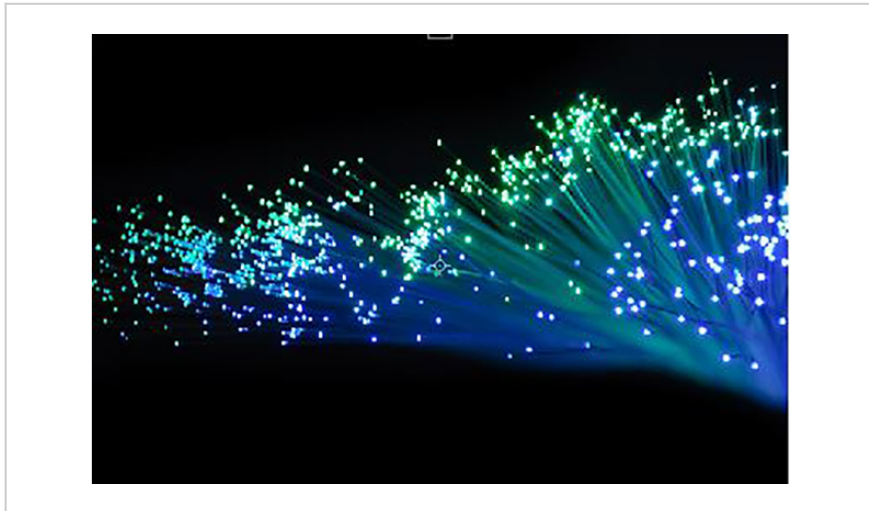


Fractal Fiber Bundle Design for Suppressing Interfiber Crosstalk

ID# 2018-4884



PennState



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 fields 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



Invent Penn State is a Commonwealth-wide initiative to spur economic development, job creation, and student career success. Invent Penn State blends entrepreneurship-focused academic programs, business startup training and incubation, funding for commercialization, and university-community collaborations to facilitate the challenging process of turning research discoveries into valuable products and services that can benefit Pennsylvanians and humankind. Learn more at invent.psu.edu.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.