Cryptography’s New Logic Layer: NJ Inventor receives Patent for Nonlinear Replacement of Standard XOR Function

The end of the Vernam Era! A new reversible fundamental building block for data mixing in cryptography.

LabCyfer

MORRISTOWN, NJ, UNITED STATES, April 23, 2026 /EINPresswire.com/ -- For more than a century, early and modern cryptography has relied on a single reversible operation: the binary XOR function. Both for bitwise and bit-word processing. Ever since the century old Vernam cipher. It is a backbone of symmetric encryption, hashing, authentication, and nearly every secure protocol in use today. Its dominance has been so complete that the field treats it as unavoidable.

> This is a new reversible fundamental building block — something cryptography has not seen in decades.”
>
> *Peter Lablans-Inventor*

Today, that assumption is no longer safe.

Independent inventor Peter Lablans has been granted US Patent 12,609,809, covering a new class of reversible nonlinear operators in machine cryptography—commutative, self inverting, and dynamically configurable 2-operand involutions that function as drop in replacements for XOR while eliminating its most dangerous property: linearity.

“XOR is simple, but simplicity comes at a cost,” Lablans said. “It exposes a cipher’s algebraic skeleton. My work shows that the reversible layer can be nonlinear, agile, and factorially large — without sacrificing speed or practicality.”

Grounded in finite field theory, reversible algebra, and combinatorial logic design, Lablans’ construction generates an immense family of nonlinear machine involutions over domains of size 2^k, including the widely used n=256 for byte wise operations. The 2-operand involutions are non-associative, lack identity, are dynamically configurable and are novel in Quasigroup

theory. The resulting design space is rich enough to frustrate structural, algebraic, and quantum accelerated attacks.

A Framework Rooted in Computer Architecture:
Lablans refers for the conceptual foundation to his late professor, Dr. Gerrit “Gerry” Blaauw, co designer of the legendary IBM System/360, whose architecture/implementation/realization framework shaped generations of computing systems.

“I apply the Blaauw framework as rule of computer design in machine cryptography — but with a twist,” Lablans said. “Blaauw guaranteed identical outputs across different implementations. I guarantee different outputs — ciphertext — across different implementations. I’m not changing the proven architectures of AES, ChaCha20, or SHA 3. I’m modifying the implementation layer on a factorial scale, enabling real time variation at the session, file, message, packet, block, or even round level.”

A New Direction for Post Quantum Security:
Rather than relying solely on heavy lattice based primitives or massive key sizes, this invention strengthens the logic substrate of symmetric cryptography itself. It introduces a new axis of unpredictability — one that quantum adversaries cannot easily linearize, model, or shortcut.

Article
A brief article summarizing the novel involution is available for download. Its change engine, the Finite Lab Transform, is explained at: https://www.labcyfer.com/fltkit.html

About the Inventor
Peter Lablans is a New Jersey–based electrical engineer and independent inventor focused on simple yet immensely secure next generation cryptographic solutions. He develops advanced practical defenses against emerging quantum threats.

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