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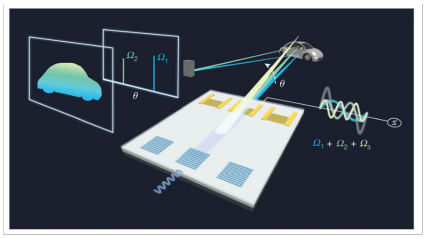
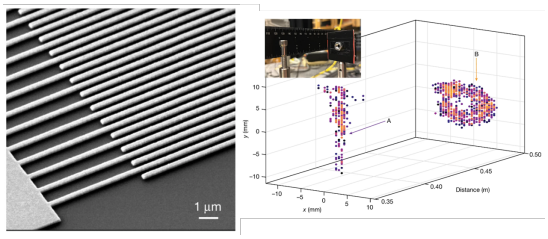
# Integrated Acousto-optic Light Beam Steering Device

**An acousto-optic device design where the acoustic waves directly scatter and steer optical waves into free space for ranging sensors at low cost and with a small form factor.**






**IP Status:** US Patent Issued; Patent No. 11,940,712

## Applications

- Light Detection and Ranging (LiDAR)
- Robotics
- Autonomous vehicles
- Drones
- Internet of Things (IoT)
- Free-space optical (FSO) communications
- Navigational instruments manufacturing

## Technology Overview

Optical beam steering is essential for light detection and ranging (LiDAR) and free-space optical (FSO) communications but existing approaches are expensive, require high power consumption, have a large form factor, are slow, or have limited angle range or resolution. Researchers at the University of Minnesota have developed an acouto-optic beam steering device that combines the fast velocity of existing acouto-optics solutions with a large angular span and resolution. The device is fully integrated, with nanofabricated transducers to excite GHz frequency acoustic wave and photonic waveguides to couple laser light.

## Phase of Development

**TRL: 3-4**

**Technology ID**
20180210

**Category**
All Technologies
Engineering & Physical Sciences/Design Specifications
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Engineering & Physical Sciences/Photonics

**View online**

Proof of concept developed and characterized.

### Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

### Researchers

- **Mo Li, PhD** Professor, Department of Electrical and Computer Engineering

### References

1. Bingzhao Li, Qixuan Lin & Mo Li(2023) , https://www.nature.com/articles/s41586-023-06201-6, Nature, 620, 316–322