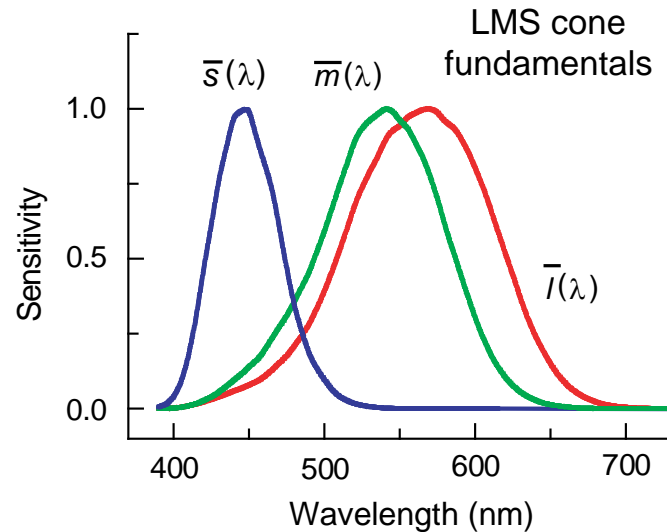


## PHYSIOLOGICALLY-BASED COLOUR MATCHING FUNCTIONS

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A continuing goal of colour science since the establishment of the trichromatic theory of colour perception has been the accurate determination of the spectral sensitivities of the long, middle- and short-wavelength-sensitive (L, M and S) cones—also known as the fundamental colour matching functions (or CMFs):  $\bar{l}(\lambda)$ ,  $\bar{m}(\lambda)$  and  $\bar{s}(\lambda)$ . These CMFs are the physiological bases of all other CMFs.



The cone fundamentals of Stockman and Sharpe (2000), which have been recommended by the CIE Technical Committee 1-36 as an international standard for colorimetry, rely upon measurements made in both normal trichromats and colour deficient observers, and upon a direct analysis of the 10-deg CMF data of Stiles & Burch. The measurements and analysis were used to guide the linear combinations of the Stiles & Burch 10-deg CMFs that define the physiological-based cone fundamentals for 2- or 10-deg viewing conditions. These CMFs can also be linearly transformed to the more familiar colorimetric variants:  $\bar{x}(\lambda)$ ,  $\bar{y}(\lambda)$  and  $\bar{z}(\lambda)$  by making a few simple assumptions