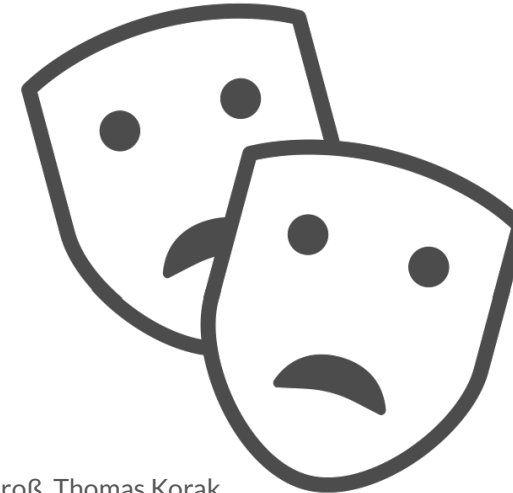
# SIFA

Statistical Ineffective Fault Attacks



**Rump Session at CHES 2018**

Based on work of:
Christoph Dobraunig, Maria Eichlseder, Hannes Groß, Thomas Korak,
Stefan Mangard, Florian Mendel, Robert Primas

# Are Protected Implementations Hard to Attack?

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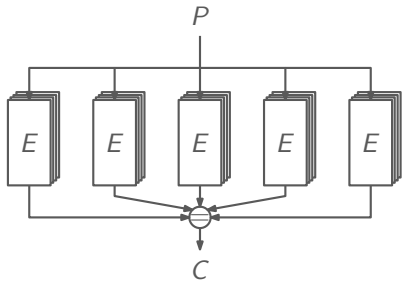

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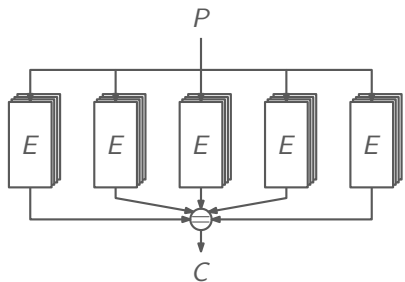
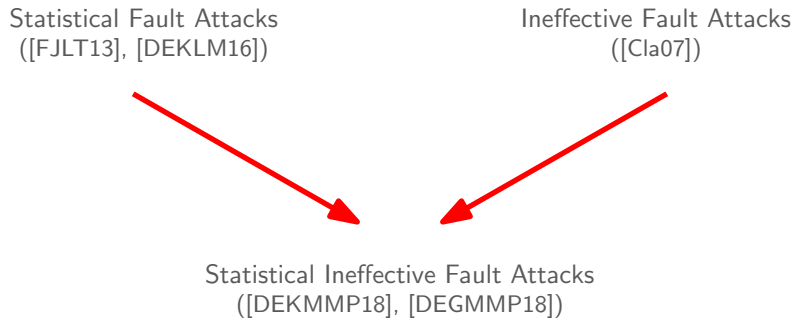
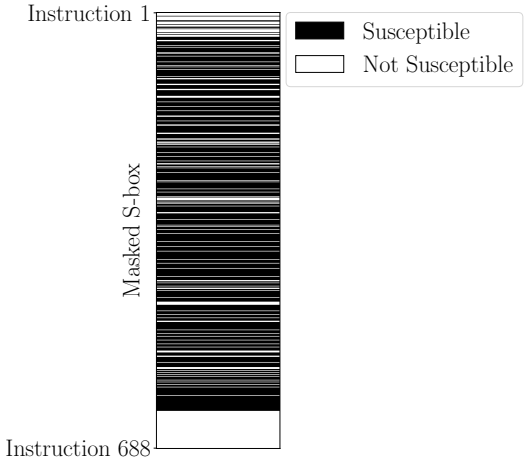



- SIFA can attack masked implementations of arbitrary order and with arbitrary error detection capabilities
  - single fault per execution of the primitive
  - typically effort does not significantly increase with higher protection order

# Path to SIFA


Statistical Fault Attacks
([FJLT13], [DEKLM16])
Ineffective Fault Attacks
([Cla07])
Statistical Ineffective Fault Attacks
([DEKMMP18], [DEGMMP18])

# Where to Fault?




- Example of masked AES in Software [SS16] and byte-stuck-at-0

# Which Fault Models?

- Successful attacks when we:
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  - Set one bit to zero
  - Randomize one bit
  - Flip one byte
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  - Skip an instruction
  - …

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# Thank you

https://eprint.iacr.org/2018/071
https://eprint.iacr.org/2018/357

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