Visual Color

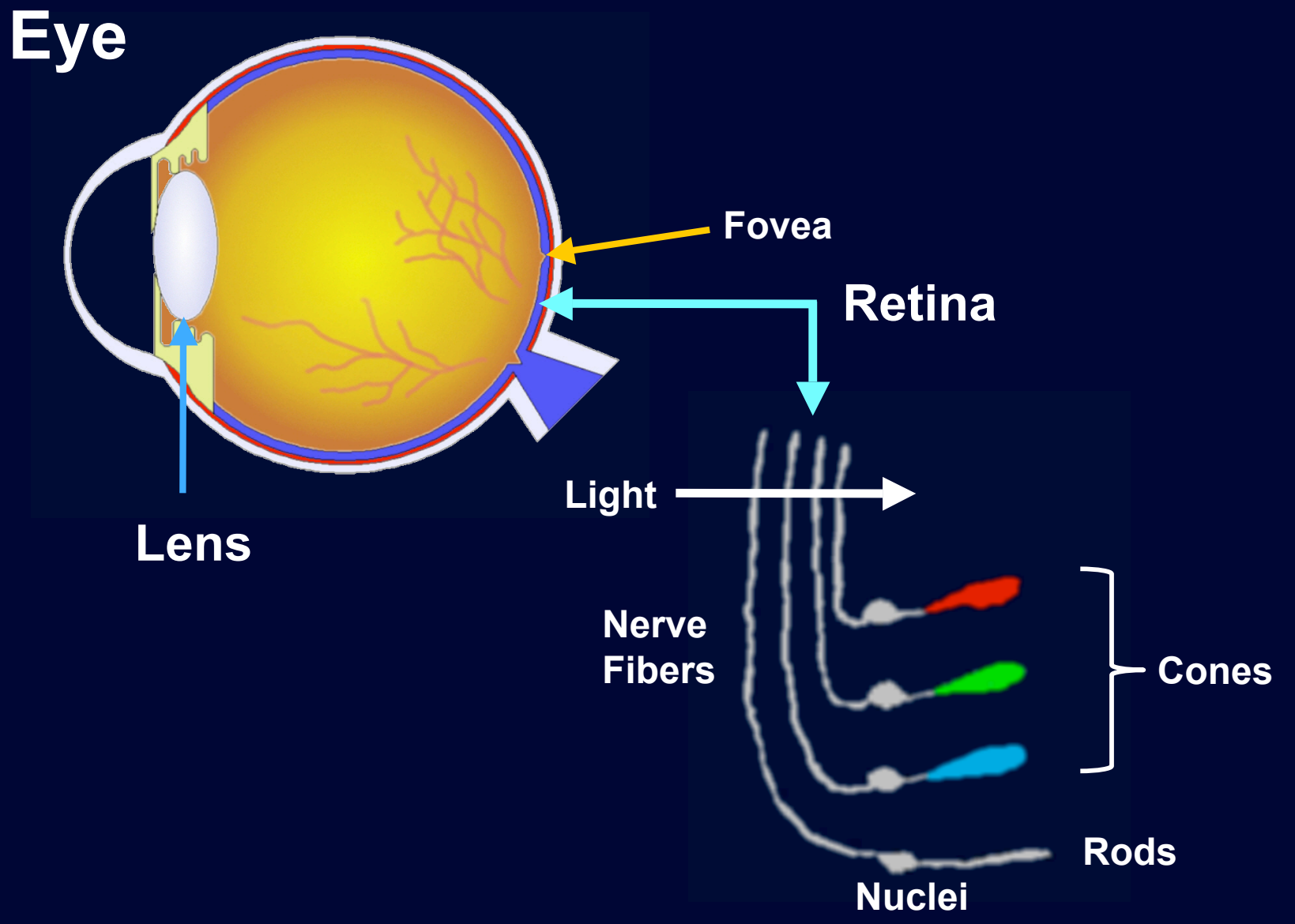
A Teaching Tool

by Walter J. Protheroe Jr.
Dr. J. Hovis, University of Waterloo, Canada
R. Rideout, Colorado School of Mines, Golden, Colorado

