

~~TOC~~

## Artefacts in Antibunching Histograms - Slow Decay

### A decay caused by correlation statistics

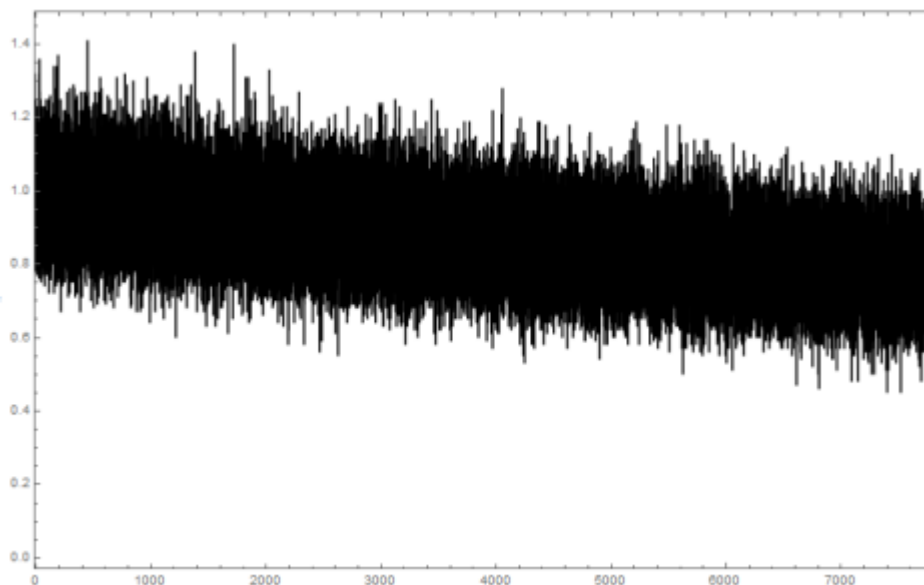


Fig. 1: Baseline decay

This decay is caused by correlation statistics. This happens because you correlate the first arriving photon against a photon at the longer time, which will be an increasingly unlikely event because the earliest stop photons always win and the experiment restarts.

A simulation with 90ns dead-time period:

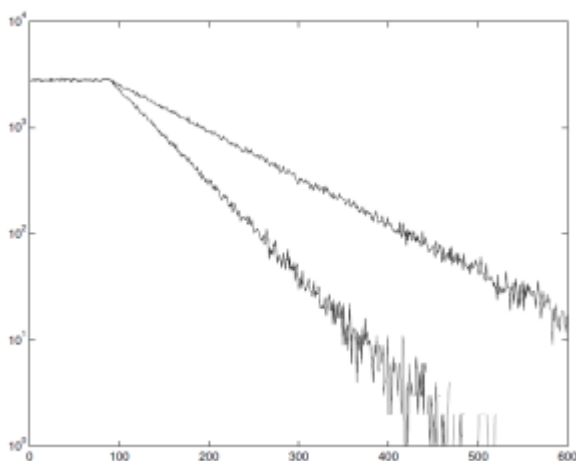


Fig. 2: Simulation

The timescale is in ns. The plateau is the [dead time](#). The decay slope depends on the count rate.

The way to avoid this is to calculate the total correlation after T2 MODE MEASUREMENT. This is not a start-stop correlation but the correlation of every photon against every photon.

It can be done using the SymPhoTime Software ([http://www.picoquant.com/products/sw\\_mt/sw\\_mt.htm](http://www.picoquant.com/products/sw_mt/sw_mt.htm)).

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