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MoSi Superconducting Single Photon Detectors

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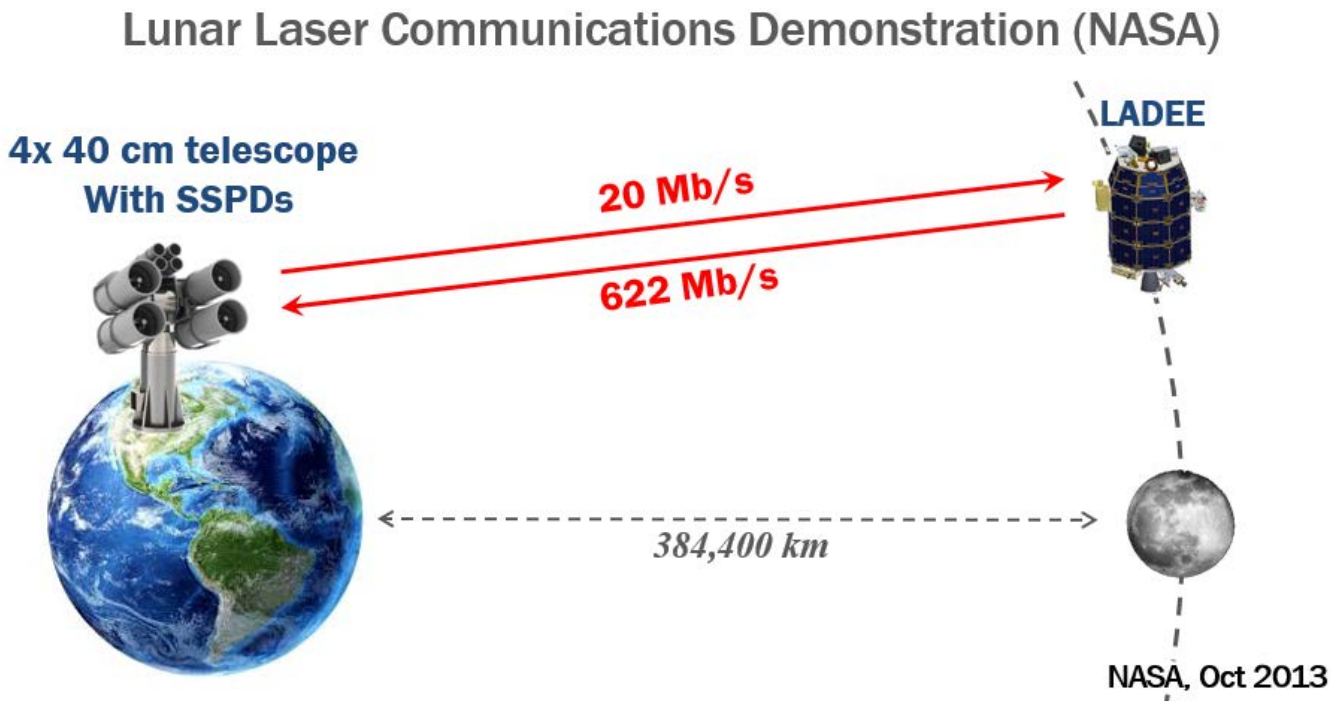
About Myself

- Colby College @ Waterville, ME
- Physics & Math junior
- Graduate school
- Experimental Physics

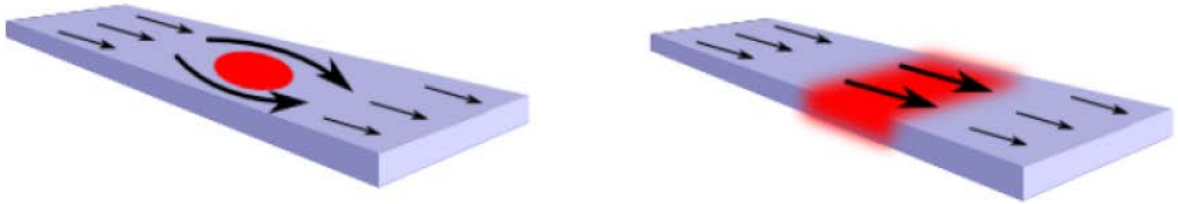
Space Communication

- ‘Noise equivalent power’ ~ 0.01 photon/sec
- High speed: jitter 10-100 ps, reset time 1-10 ns



