FACULTY OF AUTOMATIC CONTROL AND COMPUTERS

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Session 12
Maximal Extractable Value (MEV)

Blockchain Protocols and Decentralized Applications

DeFi

- Permissionless
  - Any financial instrument can be implemented and deployed with a few lines of code
  - Anyone can use it
- Transparent:
  - Anyone can inspect and verify transactions
- Composable

Reasons for DeFi

- 1.4 billion people who remain unbanked
- Cross border inefficiency
  - send $10 to Asia ⇒ 36% fees
- Economies with an unstable fiat currency

MEV - The Problem

- Users want to swap tokens (remember Decentralized Exchanges)
- Opportunists want to make arbitrage:
  - Buy EGLD on OneDEX and sell it on xExchange
  - Demo
- What happens when an user posts a Tx to the mempool?
- Leaders select the transaction and add it to the current block
- An opportunist can
  - check the mempool;
  - add its transaction with a higher priority; how?
  - By paying a greater fee;
- Another opportunist can try to front run him. What happens?
- This action is now mostly automated by copy-paste bots

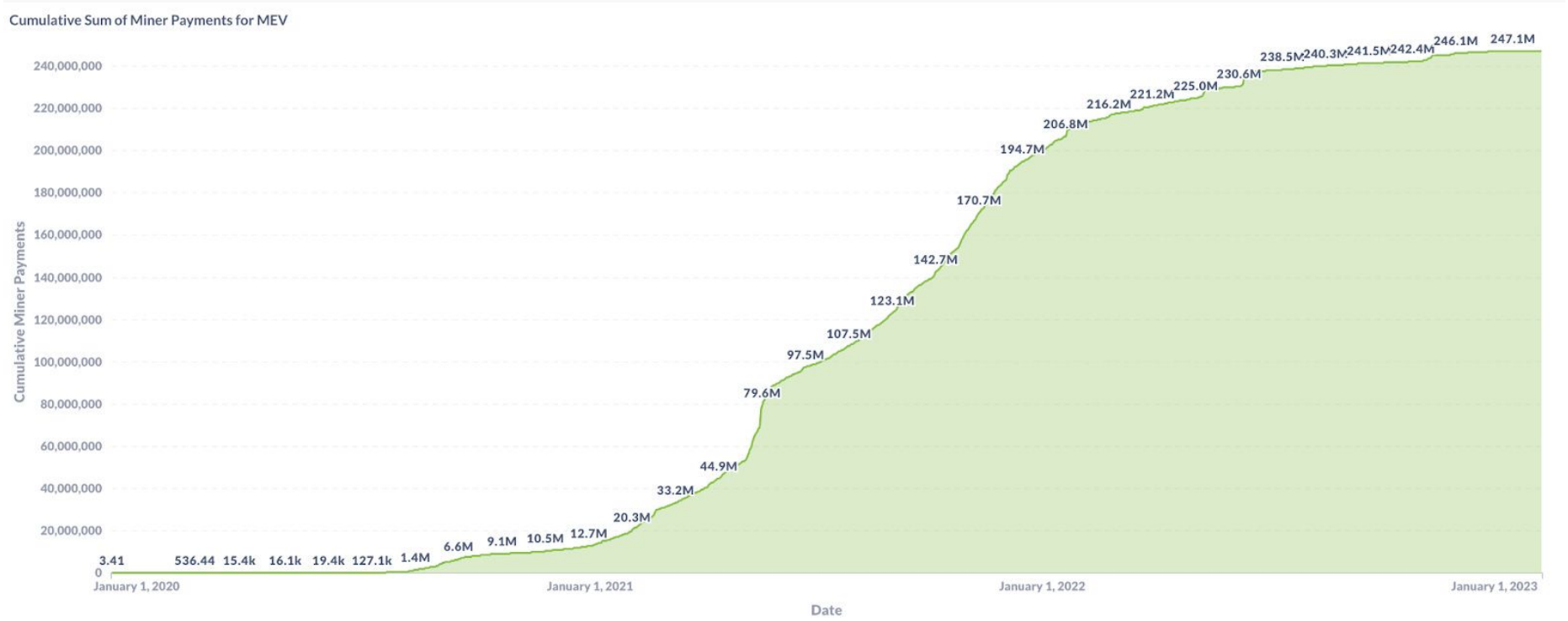
MEV - The Consequences

- Price Gas Auctions - front-runners compete
- Repeatedly submit a Tx with higher and higher maxPriorityFee
- Causes congestion (lots of Tx in mempool) and high gas fees
- Who suffers the most?

MEV - Centralization

- Private mempools
- Validators
  - don’t propagate the txs
  - Keep to themselves
- Result - only a few validators will handle a bulk of txs

Cumvulative Sum for Miner Payments



What to do?

- Accept MEV is unavoidable; minimize its harm to the ecosystem
  - Ethereum
- Try to prevent some MEV
  - MultiversX
  - Remove the block proposer’s choice in ordering Tx in a block