Overcoming Limitation of an “Electronic Bottleneck” Due to Electronic Switching Functions Description: Systems and methods for optical communications which involve routing optical signals through communications nodes are described. These signals are controlled such that the optical power arriving at input ports is linearly distributed to output port.

Routing Optical Signals through Communications Nodes The method and system comprise of multiple optical communications links, nodes and communications stations. The optical communications stations comprise of optical receiver and transmitter, and are connected to the node by an optical communications link. An optical-power divider-combiner optical input and output ports are coupled to the optical communications node. The optical-power divider-combiner is adapted to distribute optical signals arriving at the input ports to the output ports. The optical power is linearly divided in accordance with a prescribed linear combination rule. The linear combination rule is controlled to establish desired optical communications paths between communications stations.

The method and system overcome the limitation of an “electronic bottleneck” due to electronic switching functions carried out at network nodes, or by unnecessary power dissipation in (passive) star and bus broadcast designs.

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