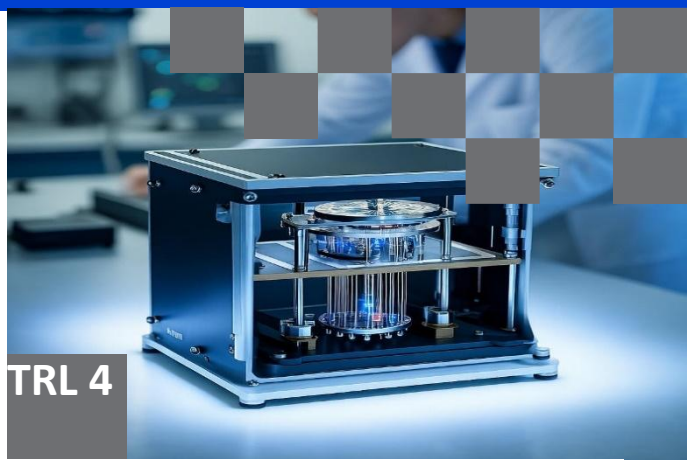
Uniwersytet Gdański
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physics

Device for Quantum Random Number Generation Based on Light Polarization and Method of Privacy Verification of Random Sequences Generated by This Device



About the solution

The invention relates to a device for quantum random number generation (QRNG) and a method of verifying the privacy of the generated random sequences.

The device uses a light source with fixed polarization, a polarization-splitting element dividing the beam into two channels, and a set of detectors that register vertically and horizontally polarized photons. Signals from the detectors are processed by a generating module that assigns binary values and produces a sequence of random bits.

The innovative aspect of the solution is the application of a multi-state polarization modulator controlled by an electronic system, which increases control over the generation process and enables ongoing verification of the privacy of the obtained random sequences.

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IP Protection

The invention is protected by a patent application filed with the Polish Patent Office under number **Pat.433108** and with the European Patent Office under number **EP4493996**

Applications

- Cybersecurity,
- Data encryption,
- Critical infrastructure.

Cooperation opportunities

- Research partnership,
- Licensing,
- Technology sale.

Technology readiness level

TRL 4 - Technology validated in laboratory conditions

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