Lor Without Resource MICE BUCED? 75, year Stown is infrementative fallows Oriend Row OKAN! I see the briber - 6ºB Something In Our mechanism in principle allows burning from any proof-of-work-based a string of Alice's choice. When the transaction is completed, she gives do wh the transaction and tag to Bob who invokes BurnVerify( $1^{\kappa}$ , t, burnAddr) to (iv) Experimental results. We provide a compehensively tested proverify she irrevocably destroyed the cryptocurrency while committing to general u inspanne Magred See Court Visco duction grade implementation of the bootstrapping mechanism in Ethethe provided tag. reum written in Solidity, which we release as open source software. Our using me Definition 1 (Burn protocol). A burn protocol II consists of two funcimplementation can be used to consume proofs of burn of a source blocktions GenBurnAddr $(1^{\kappa}, t)$  and BurnVerify $(1^{\kappa}, t, burnAddr)$  which work as disking with chain within a target blockchain. We provide experimental measurements for the cost of burn verification and find that, in current Ethereum prices, \_ laylestring at Jess burn verification costs \$0.28 per transaction. This allows coins burned on - GenBurnAddr $(1^{\kappa}, t)$ : Given a tag  $t \in \{0, 1\}^{\kappa}$ , generate a burn address. one blockchain to be consumed on another for the purposes of, for exam-- BurnVerify(1", t, burnAddr): Given a tag  $t \in \{0,1\}^*$  and an address Pos on Tehain. ple, ERC-20 tokens creation [32]. burnAddr, return true if and only if burnAddr is a burn address and my Workflow. A user who wishes to burn her coins generates an address Markey form on correctly encodes t. WHAT ABOUT THE AMOUNTS which we call a burn address. This address encodes some user-chosen We require that the burn scheme is correct. metadata called the tag. She then proceeds to send any amount of cryp-Two bonger 18 -mintale. tocurrency to the burn address. After burning her cryptocurrency, she Definition 2 (Correctness). A burn protocol II is correct if for all proves to any interested party that she irrevocably destroyed the cryp-Nonce  $t \in \{0,1\}^*$  and for all  $\kappa \in \mathbb{N}$  it holds that BurnVerify $(1^{\kappa},t,\mathsf{GenBurn}-$ I'm ) was reading EM tocurrency in question.  $Addr(1^{\kappa}, t)) = true.$ Properties. We define the following properties for a proof-of-burn pro-In short general ADDR IS UNKNOWN tocol: ERLO SIMONTS With foresight, we remark that the implementation of GenBurnAddr Constrains - Unspendability. No one can spend the burned cryptocurrency. and BurnVerify will typically be deterministic, which alleviates the need Commits only to - Binding. The burn commits only to a single tag. for a probabilistic correctness definition. - Uncensorability. Miners who do not agree with the scheme cannot Naturally, for GenBurnAddr to generate addresses that "look" valid Suppose of Marke? censor burn transactions. but are unspendable according to the blockchain protocol requires that a single Cracks ADOR the burn protocol respects its format. We abstract the address generation Finally, we consider the usability of a proof-of-burn protocol imporand spending verification of the given system into a blockchain address tant: whether a user is able to create a burn transaction using her regular bod on hush 7A5? cryptocurrency wallet. The said would **Notation.** We use  $\mathcal{U}(S)$  to denote the uniform distribution obtained by (ps) Definition 3 (Blockchain address protocol). A blockchain address sampling any item of the finite set S with probability  $\frac{1}{|S|}$ . We denote YOU (ANNOT rotocol  $\Pi_{\alpha}$  consists of two functions GenAddr and SpendVerify: NOW SO SEAM the support of a distribution  $\mathcal{D}$  by  $[\mathcal{D}]$ . We also use [n] to denote the STOP MORONS set of integers from 1 to n. We denote the empty string by  $\epsilon$  and string GenAddr(1k): Returns a tuple (pk, sk), denoting the cryptocurrency concatenation by ||. go wind som for address pk (a public key) used to receive money and its respective secret key sk which allows spending from that address.  $SpendVerify(m,\sigma,pk): \textit{Returns} \ true \ \textit{if the transaction} \ \textit{m spending from}$ 2 Defining Proof-of-Burn Signilarijes who receiving address ph has been authorized by the signature o (by being We now formally define what a proof-of-burn protocol is. Let  $\kappa$  be the sesigned by the respective private key). curity parameter. The protocol consists of two functions GenBurnAddr and S = { s .. s 3 | n f . kg We note that, while the blockchain address protocol is not part of Bornt. Being BurnVerify and works as follows. Alice first generates an address burnAddr asse so very maly the burn protocol, the security properties of a burn protocol  $\Pi$  will be to which she sends some cryptocurrency. The address is generated by indefined with respect to a blockchain address protocol  $\Pi_{\alpha}$ . voking GenBurnAddr( $1^{\kappa}$ , t) and encodes information contained in a tag t, mathematician! Brox Soften ... AS | ADA| -> 1 => V(ADA) -> (V(ANA) + DK) Send their Cragoso, by reducing the ADA = > Volke(ADA) ++. Potential mulicious use: Similar to scare where people get than to