

MixEth: efficient, trustless coin mixing service for Ethereum

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Abstract—Cryptocurrencies enable users to transact pseudonymously with each other without relying on trusted parties or intermediaries. These transactions are recorded in an immutable, publicly verifiable ledger. Due to the ledger’s transparent nature, privacy is notably reduced. If the link between users’ public key and their physical identity is exposed, their pseudonymity is lost. One way to increase users’ privacy is to deploy coin mixing services. In this paper, we present MixEth, which is a trustless coin mixing service. MixEth is more efficient than any proposed trustless coin tumbler. It requires only 3 on-chain transactions at most per user and 1 off-chain message. It achieves strong notions of anonymity and is able to resist denial-of-service attacks. Furthermore the underlying protocol can also be used to efficiently shuffle ballots, cyphertexts in a trustless and decentralized manner.

Index Terms—Cryptography, Verifiable shuffle, Cryptocurrency, Ethereum, Coin mixer, State Channel

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This document is a model and instructions for L^AT_EX. Please observe the conference page limits.

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$$a + b = \gamma \quad (1)$$

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possible to combine sections, add equations, or change the order of figures or citations without having to go through the file line by line.

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- The word "data" is plural, not singular.
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- In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
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- There is no period after the "et" in the Latin abbreviation "et al."
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An excellent style manual for science writers is [7].

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Table I
TABLE TYPE STYLES

Table Head	Table Column Head		
	Table column subhead	Subhead	Subhead
copy	More table copy ^a		

^aSample of a Table footnote.



Figure 1. Example of a figure caption.

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

ACKNOWLEDGMENT

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REFERENCES

Please number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

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REFERENCES

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