

Postdoctoral Researcher Opportunity - Superconducting Single-Photon Cameras
NIST

Boulder, CO

Position Summary

Superconducting nanowire detectors are the most sensitive optical detectors in existence: near-unity efficiency from the ultraviolet to the mid-infrared, picosecond timing, and nearly zero noise. Yet for two decades they have existed almost exclusively as single pixels. That constraint is now falling: our group recently demonstrated a 400,000-pixel superconducting camera [1], and thanks to recent advances [2] we are developing its successor, an instrument that is simultaneously large-area and ultralow-noise with unprecedented efficiency in the infrared. Just as silicon cameras spawned an entire generation of imaging applications and scientific advances for visible wavelengths, dozens of photon-starved applications await in the infrared, spanning biomedical imaging, optical communications, astronomy, and quantum computing. We are looking for postdoctoral associates to assist us with developing both the detector architecture itself and the system-level integration that will unlock these applications.

[1] Oripov, B.G., et al. *Nature* **622**, 730–734 (2023). <https://doi.org/10.1038/s41586-023-06550-2>

[2] Kristen M. Parzuchowski, et. al. *Optica* **13**, 1649-1657 (2026)
<https://doi.org/10.1364/OPTICA.599984>

To apply, please reach out to Dr. Adam McCaughan adam.mccaughan@nist.gov

Required qualifications: Significant hands-on experimental experience; Ph.D. in physics, electrical engineering, or a closely related field (completed by start date)

Preferred qualifications include: experience with cryogenic systems; nanofabrication/cleanroom processing; RF/microwave measurement; optical systems construction; single-photon detection.