ISSN: 2754-4753

Journal of Physics & Optics Sciences

SCIENTIFIC Research and Community

Short Communication

Open Access

Groundbreaking Communication Method

Liu Xinhua

Hunan sub-bureau of Middle South Regional Air Traffic Management Bureau of Civil Aviation of China

***Corresponding author**
Liu Xinhua, Hunan sub-bureau of Middle South Regional Air Traffic Management Bureau of Civil Aviation of China.

Received: March 24, 2023; **Accepted:** March 26, 2024; **Published:** April 06, 2024

A new communication mode has been introduced by a recent article. This is the first feasible mode allows information to be transmitted without media transmission from the source to the destination. The method is based on the double slit experiment combined with the Bohr complementarity principle, marking the innovation and development of communication modes. This research explores a brand-new communication method that could change our perception of communication modes and open up a new era of communication. Although the details of this method need further verification and improvement, this research has significant potential and importance for the development of the communication field.

This paper proposes a groundbreaking method for information transmission without traditional media transmission from the information source to destination.
In traditional communication modes, the information sender load the information onto a carrier, and send it to the information receiver, then the receiver can decipher and retrieve the information. Communication process cannot be separated from the existence of media. However, this groundbreaking communication mode proposes a method of transmitting information from the information source to the destination without media transmission from the sender to the receiver, by using the double slit experiment based on the Bohr complementarity principle.

The study focuses on the behavior of a single photon passing through Young's double-slit experiment. The photon's propagation route is divided into two regions: the source region and the destination region. The path distinguishability is maintained in the destination region, while the researchers manipulate the path distinguishability in the source region. The researchers investigate how the particle characteristics of a photon change as its path distinguishability increases.

The researchers employ a laser trigger signal on the front optical path. This signal is used to differentiate between valid photons and invalid photons detected in the destination region. The photon path distinguishability caused by operation on the source region can be determined, by counting the percentage of photons falling in the destination region among those that pass through the double-slit (or all emitted photons). With a pre-defined synchronization control, photon path distinguishability in the source region is kept unchanged for a certain period of time, ensuring the interference visibility (path distinguishability) of effective photons in the destination region remains unchanged. Therefore, there is no need to use the information of the source optical path to classify destination photons. Furthermore, the interference visibility of the fringe formed by the valid photons detected in the destination region is also explored. This visibility serves as an indicator of the extent to which the photons exhibit wave-like behavior and interference patterns. So, this interference visibility can determine the operation of the source region on the photon path distinguishability, as it alters the distinguishability of all photons passing through the double slits.

The results of this study provide valuable insights of the photon behavior in a double-slit experiment. By exploiting the principles of quantum mechanics, the researchers demonstrate the potential for information transmission without the traditional media transmitting from the sender to the receiver. This novel approach opens up new possibilities for efficient communication systems that rely on the principles of quantum physics. It also contributes to our understanding of the fundamental nature of particles and their behavior in various experimental setups.

In conclusion, this paper presents a groundbreaking method for information transmission based on Bohr complementarity principle. The researchers showcase the highlighting the potential for future advancements in quantum communication systems. This study significantly contributes to the field of quantum physics and paves the way for further research in the realm of information transmission without media transmission from the sender to the receiver.

Reference

1. ChuangRui Liu, HanRui Liu and XinHua Liu (2023) Using double slit experiment based on Bohr complementarity principle to transmit information without media transmission from the information source to destination. Physica Scripta 98: 4.

Citation: Liu Xinhua (2024) Groundbreaking Communication Method. Journal of Physics & Optics Sciences. SRC/JPSOS/297.