



The luminous flux

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Photometry is the applied discipline that studies light measurement methods.

Given a source of artificial light, the luminous flux it generates is defined as the quantity of light energy emitted in the time unit. The flux is the translation, in terms of emission, of a power which confirms the energy nature of light. When we supply thermal, electric, kinetic, etc, energy to any device able to transform the absorbed energy in light energy, i.e. in continuous electromagnetic radiations in the visible spectral range, we obtain a luminous flux according to the first principle of the law of thermodynamics or principle of energy conservation, we could directly adopt the Watts of the absorbed power to measure the luminous flux, however we know thanks to experiments that have been carried out that the sensibility to radiations of our visual organ, is not the same for all their frequencies and their wavelengths. The human eye responds to the stimulations provoked by those radiations whose electromagnetic wavelengths are included in a narrow interval, with a chain of maximum intensity nervous impulses.

It decreases as we get away from that interval, therefore it would not be correct and realistic to consider the emitted power as being the same for every wavelength, it is necessary to keep in mind that a luminous flux is so because it stimulates a visual apparatus which has its own energy reception rules and modalities and it is not a mere faithful and neutral instrument for the recording of light signals. Part of the flux is perhaps more precious for the eye and for this reason in the calculation of the luminous flux generated by a source the characteristic sensibility of the human eye is taken into consideration, for this purpose the response of the organ to radiations of varied wavelengths has been accurately studied and it was discovered that when vision occurs under day light conditions (photopic vision) sensibility is recorded by wavelength = 555 nanometers, it was obviously established that not all the individuals subjected to the test showed the same sensibility and the CIE thus codified an international average eye which has a conventional average sensibility that is the result of a statistical processing carried out on the basis of the surveys conducted on a high number of samples.

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