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Sommario/riassunto	Superconducting nanowire single-photon detectors (SNSPD) are promising detectors in the field of applications, where single-photon resolution is required like in quantum optics, spectroscopy or astronomy. These cryogenic detectors gain from a broad spectrum in the optical and infrared range and deliver low dark count rates and low jitter times. This thesis improves the understanding of the detection mechanism of SNSPDs and introduces new and promising multi-pixel readout concepts.