch/t/e...s/7280 **Papers** Open item for links to papers. Gallery Filter Sort 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 Drag image to repositionRepositionEIP-4844 Economics and Rollup Strategies@Davide Crapis, Edward W. Felten, Akaki MamageishviliResource PricingScaling / Rollups2023 Drag image to reposition Reposition Optimal Dynamic Fees for Blockchain Resources@Davide Crapis, Ciamac C. Moallemi, Shougiao WangResource PricingSimulationsData2023 Drag image to reposition Reposition Agent-Based Modelling of Ethereum Consensus Benjamin Kraner, Nicolò Vallarano, Claudio J. Tessone, @Caspar Schwarz-SchillingConsensusSimulations2023IEEE ICBC 2023 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 repositionRepositionOptimality Despite Chaos in Fee MarketsStefanos Leonardos, Daniël Reijsbergen,@Barnabé Monnot, Georgios PiliourasResource Pricing2022FC 2023</u>

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

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

<u>Drag image to repositionRepositionDynamical Analysis of the EIP-1559 Ethereum Fee MarketStefanos Leonardos,@Barnabé Monnot, Daniël Reijsbergen, Stratis Skoulakis, Georgios PiliourasResource PricingSimulations2021AFT 2021</u>

Talks

February 26, 2021

barnabe.substack.com/p/u...ip1559

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
Davida ( Maria at

Barnabé Monnot

D

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
J
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

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

Ethereum France, in French

November 10, 2020

Load more