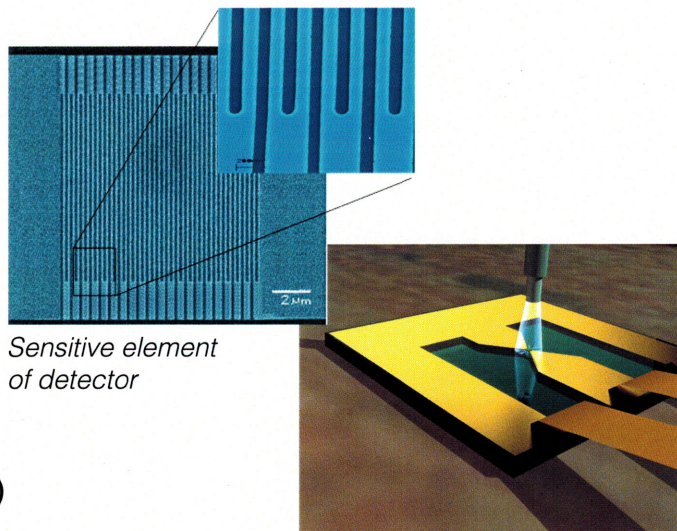


Superconducting Single Photon Detecting Systems

Scotel is pleased to present our single photon detecting system which has been developed by our researchers since 2001.*

Possible applications:

- Photonic quantum computing
- Photon correlation measurements
- Quantum cryptography
- Free space communication
- LIDAR
- Time-resolved fluorescence measurements
- Single quantum dot/molecule fluorescence spectroscopy
- Picosecond Integrated Circuits Analysis (PICA)
- Registration of extra low IR photon flux
- Optical tomography



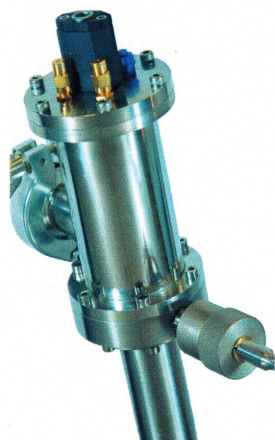
Sensitive element of detector

Superconducting Single Photon Detector

Advantages:

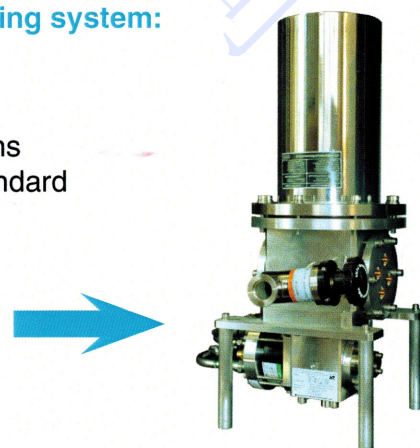
- ✓ Operation in the visible and infrared ranges (**overlapping unavailable for APD range**);
- ✓ Operation in a continuous mode;
- ✓ No afterpulsing;
- ✓ Very low level of dark counts (below 0.01 cps)
- ✓ Picosecond time resolution;
- ✓ High quantum efficiency (**up to 60 %**);
- ✓ One, two, or multi-channel systems
- ✓ Standard single-mode fiber input;
- ✓ Easy to integrate with LabView and other standard environment;
- ✓ Full-support service (installation, operation training, technical support);
- ✓ Optimization of receiver system characteristics to the customer needs.

All detectors come with one of fully packed cooling system:



1 - Single Photon Registration Systems based on a Cryogenic Insert for a standard liquid helium storage Dewar

2 - Single Photon Registration System based on a Closed Cycle Refrigerator (Cryogenic Free)



* G.Gol'tsman, O.Okunev, G.Chulkova et al., Picosecond superconducting single-photon optical detector // Applied Physics Letters. – 2001. - V. 79. N. 6. – P. 705-707.

