Abstract: Maximal Extractable Value (MEV) searching has gained prominence on the Ethereum blockchain since the surge in Decentralized Finance activities. In Ethereum, MEV extraction primarily hinges on fee payments to block proposers. However, in First-Come-First-Served (FCFS) blockchain networks, the focus shifts to latency optimizations, akin to High-Frequency Trading in Traditional Finance. This paper illustrates the dynamics of the MEV extraction game in an FCFS network, specifically Algorand. We introduce an arbitrage detection algorithm tailored to the unique time constraints of FCFS networks and assess its effectiveness. Additionally, our experiments investigate potential optimizations in Algorand's network layer to secure optimal execution positions.

Our analysis reveals that while the states of relevant trading pools are updated approximately every six blocks on median, pursuing MEV at the block state level is not viable on Algorand, as arbitrage opportunities are typically executed within the blocks they appear. Our algorithm's performance under varying time constraints underscores the importance of timing in arbitrage discovery. Furthermore, our network-level experiments identify critical transaction prioritization strategies for Algorand's FCFS network. Key among these is reducing latency in connections with relays that are well-connected to high-staked proposers.

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Playing the MEV Game on a First-Come-First-Served Blockchain

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