



SuperCables

INTELLIGENCE VALUE

The SuperCables program aims to develop high-data rate and low-power data egress solutions for cryogenic electronics to help meet the U.S. Intelligence Community's increasing need for energy efficient electronics and sensitive detection systems.

optical fibers to room temperature data processing systems, leveraging the intrinsic higher bandwidth and lower loss of optical fibers.

The SuperCables program is a 24-month effort to deliver a self-contained unit for data conversion at cryogenic temperatures. This unit will include fiber-to-chip optical couplers and any necessary room temperature support electronics. The program goal is to achieve 50 gigabit per second data egress, while realizing orders of magnitude lower power consumption than traditional techniques. This will allow cryogenic systems to reach previously unobtainable aggregate data egress rates, while maintaining compact, low-power operation.

PRIME PERFORMERS

- Boston University
- Raytheon BBN Technologies
- sdPhotonics
- Yale University

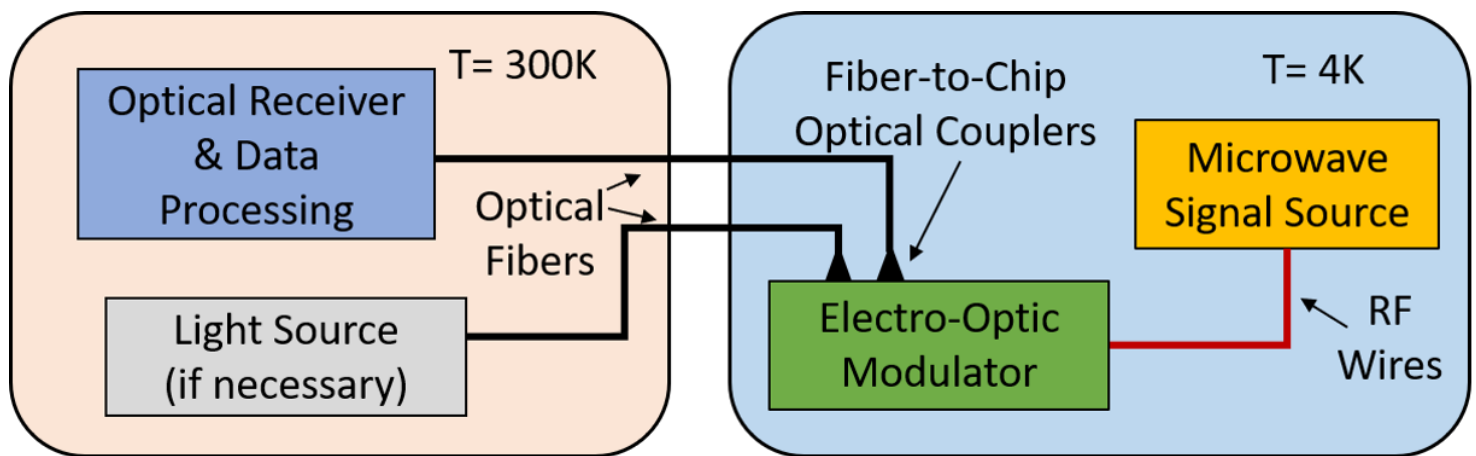
TESTING AND EVALUATION PARTNERS

- National Institute of Standards and Technology
- Laboratory for Physical Sciences
- Sandia National Laboratories
- Naval Information Warfare Center Pacific
- Office of Naval Research

KEYWORDS

- Cryogenic
- Electro-optic
- Data egress
- Photonics
- Superconducting electronics

The SuperCables program began in June of 2019, with the goal to develop an optical fiber alternative to standard metal wire connections between room temperature and cryogenic components. Metal wire connectors limit bandwidth and cause significant heating. SuperCables is developing cryogenic electro-optic modulators to convert low-level electrical digital signals into optical data. This enables data egress through



Shown is schematic of cryogenic system utilizing SuperCables cryogenic electro-optic modulator.



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