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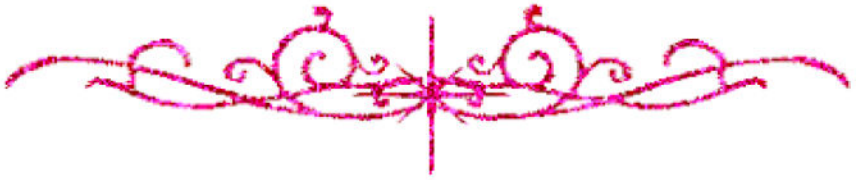

HOSSAM MAGHRABY

RECEIVED IQ IMBALANCE COMPENSATION FOR MASSIVE MIMO SYSTEMS

By

Aly Mahmoud Mohamed Abd-Ellatif

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Electronics and Communications Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

RECEIVED IQ IMBALANCE COMPENSATION FOR MASSIVE MIMO SYSTEMS

Key Words:
IQ Imbalance; MassiveMIMO; ZeroForcing; MIMO Receivers; Blind Detection

Summary:

This thesis analyses the problem of the received IQ imbalance in Massive-MIMO systems and proposes some solutions for it. Massive-MIMO represents an active trend in the research in communication systems due to the high spectral efficiency provided by it. Hence, the demand to resolve the IQ imbalance problem increases to allow using cheap hardware.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Aly Mahmoud Mohamed Abd-Ellatif Date:

Signature:

Dedication

To my father Mahmoud Mohamed, my mother, my brothers and sister, my wife and my son Mahmoud.

Acknowledgments

First of all, thanks to Allah for the continuous help throughout my whole life. I would like to thank my supervisors Prof.Yasmine Fahmy and Dr.Ahmed Hesham for their patience, the continuous guidance and for the technical and ethical aspects I have learnt from them. I would also like to thank my parents and my wife for the continuous support during all the masters journey. I would like also to thank my friend Mahmoud Elgenedy for his continuous encouragement.

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