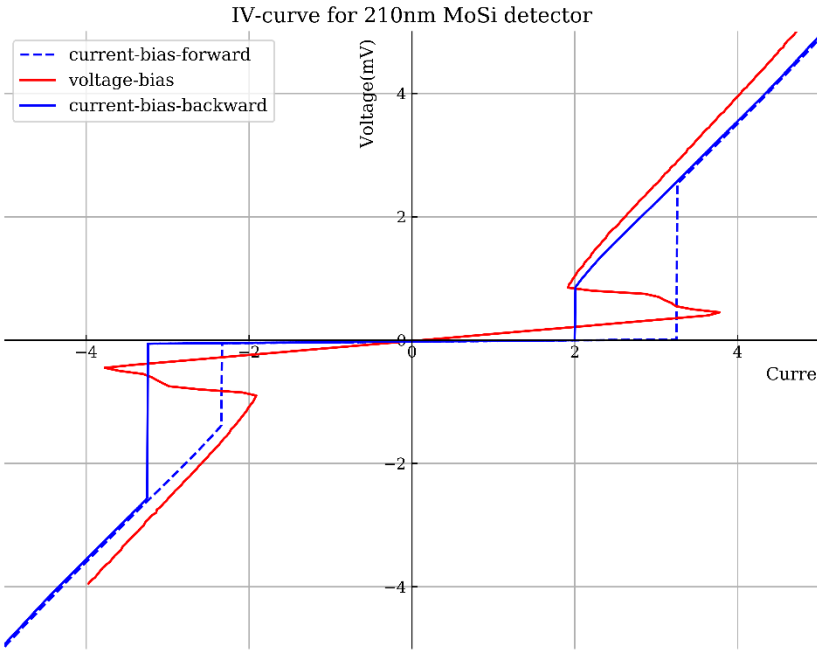
SSPD

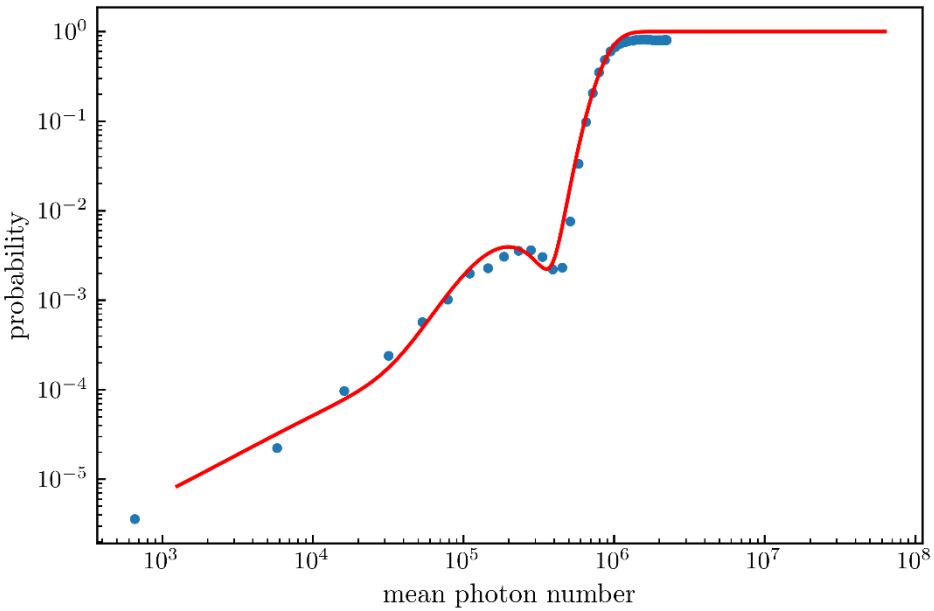
- Absorbed photon breaks up Cooper pairs
- High speed, low noise, large wavelength range
- Normal core hotspot v. Diffusive hotspot?



- Superconductivity Properties
- Quantum Detector Tomography

Result





$$p(\mu, \eta, \{p_k\}) = 1 - e^{-\eta\mu} \sum_{k=0}^{K} (1 - p_k) \frac{(\eta\mu)^k}{k!}$$

Reference

- Quantum Light and Quantum Detection, Michiel. J.A. de Dood, 2017 Physics Day Leiden.
- Probing the superconducting properties of NbN and MoSi nanodetectors, E.G.F. Abeln, Januaray 2018.