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Integrated Photonic Device

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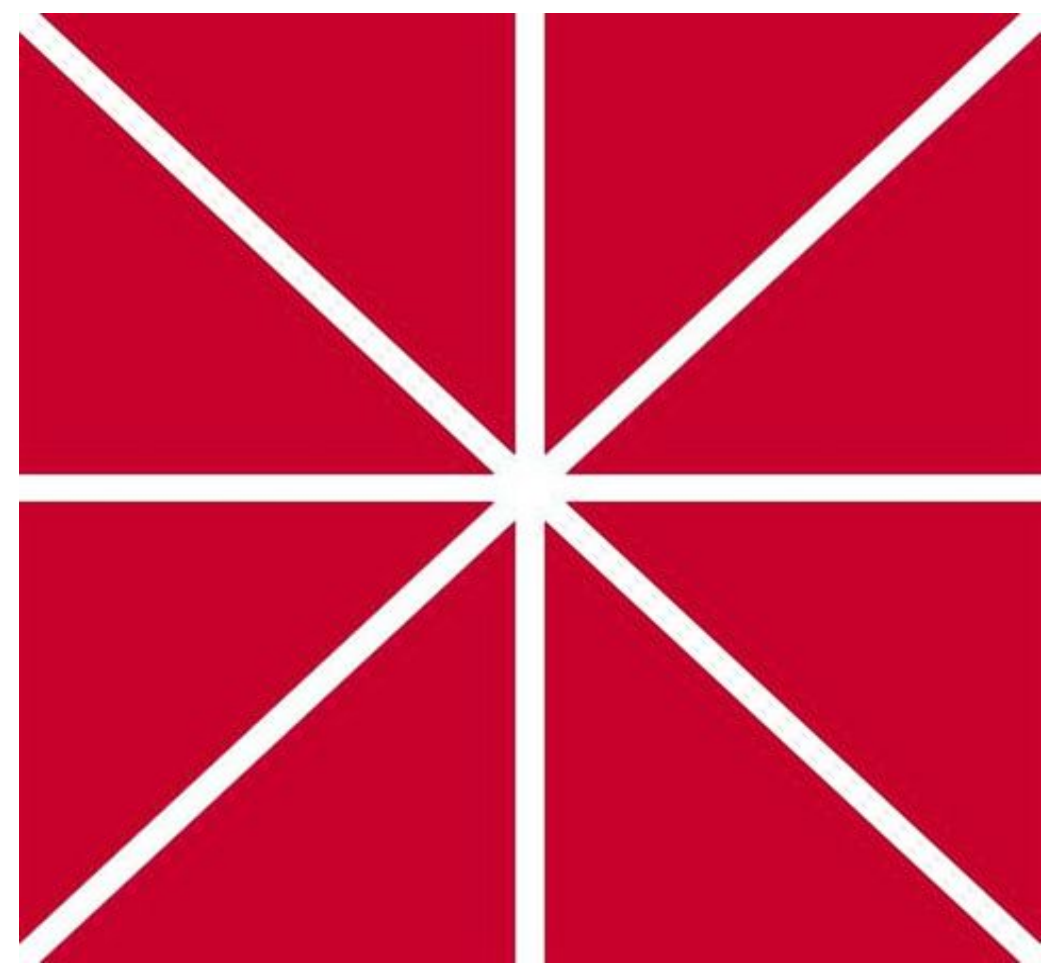
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Integrated Photonic Device

