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Iranian Researcher Pushing Transmission Rate of Copper Cables

Prof Kavehrad"s group, at Penn State University have successfully boosted the data transmission rates of Cat-7 copper cables to 100Gbps.

The researchers modelled the cable with all its attributes, including crosstalk, using information on specifications and characteristics from cabling systems firm Nexans.

A transmitter/receiver was then equipped with an interference canceller that could transfer up to 100 gigabits using error correcting and equalising approaches.

"Working with Nexans we have examined the possibility of sending digital data at a rate of 100Gbps over 100m of Cat-7 copper cable," said Mohsen Kavehrad, a professor of electrical engineering at Penn State.

Professor Kavehrad explained that all transmission cables are limited by the distance they can transmit data without degradation of the signal.

Before errors and interference make the signals non-recoverable, cable systems use repeaters similar to computer modems to capture, correct or recover data, and resend it.

The distance between repeaters depends on the cable and the approach used by the modem to correct errors.

Ethernet cable like Cat-7 comprises four pairs of twisted wires shielded to reduce crosstalk. Cat-7 is heavier wire with better shielding than Cat-5 cable.

The amount of data encompassed by 100 gigabits is "amazing", according to the researchers.

The Encyclopaedia Britannica contains 1GB of information. A rate of 100Gbps over 100m is the equivalent of more than 12 Encyclopaedia Britannica sets delivered every second.

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