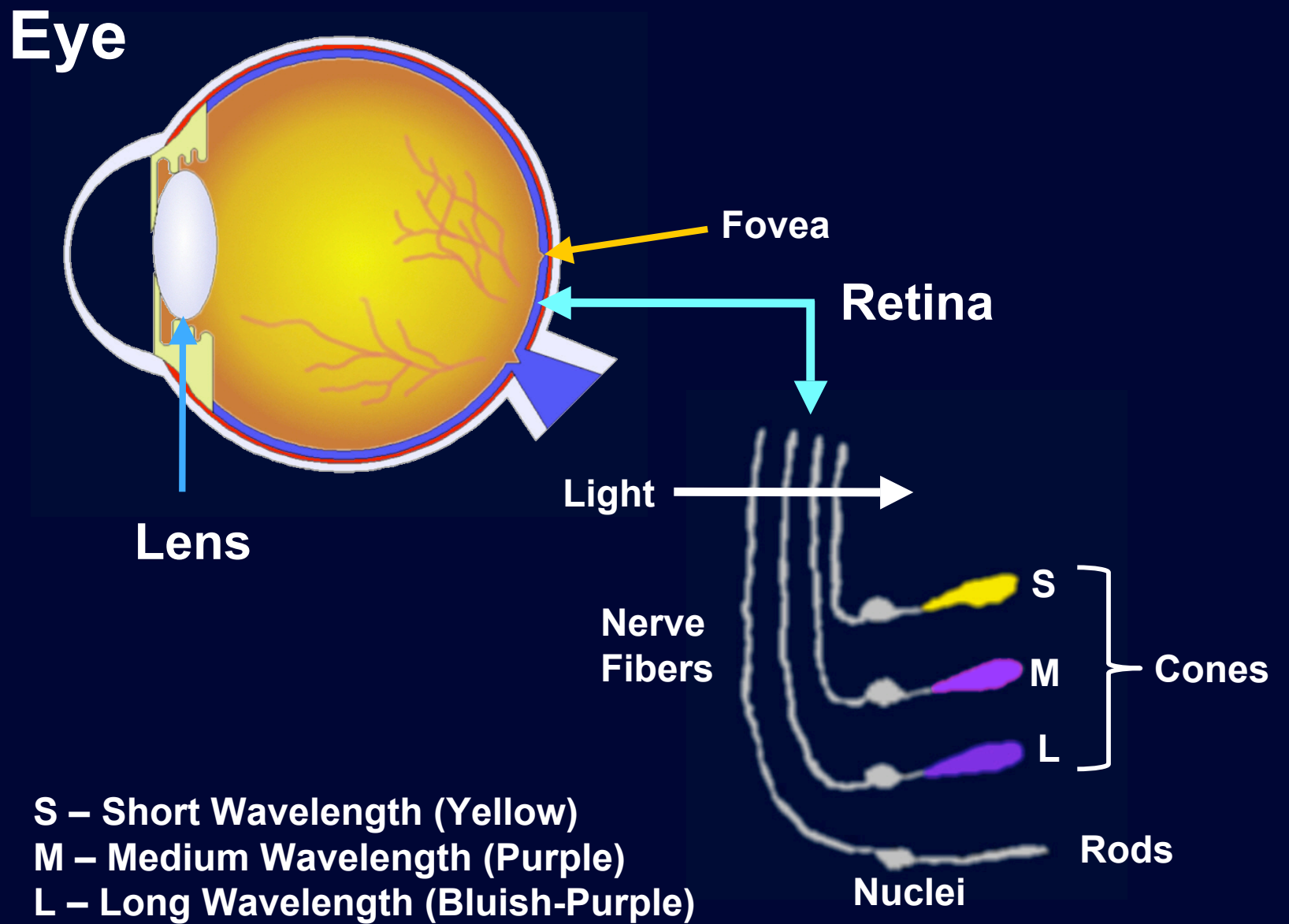
Visual Color

ADS-B - Automatic Dependent Surveillance-Broadcast

Visual Color