The Harrison Lab

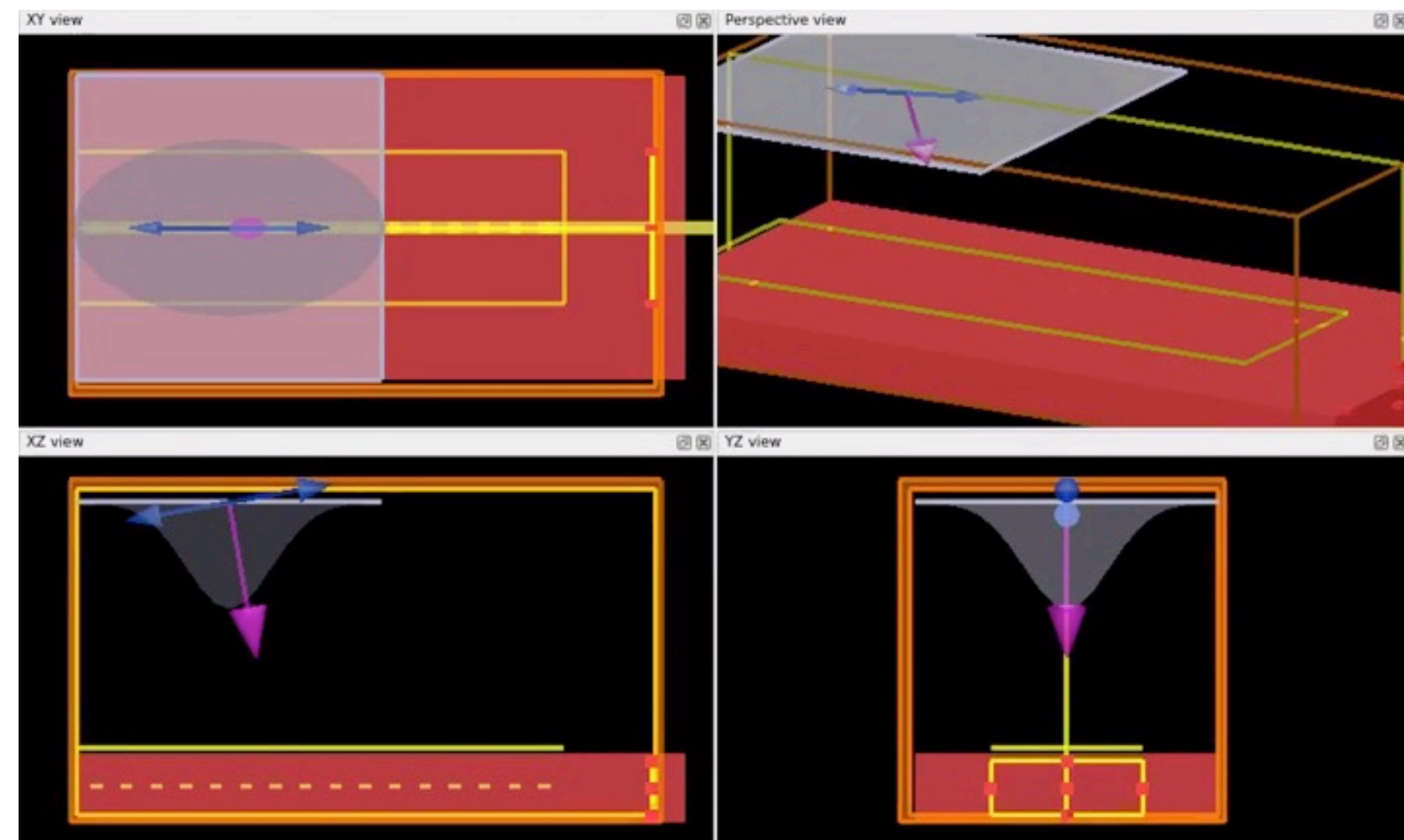
Presented By: Brittney Kuhn

Background

- An integrated photonics device is a microscopic computer part that processes optically encoded signals.
- Messages are typically sent by starting optically, turning electronic at network nodes, and then back to optic.
- By using varying dimension and materials, we are looking to enhance how efficient this device can be.

