

# Some Funny Yet Relevant Title



chriswangzanxu, 14102019, AjmastR, Anon, Or4nge, walnutt

## Introduction

Introduction here

## Adaptive Frequency Hopping

Box for AFH (both Bluetooth and Wi-Fi are based on this)

## Another General Box

Box for another common feature (add more boxes as needed)

## Conclusion

Conclusion here

## References

idk if we need this

- [1] J. M. Smith and A. B. Jones. *Book Title*. Publisher, 7th edition, 2012.
- [2] A. B. Jones and J. M. Smith. Article Title. *Journal title*, 13(52):123–456, March 2013.

## Acknowledgements

Rito

## Wi-Fi

Wi-Fi box here

## Optical Fibres

Optical fibre box here

## Bluetooth

Bluetooth box here

## Li-Fi

Li-Fi box here

## Neutrino

### Introduction

Neutrino messaging is a hypothetical form of communication currently undergoing research. Neutrinos are advantageous in communicative methods in that they pass through normal matter, but this causes them to be notoriously difficult to detect.

### History

Neutrino messaging was first experimentally verified to work in 2012 by researchers from the University of Rochester and North Carolina State University.

The message was encoded with on-off keying, with 1 and 0 being represented by the presence and absence of a neutrino beam pulse, respectively.

### Advantages

Unlike traditional forms of communication which rely on electromagnetic radiation, neutrinos are affected only by the weak force and gravity, meaning they can pass messages through virtually anything.

This is ideal for long distance communication - a potential use in the future is sending messages across vast expanses in space.

A present-day application is sending messages to nuclear submarines. Seawater can obstruct electromagnetic radiation, so submarines must extend an antenna to the surface, causing them to be easier to detect.

### Disadvantages

The interactive nature of neutrinos causes them to be difficult to detect. Neutrinos also oscillate between 3 flavours - electron, muon, and tau.

Neutrinos have both particle and wave properties, so this can be represented by a neutrino switching between waves of different frequencies as it travels through space. This can be a problem for certain detection methods.

For example, in the 1960s, there was a discrepancy between the predicted and observed amount of neutrinos emitted by the sun. This was due to the detector not factoring in that electron neutrinos from the sun oscillated into different flavours en route to Earth