

## Patent Search

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Invention Title	POLARIZATION SYNCHRONIZATION METHODS AND SYSTEMS FOR DISTRIBUTED OPTICAL BEAMFORMING (DOB)
Publication Number	33/2024
Publication Date	16/08/2024
Publication Type	INA
Application Number	202311009786
Application Filing Date	14/02/2023
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRONICS
Classification (IPC)	H04B0007060000, G01N0021210000, G02B0006293000, H04B0007100000, G02B0027280000

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## Abstract:

The embodiments of the present disclosure develop polarization synchronization methods and systems for distributed optical beamforming (DOB), to find best possible set of polarization vectors for the multiple transmitting optical sources which take part in the beamforming process. Unlike the polarization angle synchronization methods proposed in conventional CBC, which maximizes the receiver intensity by finding the optimum polarization angles in real-time, the proposed methods for polarization synchronization find the optimum polarization angles for the given set of optical sources in advance and only applies the polarization correction in real-time. Thus, the methods proposed in the present disclosure saves time and energy in the synchronization process. Further, the proposed polarization synchronization methods are agnostic to the polarization angle finding algorithms.

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## Description: TECHNICAL FIELD

The present description relates to distributed optical beamforming (DOB) for optical wireless information and power transfer, more particularly, relates to polarization synchronization methods and systems for distributed optical beamforming.

## BACKGROUND

To realize mobile networks with high data rates, global coverage and large capacity we need to maximize receiver power and also require sustainable everlasting power sources. Wireless powering is a demanding requirement in scenarios where wired power transfer is expensive, difficult, dangerous, or even impossible. It can also be used to transfer power to disaster areas for quick recovery. It proves to be a green technology that finds its use both in short-range and long-range applications to charge sensor nodes deployed in special environments.

In recent years, a variety of power transfer mechanisms have been proposed in the literature and many of them, such as magnetic induction, microwave power transmission, etc. are in commercial use too. However, they fail to live up to consumers' expectations in a complete sense. Optical wireless power transfer (OWPT) is an emerging WPT technique that outstands among the existing power transfer schemes as it allows short as well as long-range power transfer, power transfer in kW levels, and is immune to electromagnetic interference. Although various demonstrations for laser power beaming have been reported, it is still considered in the development stage due to low ( $\approx 20\%$ ) end-to-end power transfer efficiencies. Therefore, it is still challenging to transfer mwatt and watt-level of power over meters for communication