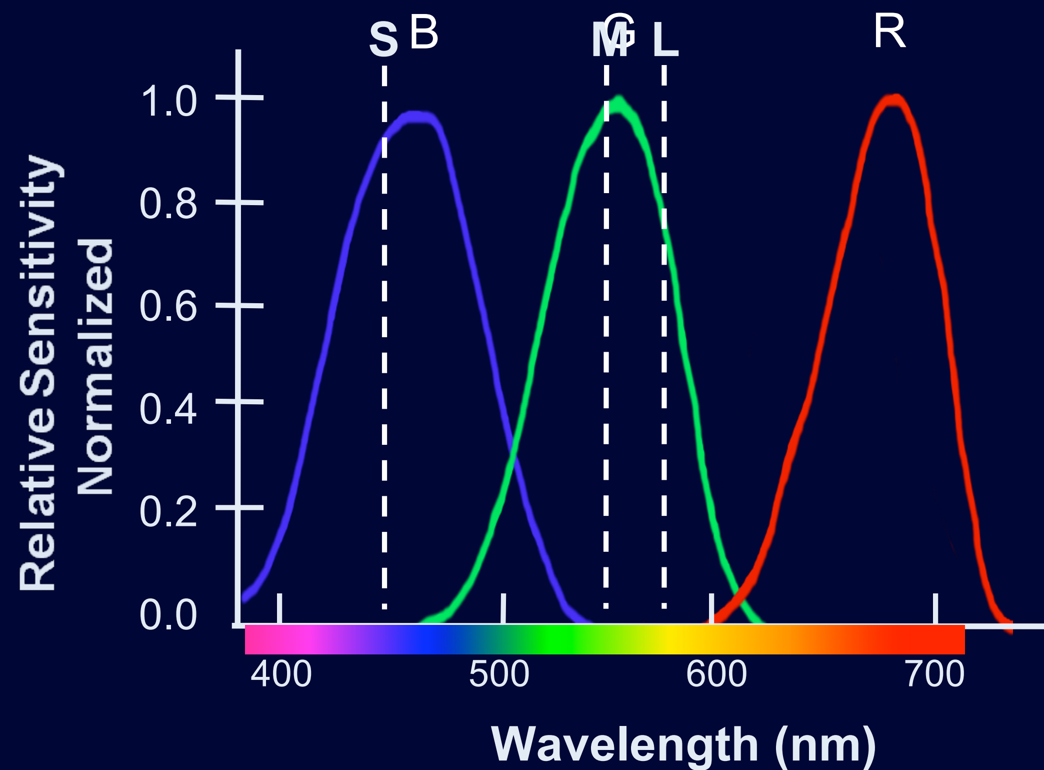


Visual Color



S – Short Wavelength (Yellow)
M – Medium Wavelength (Purple)
L – Long Wavelength (Bluish-Purple)

