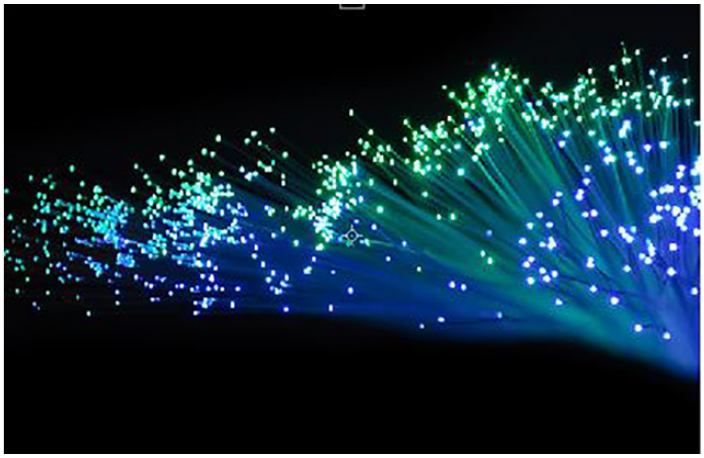
Fractal Fiber Bundle Design for Suppressing Interfiber Crosstalk

ID# 2018-4884



Example fiber bundle

Technology Summary

Crosstalk is a major issue in optical fiber bundles caused by optical fibers being brought very close together thus limiting the capacity or resolution. The proposed invention presents a way to minimize crosstalk by selecting the radii of the fibers in a fractal pattern. The fractal structure is designed to maximally localize eigenstates which minimizes the crosstalk between waveguides in a waveguide array.

Application & Market Utility

Optimizing the capacity of optical fibers is beneficial for the feilds of telecommunications and medical imaging, specifically endoscopies. Ultimately, by minimizing crosstalk, one is able to increase the amount of information sent across the optical fibers in a given time and increase the resolution in imaging applications.

Next Steps

Experiments planned to further reduce invention to practice. Patent pending. Seeking licensing and funding opportunities.

TECHNOLOGY READINESS LEVEL 1-3

Seeking

Investment | Licensing | Research

Keywords

- fiber bundle
- spatial division multiplexing
- endoscopy
- telecommunications
- optical fiber

Researchers

Mikael C. Rechtsman
Professor of Physics
Online Bio
Website

Jonathan Guglielmon
Website

Kevin Peng Chen
Professor of Electrical Engineering

Originating College
Eberly College of Science

Office of Technology Management Contact
Swope, Bradley
bas101@psu.edu
814-863-5987