Dispersion Encyclopedia Article

Dispersion

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Dispersion

In, the scattering of values in a distribution of data from an average value is called dispersion. The term dispersion generally means the spread of a series of values, usually about some central point such as the, also called the average, or the of the values. The measure of dispersion normally used is the, but the **mean** deviation and the mean difference are also used.

A well known example of what might be called physical dispersion is the refraction of **light** into its component colors when it passes through a material in which the velocity of the light waves varies with the wavelength. In a vacuum, light may be thought of as being composed of superimposed trains of light waves of many wavelengths. When light passes through some materials, like a glass prism, it is bent and spread out into its component colors because the different component wave trains travel at different speeds through the glass resulting in a spectrum. An example of such a spectrum in nature is the rainbow. When split into its colors, the light is said to be dispersed. Given appropriate media through which to send them, other wavelengths along the electromagnetic spectrum can be dispersed in a similar way. Each wave changes its length as it moves through the material, at each point having a length determined by the time of arrival of the waves traveling the point of origin.

As defined above, dispersion is the separation of a complex wave into components. The term is also applied to the property of an optical device or medium giving rise to the phenomenon, or the numerical value of this property.