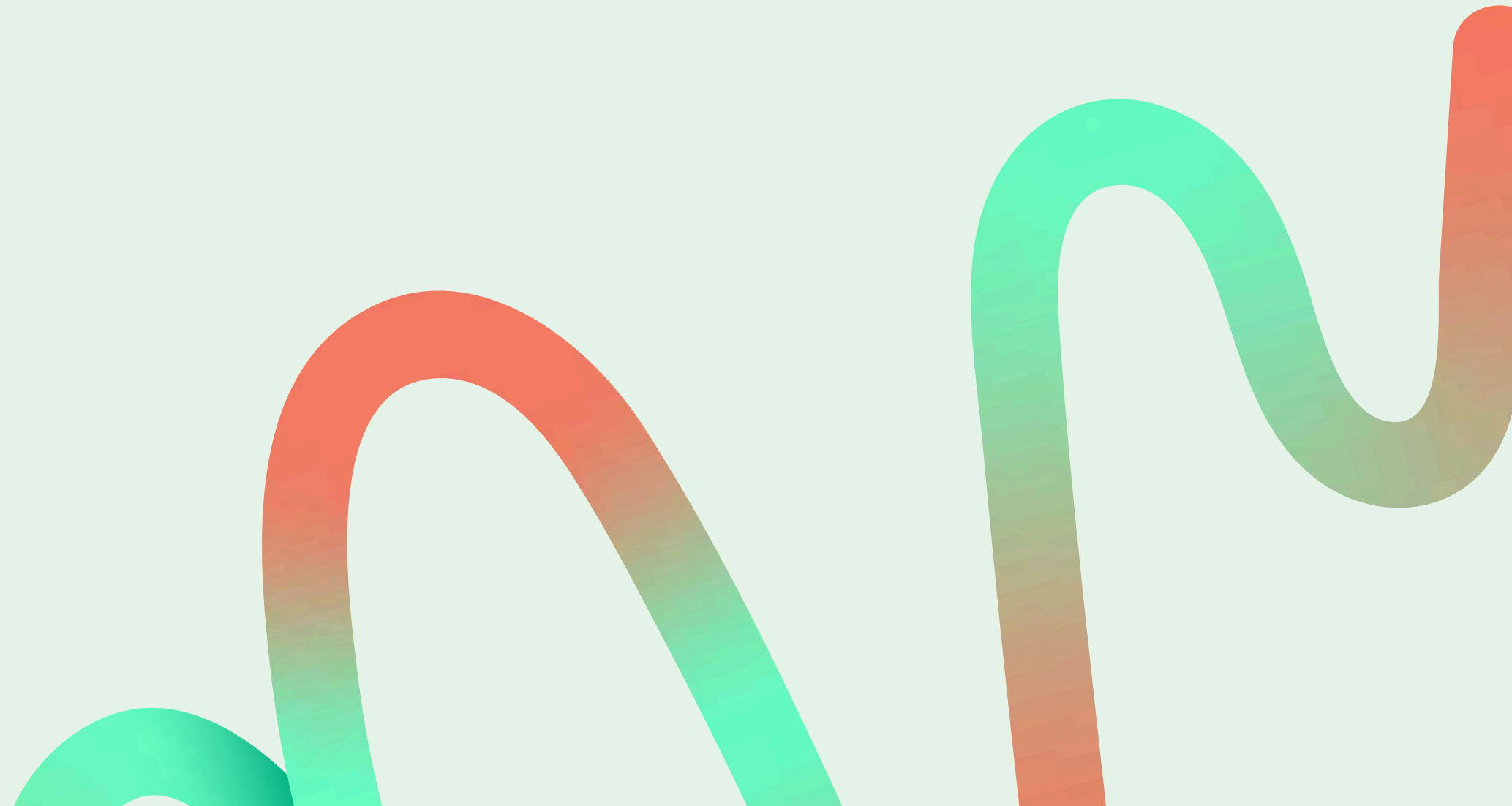ICETI

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PERFORMANCE ANALYSIS OF MASSIVE MIMO HYBRID BEAMFORMING USING REGULARIZED ZERO FORCING AND PHASED ZERO FORCING

