TABLE OF CONTENTS

Signature Page iii

Dedication iv

Epigraph v

Table of Contents vi

List of Figures vii

Acknowledgments ix

Vita xi

Abstract of the Dissertation xii

Introduction 1

Chapter 1 Nonsinusoidal beta oscillations reflect cortical pathophysiology in Parkinson’s

disease 26

Chapter 2 Cycle-by-cycle analysis of neural oscillations 58

Chapter 3 Hippocampal theta bursting and waveform shape reflect CA1 spiking patterns 99

Conclusion 140