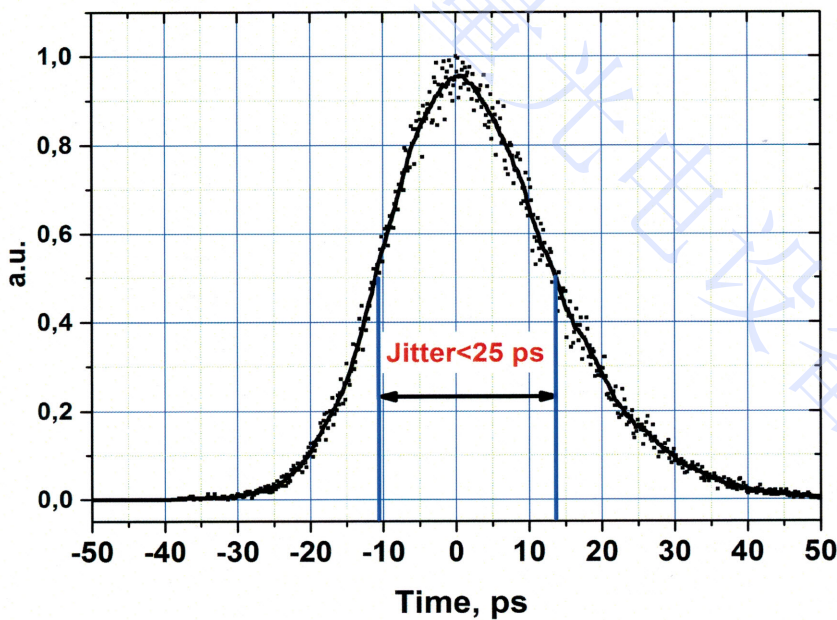
Standard system's characteristics:

Spectral range	Quantum efficiency referred to optical input	Dark counts rate	Output voltage signal	Counting rate (dead time)	Jitter
0.6÷1.7μm	≥ 60 %	≤10 cps	≥150 mV*	≥ 100MHz (≤10ns)	≤ 40ps

* Also we can provide other types of the output voltage pulses: TTL, ECL, LVDS.

SCONTEL has released the new line of products:

Ultra-fast single photon receiver



Ultra-Fast system:

timing jitter ≤25 ps
 deadtime ≤2 ns
 counting rate ≥500 MHz

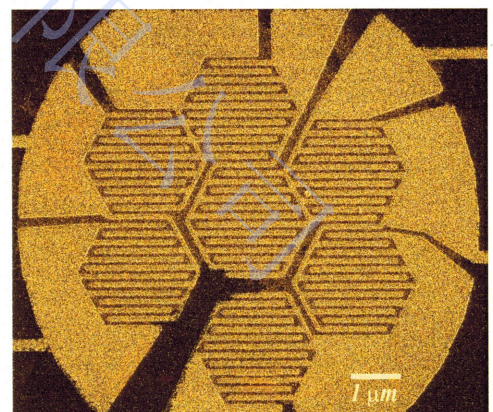
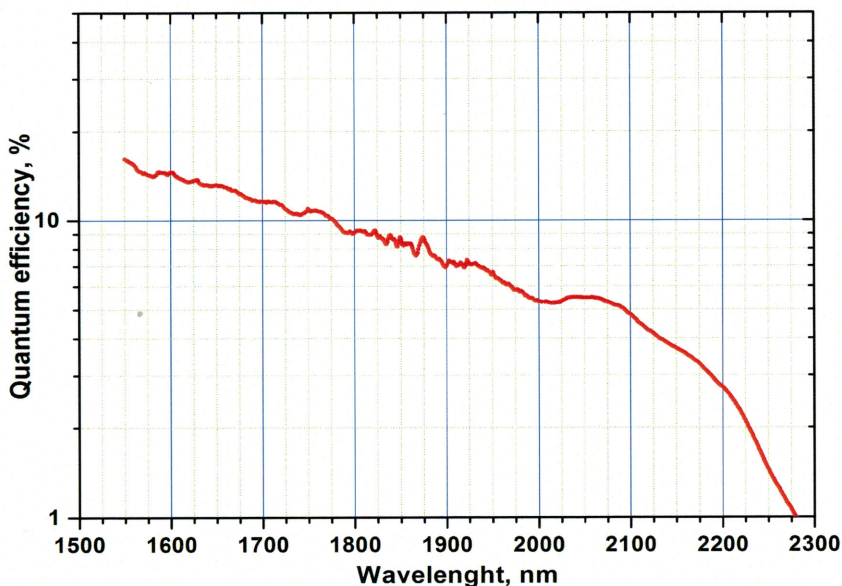
Long-Wave system:

spectral range 0.6÷2.5 μm
 QE at 2 μm ≥ 5 %

Extra-Low dark counting:

dark counts ≤0.01 cps

Long-wave single photon receiver



Matrix of the sensitive elements