Use all capitals followed by double space.

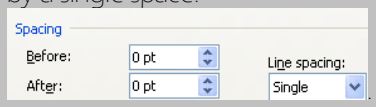
Should be
1 page for MS
2 pages for PhD

ABSTRACT

Use all capitals, single space inside the title, followed by double space.

ADAPTIVE SPACE-TIME PROCESSING FOR WIRELESS COMMUNICATIONS

Write 'by' in separate line, followed by a single space:



by
Xiao Cheng Bernstein

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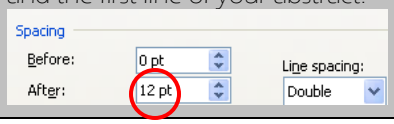

Adaptive space-time processing techniques have been considered in the past to increase the capacity of two major, multiple-access wireless communication systems: Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA). Space processing uses multiple antennas which, in turn, provide alternative signal paths in order to cancel interferences and combat multipath fading. In this investigation, the *eigencanceler* method was used to evaluate theoretical optimum combinations. The feasible *direct matrix inverse* (DMI) technique was also evaluated. An analysis of the system performance revealed that when data sets are small, the eigencanceler technique is superior to the DMI technique. A simple projection-based algorithm was proposed and its performance analyzed.

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The capacity of CDMA communication systems is normally restricted by multiple-access interferences (MAI). It was shown that spatial and temporal processing can be combined to increase the capacity of CDMA-based wireless communications systems. The degrees of freedom provided by space-time processing were exploited to combat both fading and MAI. Specifically, the following methods were considered:

(1) space-time diversity, (2) cascade optimum spatial-diversity temporal, (3) cascade optimum spatial-optimum temporal, and (4) joint-domain optimum processing. It was proved that, due to its interference cancellation capability, *optimum combining* provides significantly better performance than diversity techniques.

ADAPTIVE SPACE-TIME PROCESSING FOR WIRELESS COMMUNICATIONS

You have 17 or 18 single spaces here depending on the length of your title. Make sure your name is appearing in the middle of this page

by
Xiao Cheng Bernstein

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A Dissertation
Submitted to the Faculty of
New Jersey Institute of Technology
in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Electrical Engineering

Make sure you list the right title and department here. A list of title page samples is available on http://www.njit.edu/graduatestudies/Titles.php

Helen and John C. Hartmann Department of
Electrical and Computer Engineering

Use two single spaces and then enter the date of graduation (either January, May or August + year)

January 1996

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.

The required qualification for dissertation or thesis advisers and for committee members can be found in the on-line graduate catalog under Academic Policies and Procedures or consult with the Graduate Studies Office.

APPROVAL PAGE

ADAPTIVE SPACE-TIME PROCESSING FOR WIRELESS COMMUNICATIONS

Xiao Cheng Bernstein

At least 5 signatures are required for a Doctoral Dissertation; At least 3 for a Master's Thesis.

Dr. Alexander M. Haimovich, Dissertation Advisor — Date
Associate Professor of Electrical and Computer Engineering, NJIT

Dr. Yeheskel Bar-Ness, Committee Member — Date
Distinguished Professor of Electrical and Computer Engineering, NJIT

Dr. Michael Porter, Committee Member — Date
Professor of Mathematics, NJIT

Dr. Zoran Siveski, Committee Member — Date
Assistant Professor of Electrical and Computer Engineering, NJIT

Dr. Jack H. Winters, Committee Member — Date
Member of Technical Staff, AT&T Bell Laboratories, Holmdel, NJ

Use the Tab key for alignment (activate "show ¶" to double-check).

BIOGRAPHICAL SKETCH

Author: Xiao Cheng Bernstein

Degree: Doctor of Philosophy

Date: January 1996

These two entries will not appear online on the NJIT library ETD.

Date of Birth: November 3, 1965

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List the most recent degree first.

- Doctor of Philosophy in Electrical Engineering,
  New Jersey Institute of Technology, Newark, NJ, 1996
- Master of Science in Electrical Engineering,
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- Bachelor of Science in Electrical Engineering,
  Shanghai Jiao Tong University, Shanghai, P. R. China, 1988

Major: Electrical Engineering

Indicate your current degree program

Presentations and Publications:

Use hanging indent under Format → Paragraph → Special

Xiao C. Wu and Alexander M. Haimovich, "Adaptive arrays for increased performance in mobile communications," The Sixth International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'95), Toronto, Canada, September 1995.

Xiao C. Wu and Alexander M. Haimovich, "Space-time processing for CDMA communications," Proceedings of the 1995 Conference on Information Science and Systems, Baltimore, MD, pp. 371-376, March 1995.

Xiao C. Wu and Alexander M. Haimovich, "A simple projection based adaptive array with applications to mobile communications," Proceedings of the 1994 Adaptive Antenna Systems Symposium, Melville, NY, pp. 37-42, November 1994.

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ACKNOWLEDGMENT

The order for this section is as follows: Thesis or Dissertation Advisor, Committee members, Funding source and Technical support. Many students include peers (by name please) who were key to their success and some also finish with family members.

The Table of Contents has to be created manually and has to follow the format presented here. The 'Split Cells' function is very helpful here. Note: For detailed instructions look into the Guide for Creating a Table of Contents on the webpage.

TABLE OF CONTENTS

Chapter Titles appear in All Caps

'Chapter' and 'Page' have to be listed again on the second page of TABLE OF CONTENTS

When TABLE OF CONTENTS is longer than one page then insert (Continued) here

TABLE OF CONTENTS (Continued)

Chapter **Page**

This is a simple table with three columns.

LIST OF TABLES

LIST OF FIGURES

This is a simple table with three columns.

A List of Symbols is optional - Nomenclature or List of Terms or Definitions may also be used.

LIST OF SYMBOLS

©	Copyright
∫	Integration
Å	Angstrom (10^{-10} meters)
SAR	Specific Absorption Rate
Π	3.415
♀	Female
®	Registered
≈	Approximately
♠	Spade Suit
∂	Partial Differential
#	Number Sign
¢	Cent Sign

A List of Definitions is optional - Nomenclature or List of Terms may also be used.

LIST OF DEFINITIONS

Accuracy	How closely an instrument measures the true or actual value of the process variable being measured or sensed.
Acidic	The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.
Alkaline	The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.
Analog	The readout of an instrument by a pointer (or other indicating means) against a dial or scale.
Cohesion	Molecular attraction which holds two particles together.
Effective range	That portion of the design range (usually upper 90 percent) in which an instrument has acceptable accuracy.
Linearity	How closely an instrument measures actual values of a variable through its effective range; a measure used to determine the accuracy of an instrument.
Surfactant	Abbreviation for surface-active agent. The active agent in detergents that possesses a high cleaning ability.
Standard	A physical or chemical quantity whose value is known exactly, and is used to calibrate or standardize instruments.