Visual Color



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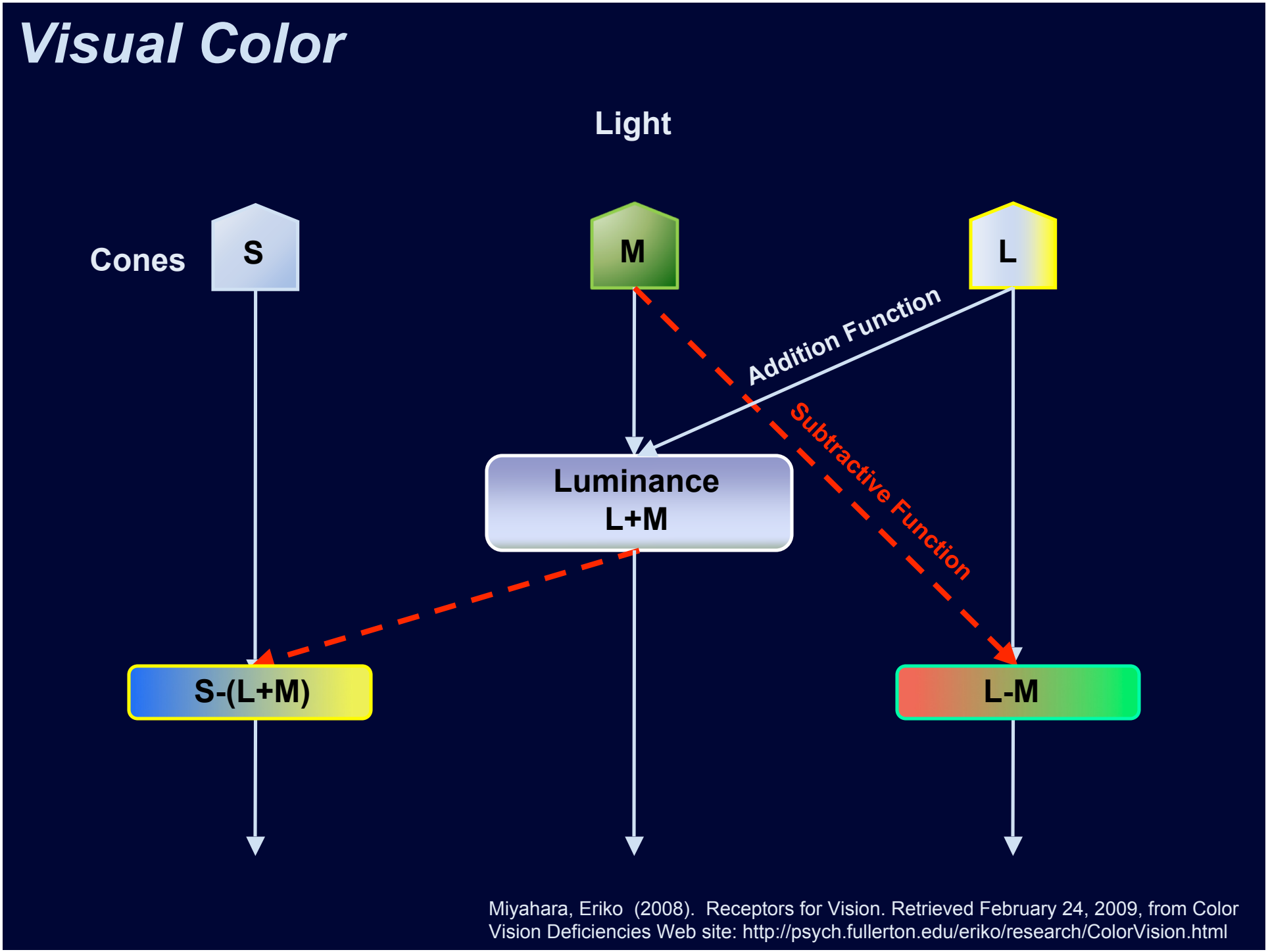
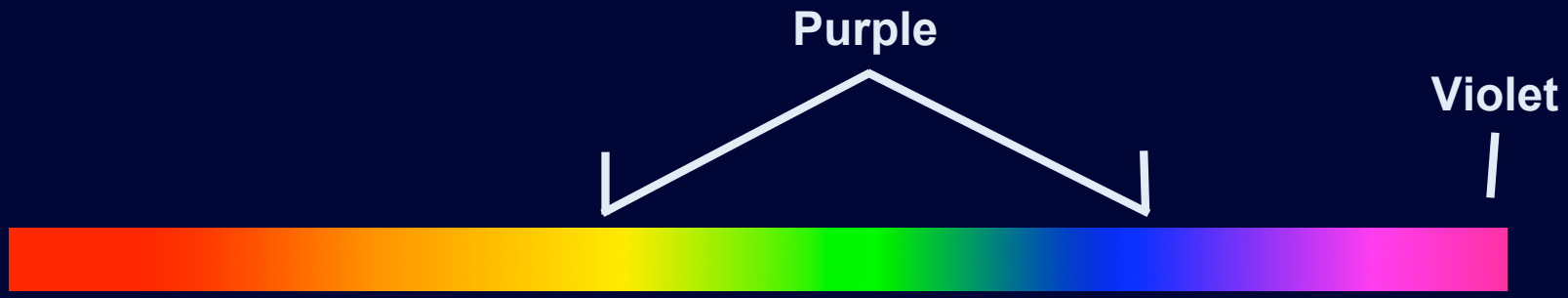


Miyahara, Eriko (2008). Receptors for Vision. Retrieved February 24, 2009, from Color Vision Deficiencies Web site: http://psych.fullerton.edu/eriko/research/ColorVision.html

Visual Color

Red = S-M+L (positive result)	Red = L
Green = S-M+L (negative result)	Green = M
Yellow = S-(L+M) (negative result)	Yellow = L+M
Blue = S-(L+M) (positive result)	Blue = S
Purple = S+L	Purple = S+L
Cyan = M>S>L	Cyan = S+M (extrapolated)
White = L+M (Luminance)	White = L+M+S



