

OPTICAL DUPLEXING APPARATUS FOR THE SIMULTANEOUS TRANSMISSION AND RECEPTION OF LASER BEAMS

Description:

Optical systems for transmitting and receiving laser-based modulated beams have been using differentiated optical elements to transmit and receive information. However, it is possible to simplify this philosophy and use part of the same elements for both functions by taking, albeit different optical paths, the same optical axis. Thus, the present invention consists of an optical duplexer apparatus for the transmission and reception of linearly polarized annular irradiance laser beams in two perpendicular planes that propagate bidirectionally on a single optical axis. The apparatus consists of a catadioptric reflector that transmits and receives polarized laser beams that are directed, according to their sense and state of polarization, to the outside (transmitted beam), or inside (received beam), by means of a beam splitting polarizing cube, mirrors and lenses. The solution proposed by this invention simultaneously simplifies the problem of alignment between distant transceivers.

Keywords:

[Laser](#), [Optical Communications](#), [Duplexer](#)

Sectors:

[ICT](#), [Electronics](#)

Areas:

[Telecommunications](#), [Electronics](#), [Internet and Networks](#)



Advantages:

The advantages of the present invention include that the system includes beam splitters and sensors that allow the deviation of the polarization plane to be analyzed in order to determine the influence of the components of the atmosphere on the beam itself. On the other hand, the system solves the technical problem of using two different optical systems, replacing them with a single optical system, thus providing advantages for reducing the costs of the optics used, for the simplification of the alignment mechanics and for the increase of the efficiency in the capture of the beams.

Uses and Applications:

This invention belongs to the field of the electronic industry of high-speed optical communications in which modulated laser beams intervene, specifically, the invention presented is framed within the optical and precision mechanical (instrumentation) industry, oriented to emission and reception. efficient light beams.

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