This invention presents the first all-optical phase and polarization recovery scheme for Phase-Shift Key signals.

UCF scientists have developed the first all-optical carrier phase and polarization recovery scheme for Phase-Shift Key (PSK) signals. The technique also provides a means to carry out reliable optical carrier synchronization using a phase sensitive oscillator. Coherent optical communication is an active area in modern optics research.

Technical Details

Most existing strategies use interference between an incoming optical signal and a local oscillator signal for phase recovery. However, phase recovery schemes such as phase-locked loops and injection locking, are only effective if optical carrier information is available. Hence, efficient carrier phase and polarization recovery is important. The absence of reliable carrier recovery technologies thus poses a challenge and hindrance, to the frequent use of coherent optical communication. In addition, all-optical signal processing techniques for coherent optical modulated signals such as regeneration of PSK, require a polarization and phase locked local oscillator.

Benefits

- Only system to accomplish all-optical carrier phase recovery
- Reliable optical carrier synchronization

Applications

- Optical regeneration of optical phase modulated signals transmitted over long distances
- Coherent optical communication systems

Technology #30930

- US Patent 8,027,588 B2

Inventors

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