Formulas based on information supplied by
Dr. J. Hovis, University of Waterloo, Canada

Visual Color

Red = L

Green = M

Yellow = L+M

Blue = S

Purple = S+L

Cyan = S+M

White = L+M+S

	Wavelength		
Color	**S**	**M**	**L**
Red	**0**	**0**	**1**
Green	**0**	**1**	**0**
Yellow	**0**	**1**	**1**
Blue	**1**	**0**	**0**
Purple	**1**	**0**	**1**
Cyan	**1**	**1**	**0**
White	**1**	**1**	**1**

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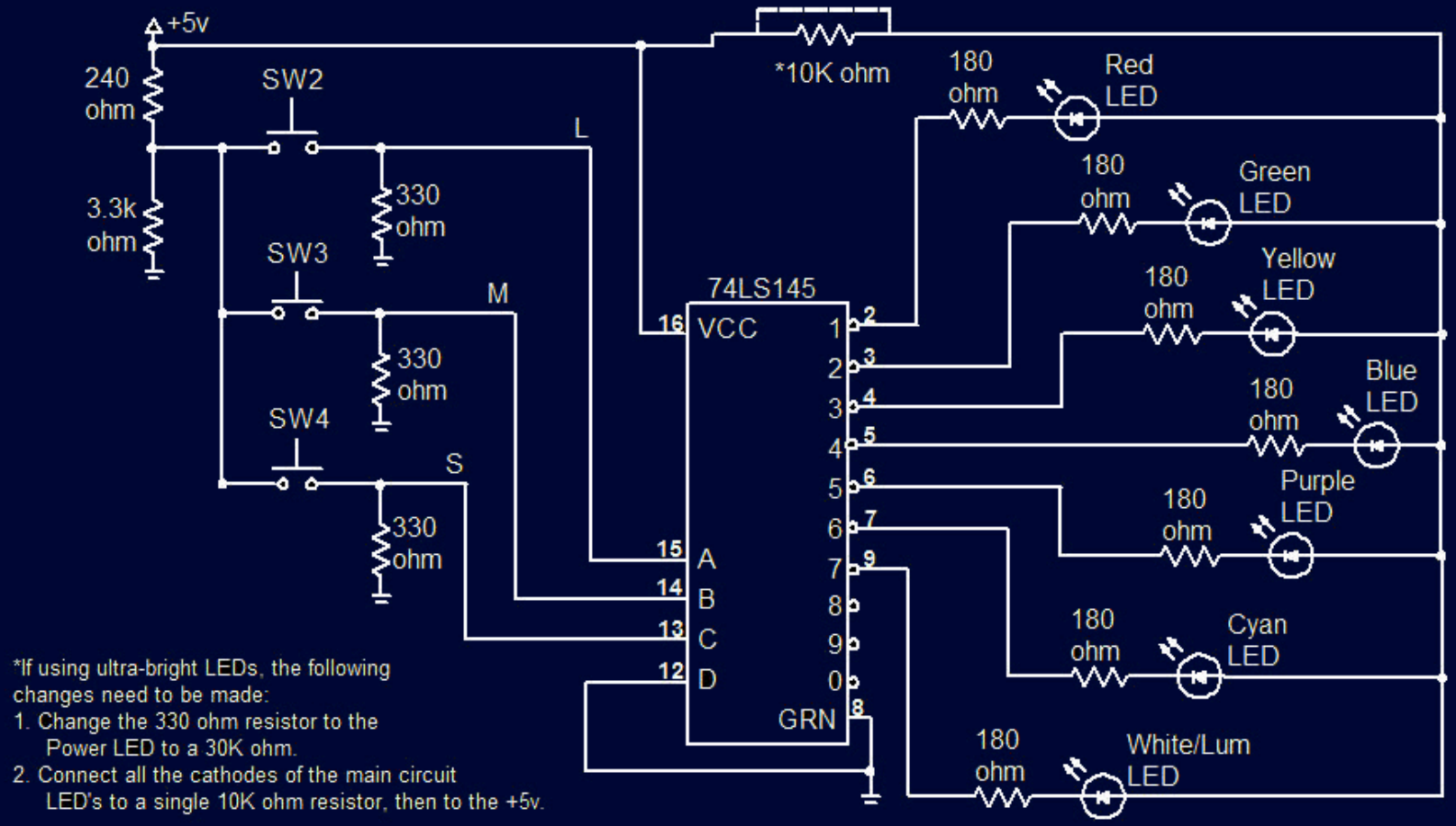
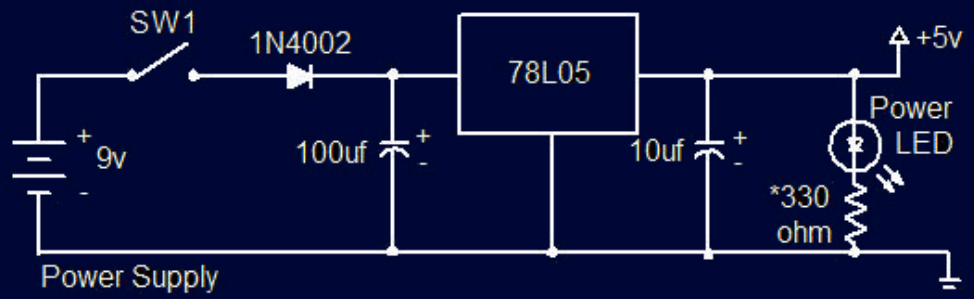
Visual Color

