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# Side-Channel Analysis of Post-Quantum Cryptography

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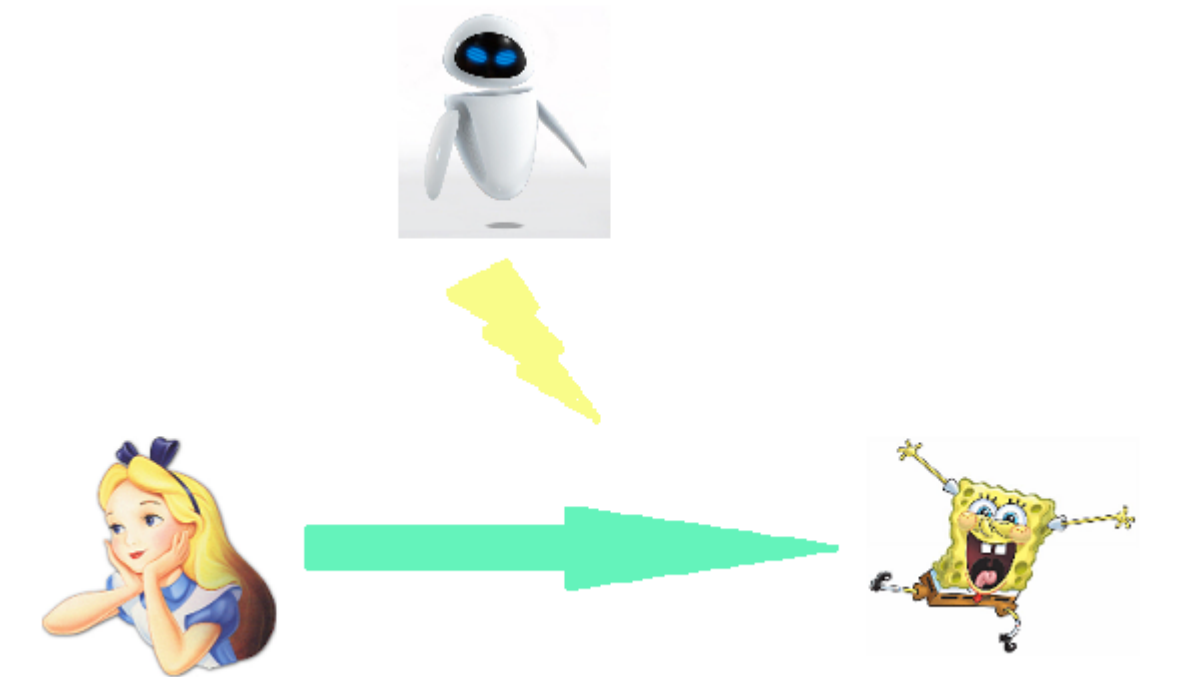
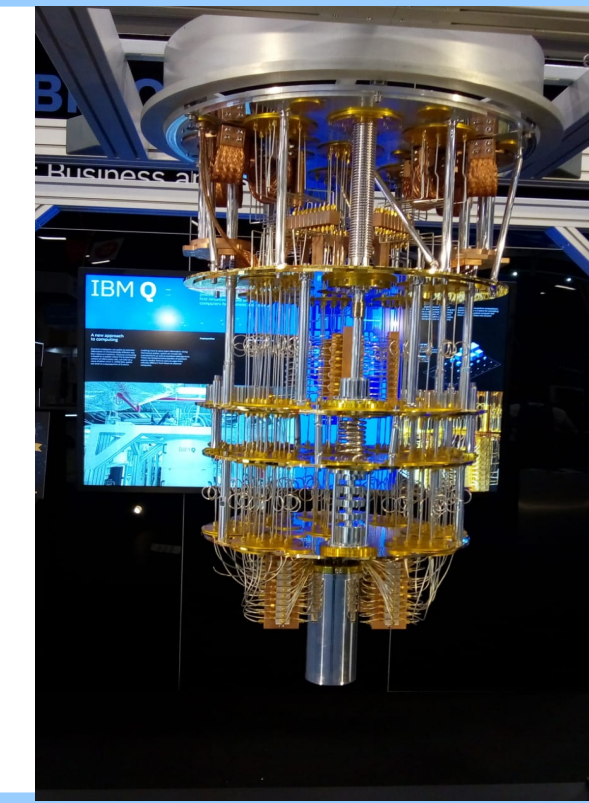


