# Cryptography with Dispensable Backdoors

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## Eurocrypt 2018 Rump Session

# Apple vs FBI

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Backdoor your locking mechanism so that I can solve crimes

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Can this be avoided?

# Apple vs FBI

I know how to do this

# Apple vs FBI

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I know how to do this

Ha! I heard it

# Apple vs FBI

I know how to do this

Ha! I heard it

Meeau too!

And it’s the same for all phones

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- Store all (key/phone-ID) pairs
- Upon receiving an ID, output the key and never receive another input

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To lock:

- Use key to encrypt state
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Yields:

- Encryption where one out of many keys can be recovered
- Only this one! All other keys/encryptions are safe
  - *Dispensable-backdoor encryption.*

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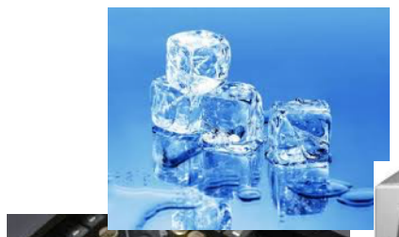

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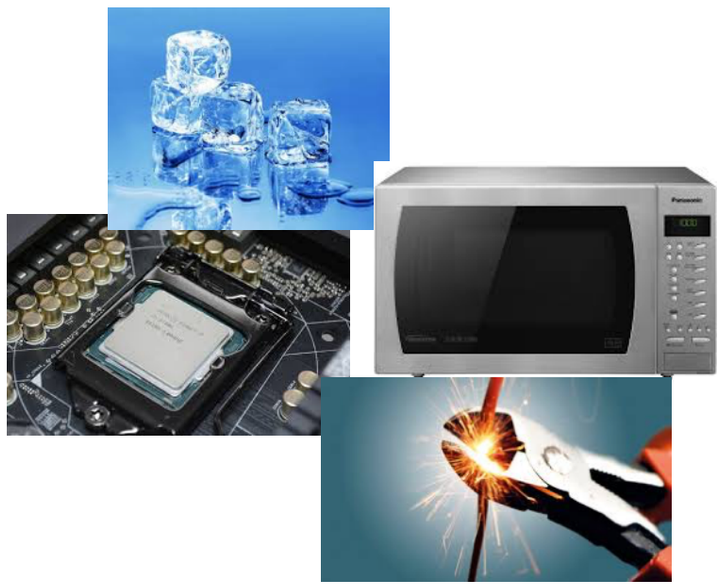

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Reset the token

# Apple vs FBI

Reset the token

Can we do it from stateless tokens?

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I want to create information that

- Cannot be copied/duplicated
- Can encode a lot of keys
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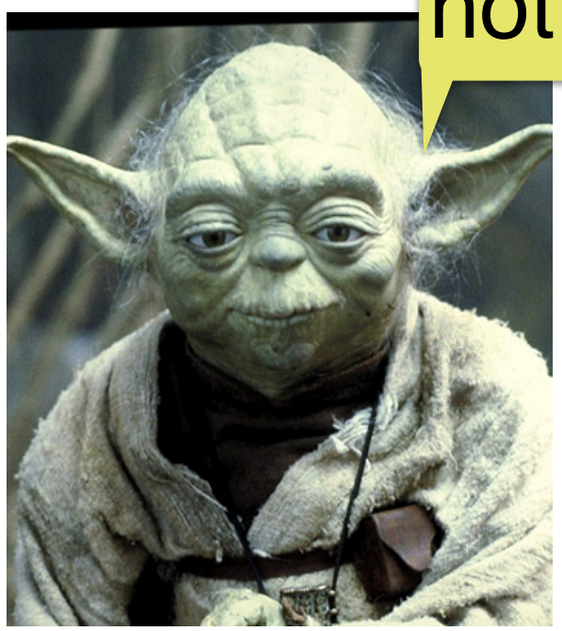

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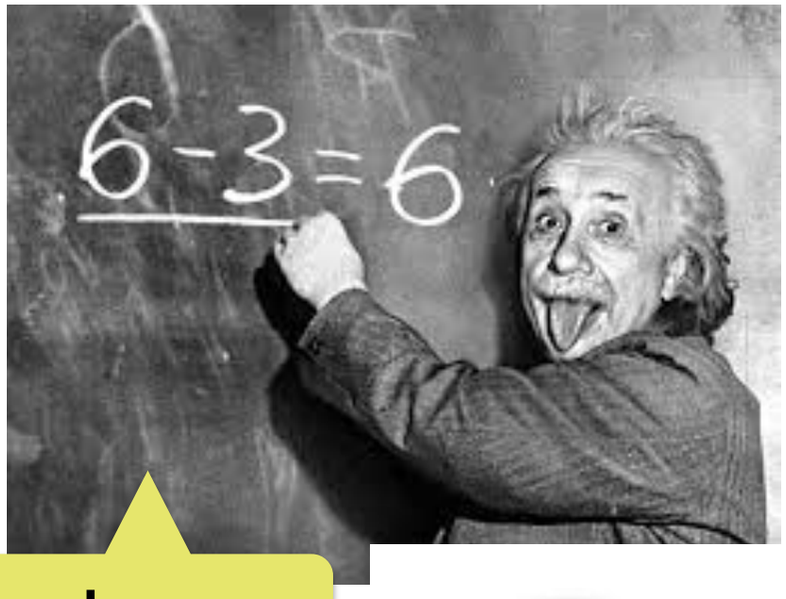
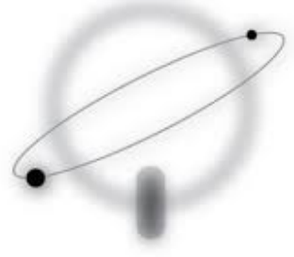



I have exactly what you need!



# Cryptography with Dispensable Backdoors

https://eprint.iacr.org/2018/352.pdf

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