74LS145 Binary Coded Decimal to Decimal



*If using ultra-bright LEDs, the following changes need to be made:

1. Change the 330 ohm resistor to the Power LED to a 30K ohm.
2. Connect all the cathodes of the main circuit LED's to a single 10K ohm resistor, then to the +5v.

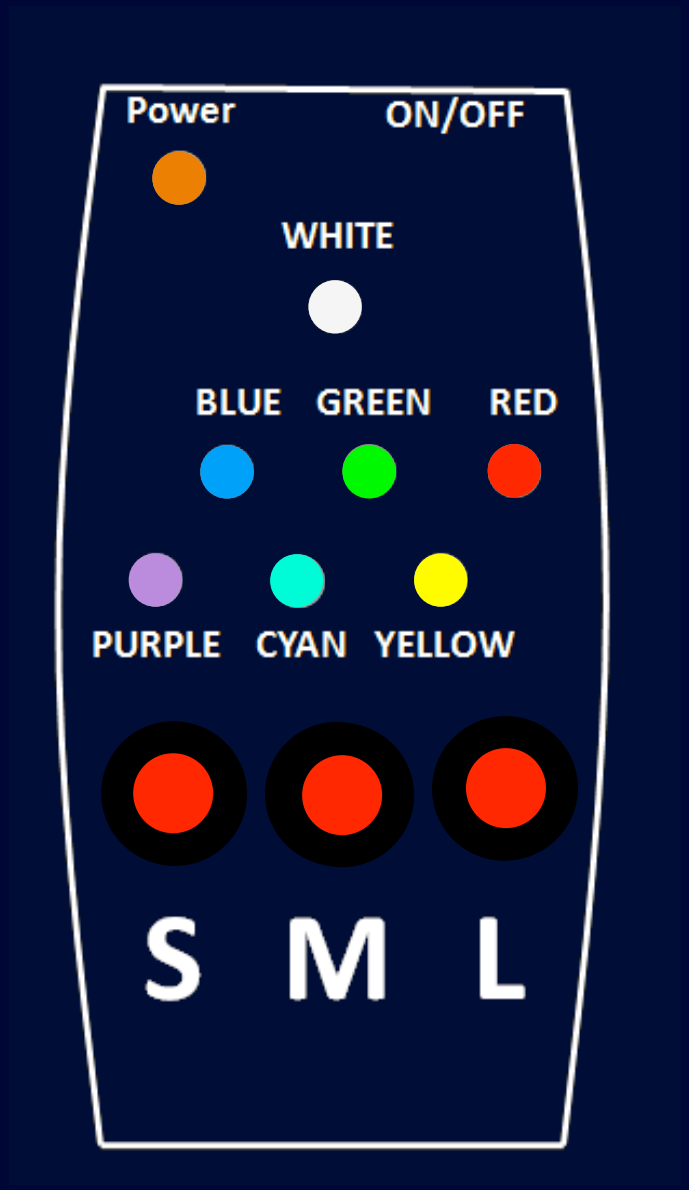


Color Vision

Designed by: Walter J. Protheroe Jr.
Edited by: Dr. J. Hovis, Univ. of Waterloo
Rex Ridout, Colorado School of Mines

Formulas used in circuit design are from notes distributed by Dr. J. Hovis.