# Side-Channel Analysis of Post-Quantum Cryptography

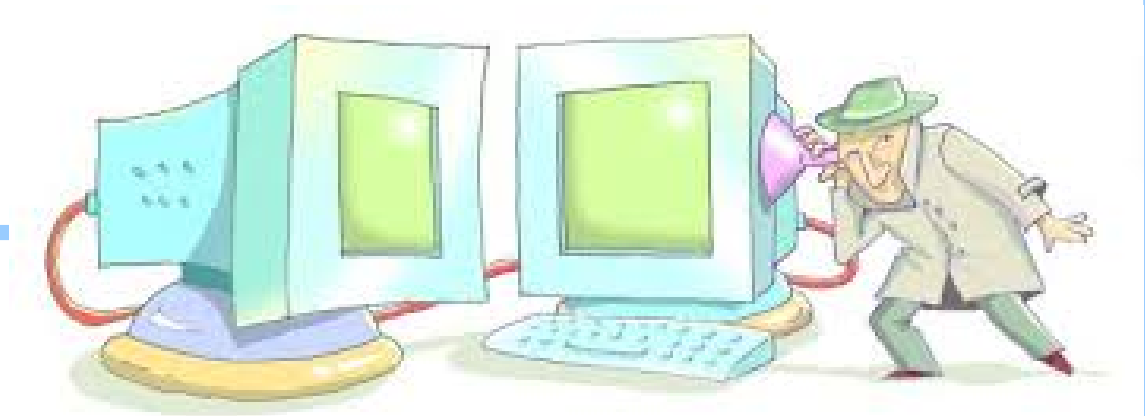
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**Context:** Quantum Computer is coming!  
Quantum secure communication is needed.  
NIST standardization is happening now.

