What Blockchains Can Do For Us

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Joint work with
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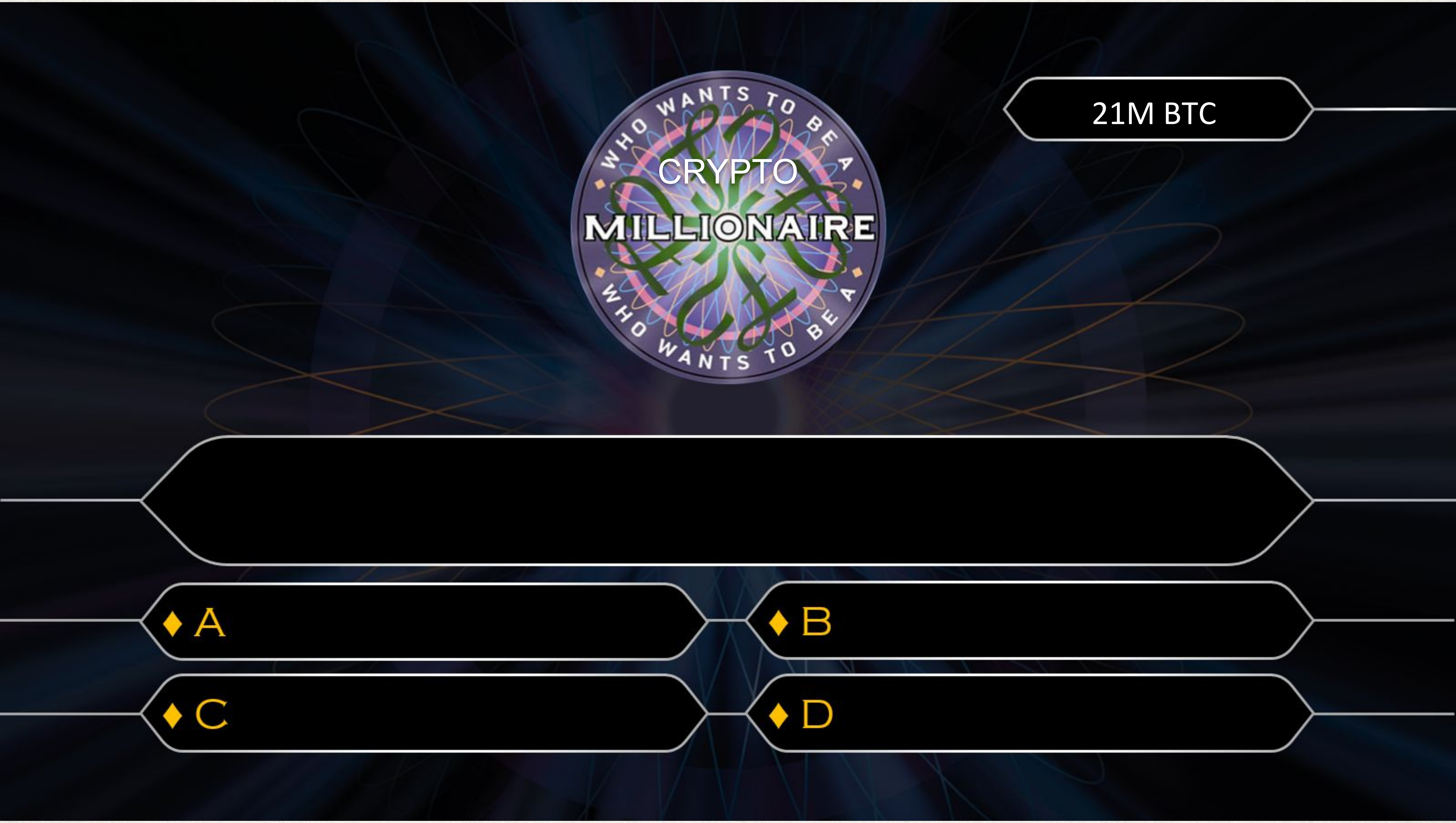

21M BTC

♦ A

♦ B

♦ C

♦ D

WHO WANTS TO BE A CRYPTO MILLIONAIRE

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What useful can blockchains give us, beyond a ledger?

