

Defending humans against killers



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Michael Hayden (DIRNSA 1999–2005; DIRCIA 2006–2009)

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Countermeasure: Eliminate the metadata.

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Countermeasure: Eliminate the metadata.

But do they also kill people based on content?

Defending crypto libraries against side-channel attacks

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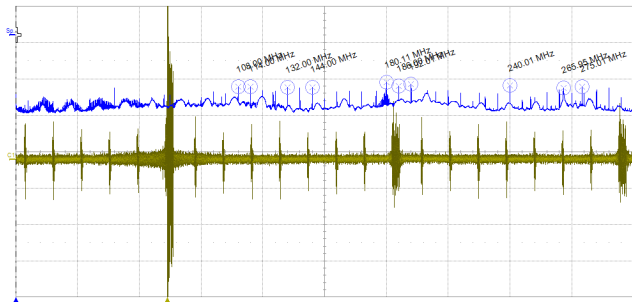
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News (Bernstein–Bekkers–Lange): successful EM extraction of secrets from **constant-time software** running on **fast ARMs**.

SRAM data on fast ARM → EM → key recovery

SpecAR	Freq.	Amplitude
1	180.114 MHz	-64.98 dBm
2	192.005 MHz	-67.53 dBm
3	240.006 MHz	-69.56 dBm
4	186.004 MHz	-70.43 dBm
5	275.005 MHz	-70.67 dBm
6	114.002 MHz	-70.90 dBm
7	108.002 MHz	-71.08 dBm
8	144.004 MHz	-71.59 dBm
9	132.002 MHz	-72.24 dBm
10	265.947 MHz	-72.32 dBm



C1	AVG (65)	SDPSR
	10.0 mV	50.0 dB/div
	-2.2000 mV	30.0 MHz
	6.810 kHz	5.401 kHz

Tbase	-12.7 μs	Trigger	DC
	5.00 μs/div	Stop	6.15 mV
	100 kS	2 GS/s	Edge Positive

Arithmetic data on fast ARM \rightarrow EM \rightarrow key recovery