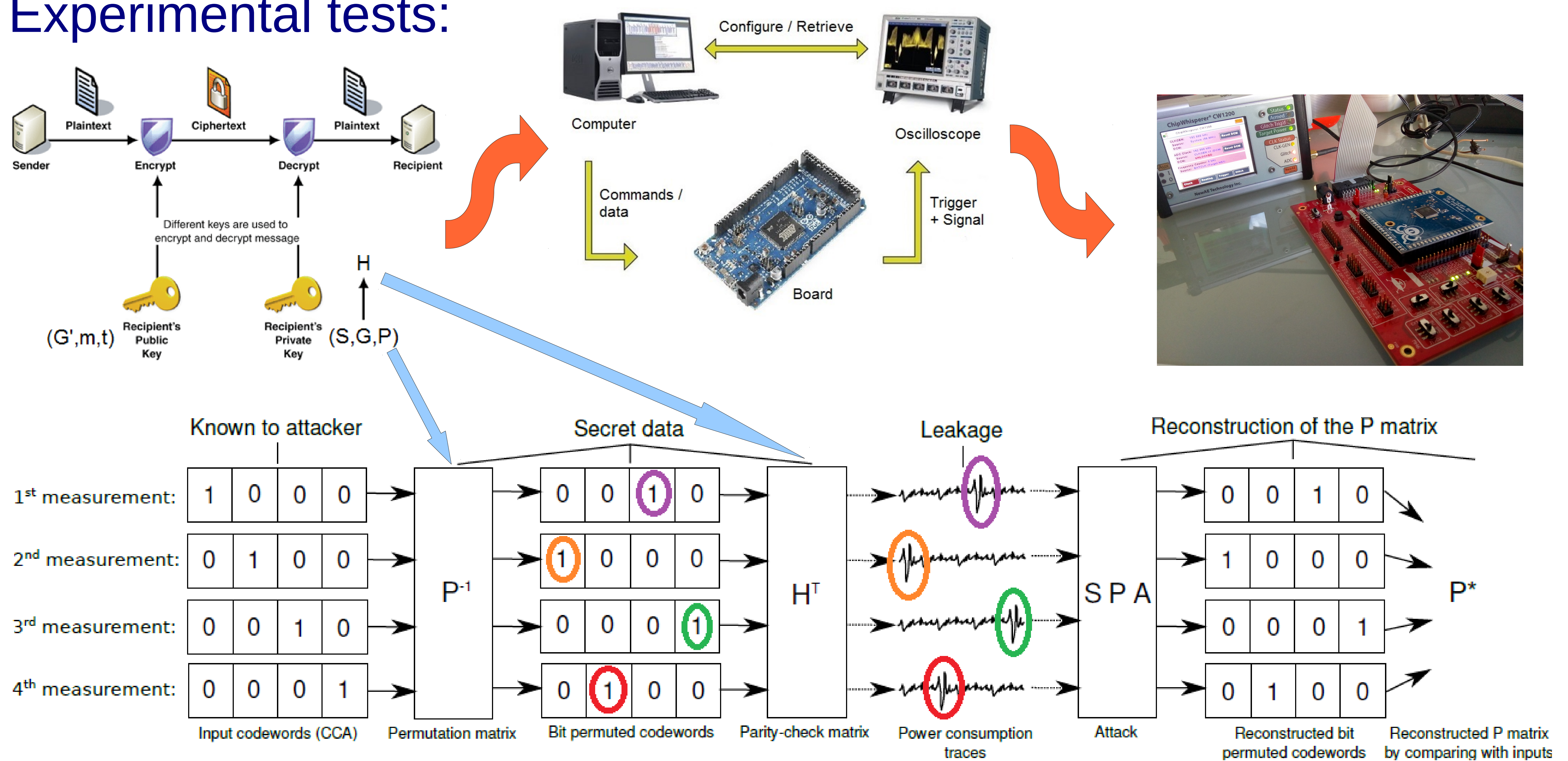


**Goals:** Side-channel analysis of NIST candidates/schemes



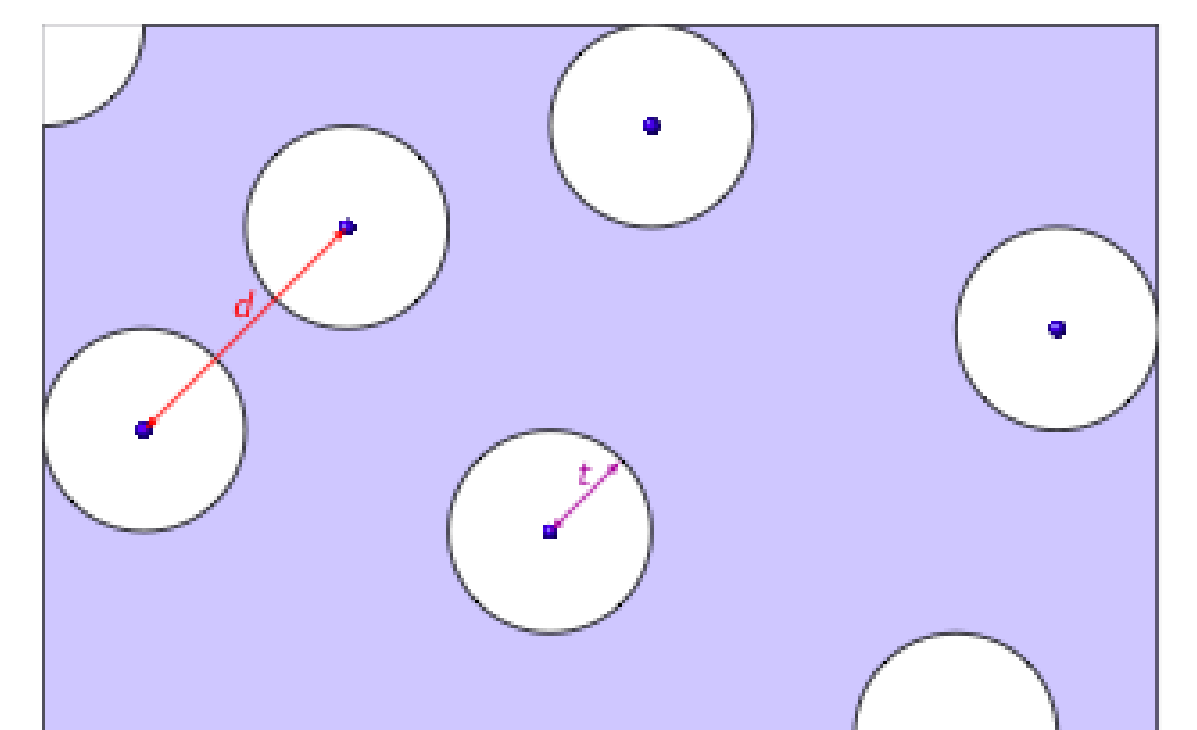
**How?** Finding theoretical leakages in Time/Power/EM:  
interactions between Maths (Number Theory, Probabilities/Statistics),  
Computer Science (Programming) and Electronics (Embedded Devices).

**Experimental tests:**



**Current focus: Code-Based Cryptography**

- McBits, QcBits;
- BIKE, QC-MDPC KEM, RankSign.



**Perspectives:** Enhancing the security of post-quantum secure cryptographic protocols by improving resilience against SCA.

**References:**

<https://csrc.nist.gov/Projects/Post-Quantum-Cryptography/Round-1-Submissions>

Tania Richmond. *Secure implementation of cryptographic protocols based on error-correcting codes*. PhD dissertation (in French), Université Jean Monnet, Saint-Etienne (France), October 2016.

