

A one-time single-bit fault  
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to a chosen-ciphertext attack

D. J. Bernstein

University of Illinois at Chicago;  
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[cr.yp.to/papers.html#ntrw](http://cr.yp.to/papers.html#ntrw)

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Thanks to Lange for pointing  
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Defense 3 (in the ntrw’s survey of a defenses): plaintext

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3 (in the numbering from survey of attacks and ): plaintext confirmation.

of ciphertext  $E(m)$ , ciphertext  $(E(m), H'(m))$  ' $H'$ ' is a hash function.  $(E, H')$  in reencryption.

ps chosen-ciphertext that exploit structure of public-key encryption function to convert  $E(m)$  for secret  $m$  to  $E(m + 1)$ . Attacker may try to convert  $H'(m)$  into  $H'(m + 1)$  for “unstructured”  $H'$ .

6

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## Classic NTRU

2022.10:

[recommendations](#)

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eliminate any cond  
U.S. patent 99124

## What can we do in response?

Incompatible new NTRU-HRSS  
can re-add plaintext confirmation.

Can fix corruption by applying an  
error-correcting code (ECC):

- ntrw's [libsecded](#) software; or
- SECDED ECC DRAM hardware.

Many benefits beyond this attack.

Specify ECC in secret-key format?

Use ECC in crypto libraries?

Use ECC in applications?

Programming language? OS?

Require SECDED ECC DRAM?

Point fingers and do nothing?

## Classic McEliece followup

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aiming at a goal beyond IND-  
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