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29 Aug 2017

Manuscript submission to Optics Express

Dear Editor,

please find enclosed our manuscript on "Breakdown flash at telecom wavelengths in InGaAs avalanche photodiodes", where we report on an experimental investigation of photoemission in InGaAs avalanche photodetectors.

These devices are a key component of quantum key distribution systems in the telecom wavelength range, and the observed photoemission may expose such a system to a vulnerability through a hardware side channel. In this work, we report on an absolute number of photons observed from this effect, an estimate about its spectral distribution, which allows to choose an optical bandpass filter to significantly reduce the potential information leakage due to this light.

This effect has been observed in Silicon avalanche photodetectors before, and suspicion has been that the III/V direct bandgap materials for telecom avalanche photodetectors show an even stronger fluorescence.

We feel our work will highlight an important optical aspect for practical quantum key distribution systems which find a revival of interest recently. As Optics Express has a reach both into the classical optics and quantum information community, we feel it would be a very suitable platform for presenting these technical results.

Potential referees for this work could be

- Alan Migdall, NIST Gaithersburg
- Hoi-Kwong Lo, University of Toronto, Canada
- Oliver Benson, Humboldt-University, Berlin/Germany,

With Best Regards on behalf of all authors,

Christian Kurtsiefer