Picosecond Resolution Time Measurements

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Kurzfassung:
Time resolved measurements of single photon detection events are an inherent part of single photon based quantum technologies. I will present an FPGA based measurement architecture that provides a record breaking time resolution down to 2.7 ps and provides on-the-fly processing of all single photon detection events. Such high timing resolution requires a dedicated calibration of the integrated measurement electronics. I will discuss this in greater detail and shine light on TDC artefacts and cross talk which play a key role in single photon based quantum random number generation and quantum key distribution.