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Research Background

- As the number of users and connected devices increases, so does the need for greater network capacity to reduce interference in wireless communications.
- Development of previous research entitled "Performance analysis of multi user massive MIMO hybrid beamforming systems at millimeter wave frequency bands"
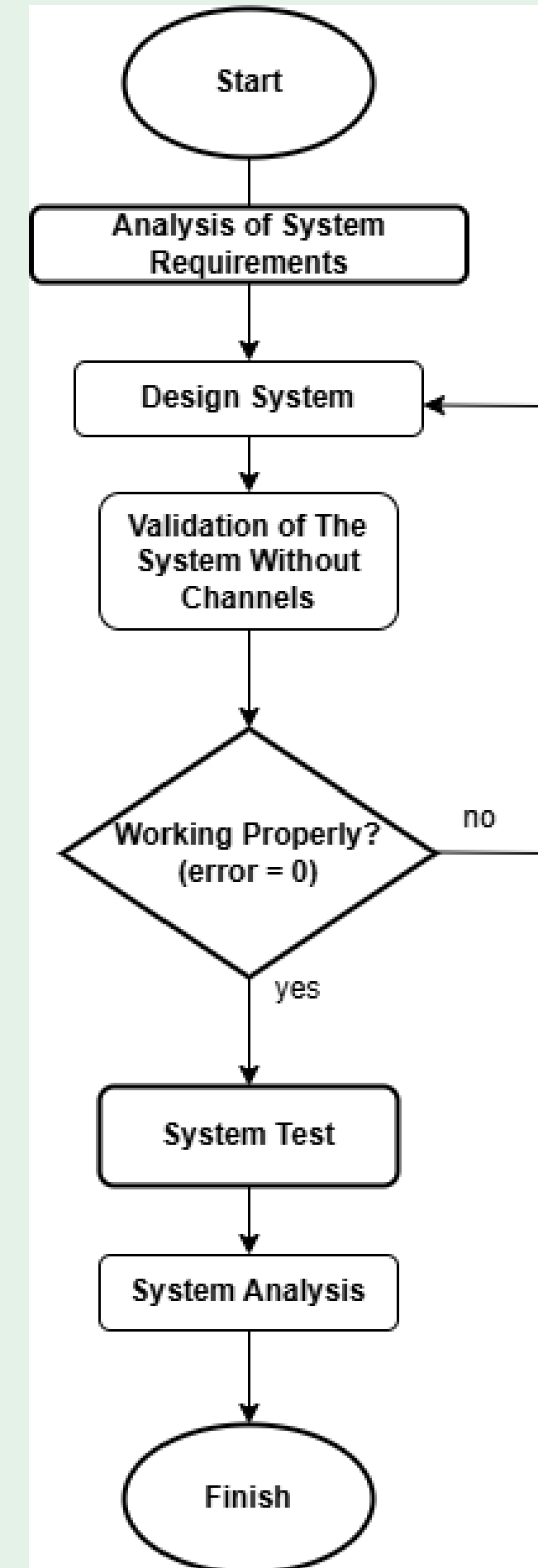
Problem Statement

How is the comparative analysis of BER value against SNR using Regularized Zero Forcing RZF, Phased Zero Forcing PZF and without them?

