High-speed high-security signatures

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#### Fast signature verification.

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#### Very fast signing.

88328 cycles for signing. (Official eBATS measurement.) 4×2.4GHz: 108000 signs/second!

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- $> 2^{128}$  operations for
- all attacks known

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#### Small signatures.

64 bytes for signature.

No hidden slowdowns.

## Small keys.

32 bytes for public key. No hidden slowdowns.

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#### Foolproof session keys.

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## **Foolproof session keys.** Signing is deterministic.

No secret array indices. No information flow from secret data to addresses.  $\Rightarrow$  No cache-timing attacks. No secret branch conditions. No information from secret data to branch unit. Collision resilience. Hash Wisions do not break this signature system.

**Foolproof session keys.** Signing is deterministic. Software uses the NaCI/SUPERCOP API: crypto\_sign\_keypair, crypto\_sign, crypto\_sign\_open.

Available now in SUPERCOP: bench.cr.yp.to/supercop.html

Will also be in NaCl: nacl.cr.yp.to

Public domain use it any way you want!

Paper is online: ed25519.cr.yp.to