Quantum random number generator passes long term reliability testing

The high bit rate device shows no fails after 24 months of continuous operation

Berlin (Germany), 30 November 2012 – The high bit rate quantum random number generator (QRNG) service developed by PicoQuant GmbH and the Nano-Optics Group at the Department of Physics at Humboldt-Universität zu Berlin has been in continuous operation for 24 months without showing any fails. The QRNG service delivers random numbers available online at http://qrng.physik.hu-berlin.de/. The generator device PQRNG 150 is also available as a stand-alone product from PicoQuant.

The quantum optical generator design of the PQRNG 150 is based on a solid theoretical foundation that affirms the unpredictability and perfect statistical quality of the generated random numbers. Regardless of the theoretical perfection, it may be conjectured that the physical implementation could suffer from degradation during long term operation, e.g. by thermal aging of the optical and electrical components. Therefore, the device's output has recently been subjected to a thorough retesting after 20 months of operation and 600 TB of data delivered. Despite the long time of continuous operation, no weaknesses whatsoever were found. It may therefore be assumed that possible effects of component aging or detuning are not an issue and that the randomness of output data is not compromised by the permanent use of the device. Details and results were published as an addendum to the original publication in the peer reviewed journal Applied Physics Letters [Appl. Phys. Lett. 98, 171105 (2011)].

The PQRNG 150 is based on the quantum randomness of photon arrival times. It provides a bit rate with up to 150 Mbits/s over USB and is thereby the fastest commercial quantum random number generator. The high speed and guaranteed conservation of randomness allow for the use of the delivered random numbers in unconditionally secure encryption schemes.
About PicoQuant

PicoQuant GmbH is a research and development company in the field of optoelectronics. The company was founded in 1996 and is based in the science and technology park Berlin-Adlershof, Germany. The company is a worldwide leader in the field of single photon counting applications. The product line includes pulsed diode lasers and LEDs, photon counting instrumentation, fluorescence lifetime spectrometers and time-resolved confocal microscopes. PicoQuant employs currently around 50 people. Since April 2008 Sales and Support in North America is handled by PicoQuant Photonics North America Inc.

Pictures

PQRNG_150.jpg
Caption: The high bit rate quantum random number generator shows no fails after 24 months of continuous operation.

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