Docket #: S20-131

Serpentine Optical Phased Array with Dispersion Matched Waveguides

Stanford researchers in the Vuckovic group have developed an optical phased array (OPA) for solid-state beam-steering in optical systems such as LIDAR, projectors, and microscopy. With no moving components, solid state beam steering can be less expensive, more robust, more stable, and faster than current beam steering methods. The Stanford OPA serpentine architecture (figure 1) is based on two group index matched slow light waveguides, which eliminates large phase-shifting elements, but maintains the ability to set phase relation and thereby steer the beam. This OPA architecture steers in two directions with a high antenna density, small operating bandwidth, and a large sweep angle making it attractive for LiDAR and other optical systems.

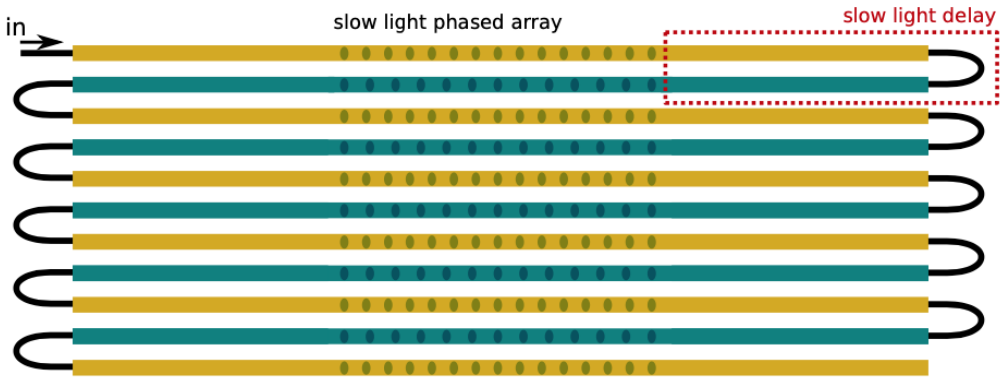

Figure 1 Matched slow light waveguide serpentine OPA architecture (Image courtesy the Vuckovic Group)

Stage of Development – Proof of Concept

Applications

- LiDAR
- Photonics
- Projection systems
- Microscopy

Advantages

- Robust, stable, less expensive, and fast
- Small operating bandwidth
- 2D steering
- Improved accuracy - larger scanning cone through a higher packing density

Patents

- Published Application: 20230258861
- Issued: 12,019,268 (USA)

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