Delegatable Anonymous Credentials from Mercurial Signatures

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Usual Signatures

$$\mathsf{Sign}(\mathsf{pk}, \mathsf{sk}, M) \to \sigma$$
$$\mathsf{Verify}(\mathsf{pk}, M, \sigma) \to \mathsf{Accept/Reject}$$

Correctness: $M = M$, $\mathsf{Verify}(\mathsf{pk}, M, \sigma) = \mathsf{Accept}$.

Security: Usual.

Signatures on Equivalence Classes

$$\mathsf{Sign}(\mathsf{pk}, \mathsf{sk}, M) \to \sigma$$
$$\mathsf{Verify}(\mathsf{pk}, M, \sigma) \to \mathsf{Accept/Reject}$$

Correctness: $M \approx_R M$, $\mathsf{Verify}(\mathsf{pk}, M, \sigma) = \mathsf{Accept}$.

Security:

FHS14 Construction: $(A, B, C) \approx (rA, rB, rC)$

Mercurial Signatures (Our Work)

$$\mathsf{Sign}(\mathsf{pk}, \mathsf{sk}, M) \to \sigma$$
$$\mathsf{Verify}(\mathsf{pk}, M, \sigma) \to \mathsf{Accept/Reject}$$

Correctness: $M \approx_R M, \mathsf{pk} \approx_R \mathsf{pk}$,
$\mathsf{Verify}(\mathsf{pk}, M, \sigma) = \mathsf{Accept}$.

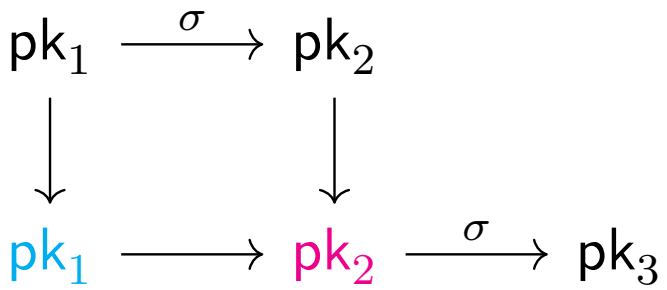
Security:

Our Results

1. Mercurial signatures for this equivalence class that are secure in the generic group model.

Our Results

Why? Allow delegatable anonymous credentials:



2. (certain) Mercurial sigs $\Longrightarrow$ Del. creds

First direct construction.


OshKosh