Visual Color



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Red = S-M+L (positive result)

Green = S-M+L (negative result)

Yellow = S-(L+M) (negative result)

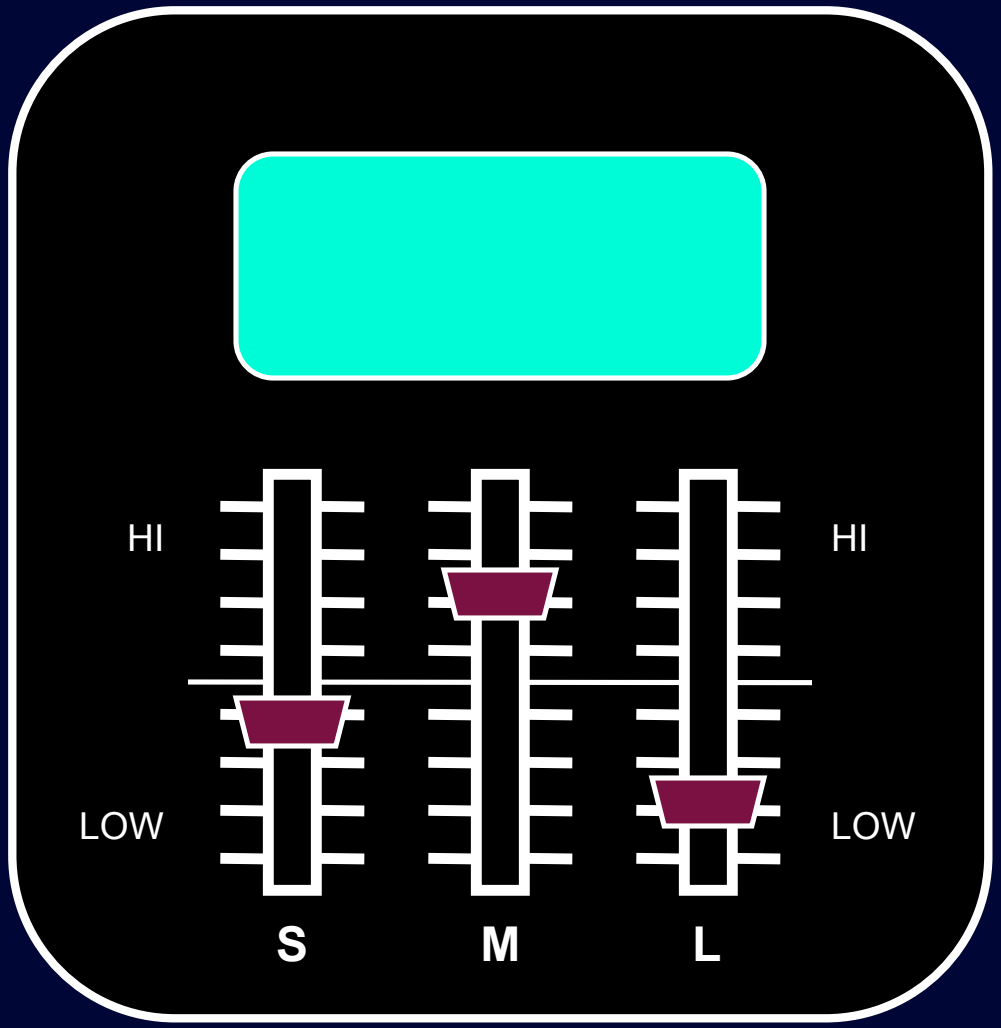
Blue = S-(L+M) (positive result)

Purple = S+L

Cyan = M>S>L

White = L+M (Luminance)

Proposed Unit



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I wish to extend my thanks to…

Dr. Kritina Holden

and

Dr. Camille Peres

University of Houston Clear Lake

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