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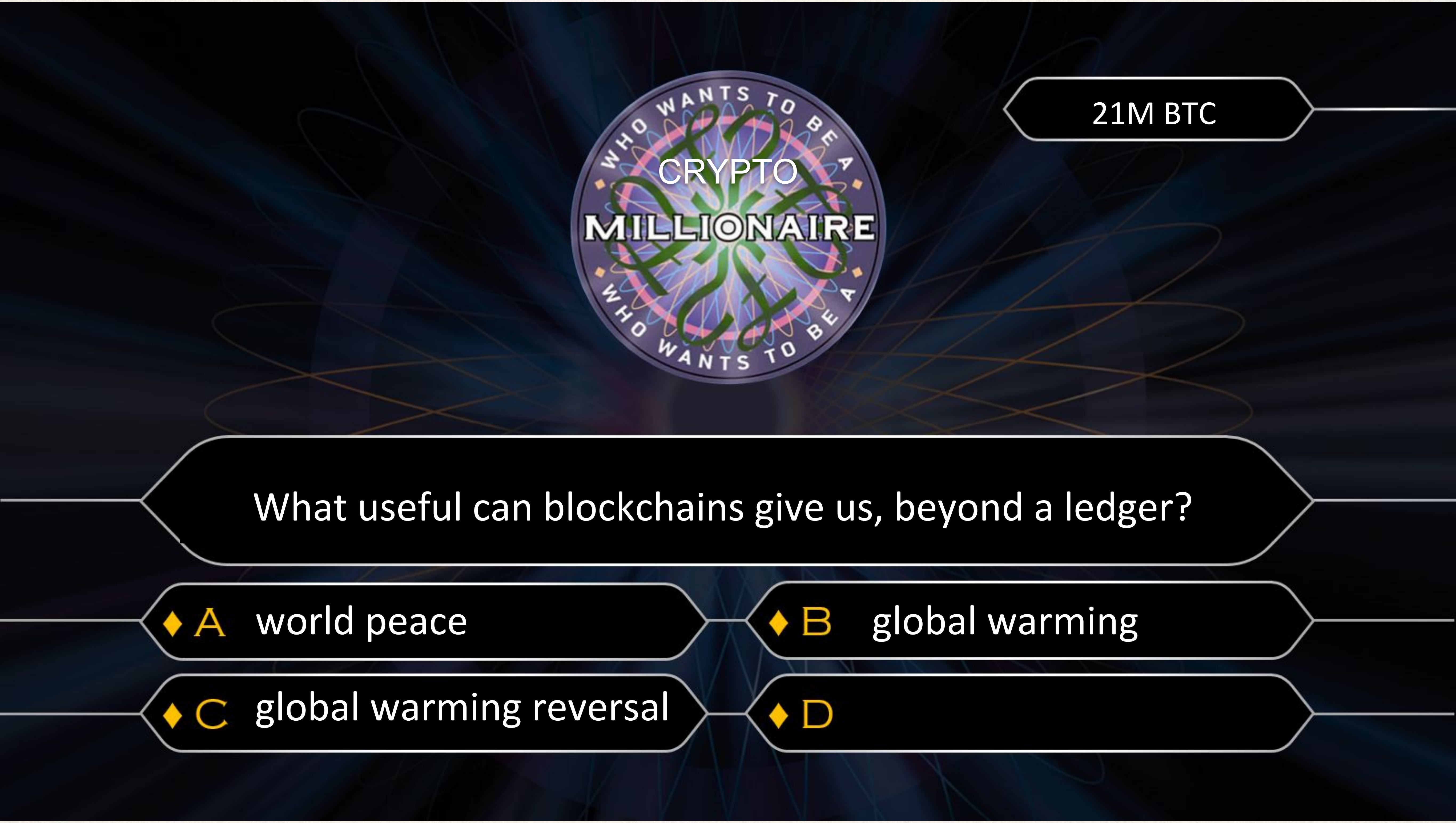

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Like previous Ouroboroi:

- proof-of-stake protocol for permissionless blockchains
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What's new this time:

- no need to assume global clock!
- actually, can export one!

Why is that interesting?

Previous eventual-consensus PoS protocols need to assume global clock.

- to discard fake chains going “into the future”

Practical implementation: rely on NTP.

- additional trust assumption
- often neglected single point of failure

What does it Chronos achieve?

Assume:

- *same-speed* clocks for all parties
- bounded skew for initial parties
- bounded-delay network
- honest stake majority

Get:

- robust transaction ledger
- parties stay synchronized
- new parties can synchronize on join
- time can be exported to higher-level protocols

How does it work?

Synchronization procedure:

- executed periodically by all parties
- adjust local time based on timestamps of received blocks
    - how to aggregate from all blocks?
    - which blocks? (consensus+fairness needed here)

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Joining procedure:

- executed by each newly joining party
- passive: observe network and wait
- gets in sync with old parties by next synchronization

Interested?

Talk to us!

...or check eprint soon.

C. Badertscher, P. Gaži, A. Kiayias, A. Russell, V. Zikas:
Ouroboros Chronos: Permissionless Clock Synchronization via Proof-of-Stake