The MEV Letter

is a weekly collection of papers, articles and resources related to MEV. The intention of this letter is to provide a comprehensive summary of the latest research, discussions, and developments in the space, with links for further reading.

See our Transparency Reports for deeper dives into updates related to Flashbots.

Papers & Articles

- Ethereum's Supply Chain, Part 2 by Emperor gives an overview of the current state of ePBS research by defining design goals and analyzing current proposals.
- Ethereum's Supply Chain, Part 1 by Emperor
- Ethereum's Supply Chain, Part 1 by Emperor
- How I implemented Ethereum's PBS using .NET Part 1 by Stefan Lindberg describes their initiative to implement MEV-Boost in .NET Core to increase client diversity.
- Github: mevsharp by Stefan Lindberg
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- Infrastructural Frontiers for Multi-Rollup World by Grace Deng explore the infrastructure layer of a multi-rollup ecosystem with a focus on security, interoperability, and cost.
- Thread by Grace Deng
- Thread by Grace Deng
- ETH Global Istanbul : Flashbot & Uniswap's prize winners and insights about SUAVE by ywzx provides a summary of the winning submissions of the UNISUAVE prizes at ETHGlobal Istanbul.
- MEV Supply Chain: Trust but Verify by Austin Adams, Benjamin Chan, Sarit Markovich and Xin Wan describes findings from their paper that showcase how reordering slippage

can hold private RPCs, relayers, and builders accountable to users sending private transactions. * Paper: The Costs of Swapping on the Uniswap Protocol by Austin Adams, Benjamin Chan, Sarit Markovich and Xin Wan

- Paper: The Costs of Swapping on the Uniswap Protocol by Austin Adams, Benjamin Chan, Sarit Markovich and Xin Wan
- UniswapX: Moving toward intent-centric swaps by Hitesh Joshi dives into the UniswapX design and the potential impact on LPs, centralization and cross-chain swaps.
- Resilient Shared Sequencers by Rohan Shrothrium explores how shared sequencers using pipelined BFT might be vulnerable to attacks and presents potential solutions.
- Thread by Rohan Shrothrium
- Thread by Rohan Shrothrium

Posts & threads

- Danning Sui published a thread that highlights the emerging trend of private mempools and the impact this has on the builder- and solver markets.
- Dune Dashboard: Mempool Hygrometer by Danning Sui
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- Danning Sui published a thread that delves into the market share of fillers from the first $1b of volume on UniswapX.
- Dune Dashboard: Uniswap X by Danning Sui
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- Uniswap Foundation published a thread to celebrate the UNISUAVE prize winners that showcased innovative use cases of Uniswap V4 hooks and SUAVE at ETHGlobal Istanbul.

- Toni Wahrstätter published a thread as a response to the blog post by P2P that describes how they get more valuable bids by delaying the relay request by the proposer.
- Response by Vlad Kurenkov
- Response by Vlad Kurenkov
- Caspar Schwarz-Schilling published a thread on the negative implications and downstream effects of Ethereum proposers participating in timing games.
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- arixon.eth published a thread that explores rollup sequencing and the different ways it can be done.
- Sebastian Bürgel published a thread that summarizes their talk from censorship.wtf titled; The Dark Endgame of CL, EL & Application Layers Without IP-level Privacy.
- Dappnode published a thread that introduces Smooth; a smoothing pool for solo stakers that distributes proposer rewards.

Talks & Discussions

- Bankless: How They Solved Ethereum's Critical Flaw invites Phil Daian and Andrew Miller for a deep dive into SUAVE.
- Thread by Bankless
- Thread by Bankless
- Hot Take Series by Avail: Do Sequencers Matter? by Toghrul Maharramov discusses the roles of sequencers and how they might evolve and decentralize going forward.
- Ava Labs x CBER: Loss-Versus-Rebalancing (LVR) at Decentralized Exchanges invites Ciamac Moallemi to give an overview of LVR and proposed solutions to reduce it.
- Fenbushi Capital Research Workshop - MEV & Orderflow & PBS by Fenbushi Capital invited researchers to share insights on relay incentives, OFAs, integrated searcher-builders, and more.
- Competitive Relays by Alex
- Orderflow, Mempool & Block Building by Danning Sui
- Panel On The Order Flow Landscape with Quintus Kilbourn, Barnabé Monnot, Julian Ma, Thomas Thiery and Toni Wahrstätter.
- Structural Advantages of Integrated Builders: Beyond Latency by Max Resnick
- Observability Challanges in Ethereum PBS - A Practical Case Study on Order Flow Auctions by Blair Marshall
- STAKESURE: Proof of Stake Mechanisms with Strong Cryptoeconomic Security by Soubhik Deb
- MEV x Account Abstraction - Atlas x SUAVE by Alex Watts
- Internalizing MEV Leakage in AMMs by Ludwig Thouvenin and Karthik Srinivasan
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- ETHStaker's Staking Gathering by ETHStaker explored Ethereum staking, crypto-economics, and protocol design.
- Censorship Resistance Before ePBS by Kydo
- Increase the MAX_EFFECTIVE_BALANCE by Mike Neuder
- Beacon chain design mistakes by Justin Drake
- Checks and Balances - Maintaining rationality across the stack by Danny Ryan
- Guarding Ethereum: Protecting Staking Pools from MEV Theft in the Upcoming Dencun Era by Ken Smith
- Smooth your MEV Rewards as a Solo Staker by Alvaro Revuelta
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- TrustX by Secureum brought together researchers and analysts to discuss Ethereum security from the perspectives of protocols, projects or products.
- In-Depth Exploration of Front-Running Protection by Tony Ke
- Unpacking the Debate: Trusted Execution Environments (TEEs) in Web3 by Zheng Leong Chua
- Exploring the Secret World of Trusted Execution Environments by Zheng Leong Chua
- In-Depth Exploration of Front-Running Protection by Tony Ke
- Unpacking the Debate: Trusted Execution Environments (TEEs) in Web3 by Zheng Leong Chua
- Exploring the Secret World of Trusted Execution Environments by Zheng Leong Chua

Upcoming events

- Dec 6-7: Columbia CryptoEconomics (CCE) Workshop 2023 will host talks and keynotes on MEV, Ethereum staking economics, mechanism design and more.
- Dec 14: MEV-Boost Community Call #7 by Alex Stokes invites the MEV-Boost community to discuss ecosystem updates and the specification- and implementation details of Deneb.

Other

- Eden Public Data by Eden Network is a public dataset collection from MEV-Boost relays including historical bids and payloads, with more to come.
- Thread by Eden Network
- Forum Topic by Caleb
- Thread by Eden Network
- Forum Topic by Caleb
- Titania Research is a research group formed to propose and develop solutions related to block construction, MEV supply chain, centralization, and censorship on Ethereum.
- Thread by vita
- Thread by vita

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