

CONTENTS

2.8.1	Vertices	40
2.8.2	Edges and Faces	45
2.9	Cyclic Zonohedra	48
2.10	Chapter Summary	55
3	Physical Factors in Colour Matching	59
3.1	Introduction	59
3.2	Colour Stimuli	61
3.2.1	Radiometric Functions	61
3.2.2	Colour Stimuli as a Subset of a Vector Space	63
3.3	Illuminants and Light Sources	64
3.4	Reflectance Spectra	66
3.4.1	Lambertian Reflection	67
3.4.2	Absorption and Reflectance	71
3.5	Chapter Summary	73
4	Perceptual Factors in Colour Matching	75
4.1	Introduction	75
4.2	Experimental Considerations	77
4.2.1	The Stimulus Error	77
4.2.2	Colour-Matching Experiments	78
4.3	Colour-Matching Algebra	79
4.3.1	Metamers	79
4.3.2	Grassmann's Laws	79
4.3.3	Luminance	82
4.3.4	Luminous Efficiency	83
4.3.5	Abney's Laws	86
4.4	Coordinates for Colour Matching	88
4.4.1	Colour-Matching Functions from Primaries	89
4.4.2	Evaluating Colour Matches	94
4.4.3	Converting between Different Sets of Primaries	95
4.4.4	Primaries from Colour-Matching Functions	97
4.5	Consequences of Linearity	98
4.5.1	Metameric Blacks	100
4.5.2	Convex Structures in Colour Matching	101
4.6	The 1931 CIE Colour-Matching Functions	105
4.6.1	Luminance Hyperplane	106
4.6.2	Non-Negative Coordinates	108
4.6.3	Equal-Energy SPD	110
4.6.4	Summary of CIE Coordinates	110
4.7	Chapter Summary	115