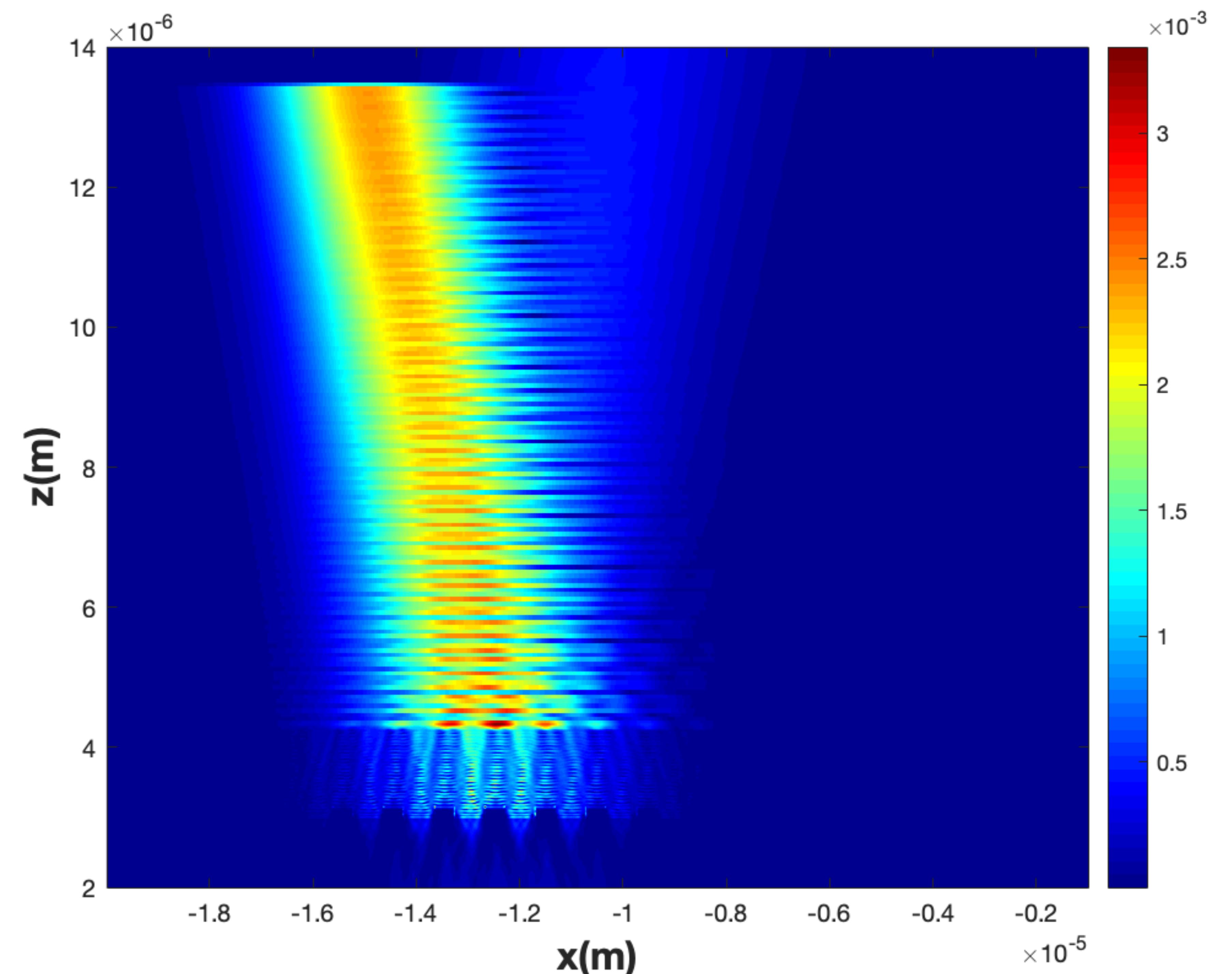
Methods

- Using *Lumerical*, dimensions are entered to create 3D figures to simulate how well our designs funnel in light.
- A light source is placed above the design and as the simulation runs measurements of where and how the light travels is documented.
- In The Harrison Lab, we want to see how efficiently we can get the light to flow over the teeth of the grating coupler towards a waveguide (not pictured) that will be our second focus in our lab.
- Looking at the photo below you can see the light source aimed at the yellow ridges (dashes) below



Results

- Preliminary results show that more work needs to be done to refine efficiency of the design of the device.
- Below are the simulation results of the optical power flow as the light travels towards the grating coupler.



Discussion

- Computer mediated information will be safer as security breaches will be easier to detect
- Using metal instead of a traditional silicon wafer will reduce the amount of energy used to send messages.