

INDEX

ABBREVIATIONS	3
INDEX	4
LIST OF FIGURES	6
LIST OF TABLES	8
1. BASICS OF WAVEFRONT	1
1.1. Introduction.....	1
1.2. Definition and optics.....	3
1.3. Historical Development	8
2. REFRACTIVE ERRORS	16
2.1. Theoretical Limits of Vision.....	16
2.2. The Perfect Eye.....	17
2.3. The Aberrated Eye	19
2.4. Aberration Map.....	20
2.5. Aberrometers.....	26
2.6. Types of aberrometers.....	27
2.6.1. Outgoing refractive aberrometry.....	28
2.6.2. Ingoing adjustable refractometry	31
2.6.3. Retinal imaging aberrometry	34
2.7. Zernike polynomials	37
2.8. Optical quality.....	47
2.8.1. Optical quality and quality of vision.....	54
2.8.2. Specification of magnitude of aberration.....	60
2.9. Classification of aberrations	63
2.9.1. Lower-order aberrations.....	63

2.9.2. Higher-order aberrations	65
2.9.2.1. 3 rd -order aberrations' coma and trefoil.....	66
2.9.2.2. Other higher-order aberrations.....	69
3. WAVEFRONT-GUIDED CUSTOMIZED LASIK	71
3.1. Background	71
3.2. Patient selection	73
3.2.1. Who to treat?	73
3.2.2. Who not to treat?.....	73
3.3. Instrumentation	76
3.4. Preoperative preparation	76
3.5. Surgical technique.....	77
3.6. Outcomes	79
3.7. Wavefront vs. corneal topography	81
3.8. Limitations of Wavefront Customized Corneal Ablation	85
4. Future of Wavefront.....	90
4.1. Preview lenses.....	90
4.2. Wavefront-designed spectacles.....	92
4.3. Contact lenses and IOLs	93
4.4. Adaptive optics	94
4.4.1. How Does an Adaptive Optics System Work?	100
4.4.2. Adaptive Optics Ophthalmoscopy	102
5. CONCLUSION.....	106
6. REFERENCES	108