FREE SPACE OPTICS

(OPTICAL COMMUNICATION)

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Abstract:-

Free space optics is an optical communication technology that uses light that is propagating in free space to transmit data wirelessly. Free space optical communications (FSO) is now common for point to point communications between fixed locations on land, and is also used for communication between moving platforms on land, on the surface of the sea, in air, and in space. Free space implies that it is not practical to use optical fiber to connect the points that need to communicate or exchange telemetry data. After the cold war in the new environment of GWOT, U.S. submarines are capable of accomplishing missions that would require them to be at periscope depth, communicating critical information at high data rate with the other moving platforms. Submarines' covert surveillance abilities are capable of attaining important tactical information, however, that information may be of greatest value when it is communicated in real time, at high fidelity, to other platforms that are participating in joint operations and to high level decision makers. Free space optical communications (FSO) can provide covert, difficult to jam or intercept, high speed, broadband connectivity for submarines with other platforms. In addition, there are test scenarios that include requirements for telemetry of large volumes of data. Free space optical communications (FSO) would provide the infrastructure to support those telemetry requirements.

Free space optics is again related to many updating technologies like **Optical computers, Light powered computers** and **Li-fi**(Light-fidelity). The computers that we use work on transistors and semi-conductors whereas optical computers make use of photons (light particles). Light-fidelity (**Li-fi**) is the revolution in the field of optical communication. **Wi-fi**'s baud rate is not comparable with that of **Li-fi**. Research claims that speed of Li-fi is around 224 Giga bits per second("18gb file can be downloaded in just few seconds").

It uses visible light spectrum to transmit data making it highly efficient. Interference problem is reduced. One of the main advantages of using Li-fi is its high level of security.

The effects of radiation are not seen in Li-fi unlike other wireless technologies.