Purpose of The Study

Performed a comparative analysis of BER value against SNR using Regularized Zero Forcing , Phased Zero Forcing and without both methods.
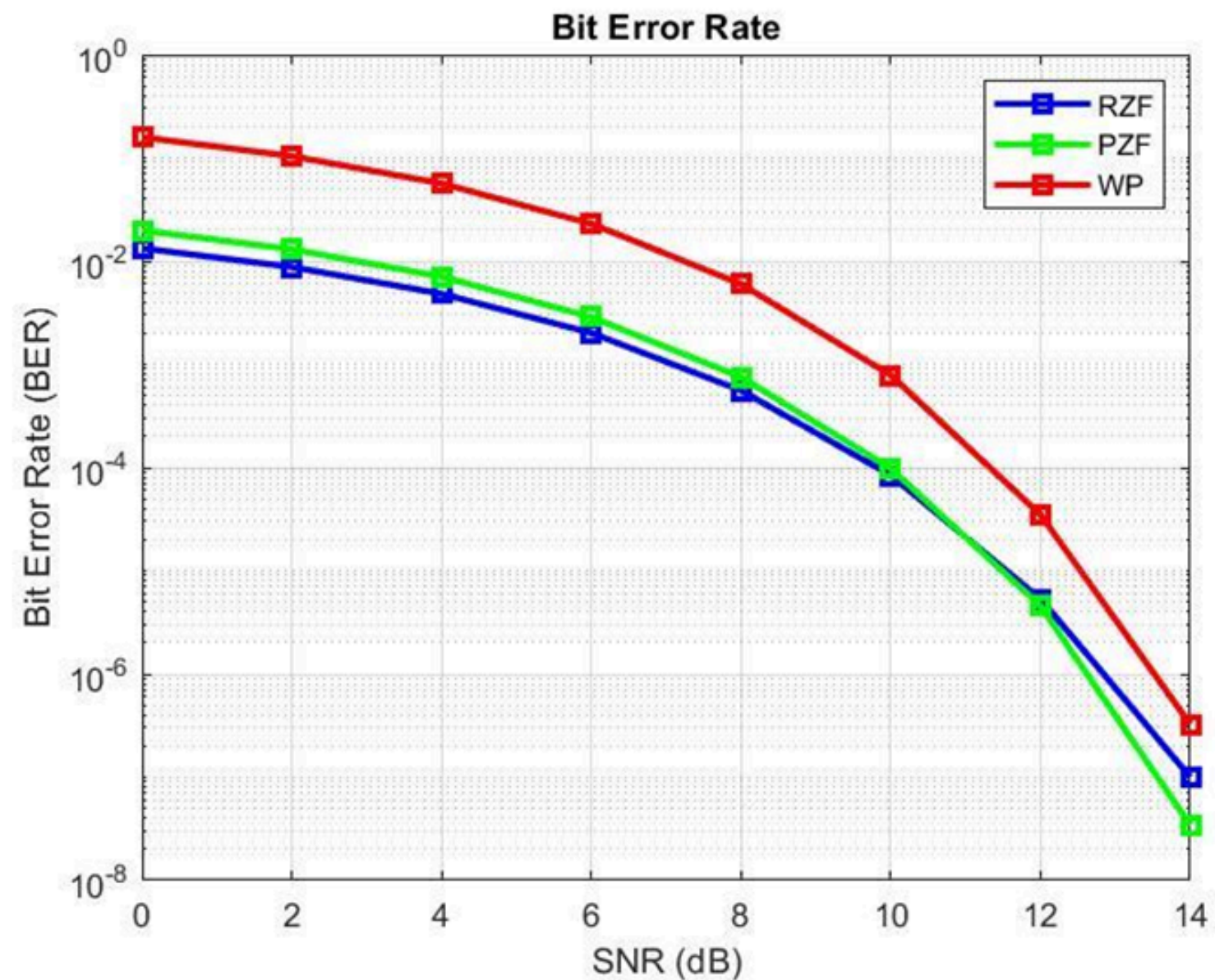
Flow of Research

Research Scenario

Scenario	Methods
	Regularized Zero Forcing
	Phased Zero Forcing
	without *hybrid beamforming*

Results

Precoding	SNR values	Coding Gain
Without Precoding	11.5 dB	Reference
Regularized Zero Forcing	9.8 dB	1.7 dB
Phased Zero Forcing	10 dB	1.5 dB

Conclusion

1.The use of the Regularized Zero Forcing method influences the 256 x 256 Massive MIMO hybrid beamforming system by reducing the occurrence of interference and errors. This method has the best performance compared to the PZF method, as evidenced by the coding gain of 1 .7 dB.

2. The use of the Phased Zero Forcing method has an influence on the 256 x 256 Massive MIMO hybrid beamforming system in reducing the occurrence of interference and error. However, the use of this method is not better than the RZF method in overcoming the occurrence of errors. This is evidenced by the coding gain of 1.5 dB.

3.The use of hybrid beamforming has an influence on the communication system to reduce interference between Massive MIMO antennas. This is evidenced by the results of graphs that do not use hybrid beamforming, requiring the largest SNR value between the use of RZF and PZF methods by 11.5 dB.

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THANK YOU!

DO YOU HAVE ANY QUESTIONS?