Coherent optical transistor

Provides fast and highly accurate optical switching.

High speed digital optical logic is critical for optical switching and telecommunication. Coherent optical logic uses optical interference to realize basic logic functions, and most devices cannot provide restoration of the logic levels or the ability to drive multiple devices without external amplification introducing spontaneous emission noise. Previous attempts at developing optical transistors lack a coherent gain mechanism. This new technology alleviates this problem.

BENEFITS
- Faster optical switching
- Higher accuracy
- Simpler electrical setup
THE TECHNOLOGY

NASA Goddard Space Flight Center has developed a coherent optical transistor incorporating a coherent gain mechanism, resulting in larger and higher intensity signals present in optical logic systems. Moreover, the gain mechanism only adds a small amount of thermal energy, making the entire transistor easier to cool, reducing the overall size, weight, and power requirements.

APPLICATIONS

The technology has several potential applications:
- Telecommunications
- Optical switching
- Quantum Computing

PUBLICATIONS

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