



# Photometry , photometric sizes and their application and of photometry main methods School Students

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## ABSTRACT

This in the article photometry , photometric their sizes application and of photometry main methods about data given . In particular , light energy , his direction and to him depends was sizes about concepts there is .

## Keywords:

Photometry , photometric sizes , light flow , full light flow , light strength , brightness , clarity , illumination , illumination laws , visual photometry , physics photometry .

Light waves light from the source around to space energy will arrive . Optics light energy to measure methods the teacher section called photometry .

Light himself deliver energy point of view in terms of one series physicist sizes with is characterized . These sizes photometric are called sizes . Of them the most important light is the flow .

Light energy feel for of course , the eye separately important have For this reason us , first next , light waves with passing full energy not but his directly to the eye effect which part is interested .

Eye green the rays the most good feels For this reason light of energy belongs to to measure tools with note to be done amount only not but this of energy to our eyes directly tangible , that is our eyes with assessor the amount knowledge is more practical important has Light energy such evaluation for included physicist size light is the flow .

If any time  $t$  per hundred during energy was  $W$  light coming down if it is of radiation power  $\frac{W}{t}$  to equal to will be

Known one face coming down radiation power with measurable size  $F$  is light flow is called :

$$F = \frac{W}{t}.$$

Light of sources most of them the light everyone in directions distributes , therefore complete for light flow concept is entered .

All directions radiation power with measurable to size  $F_0$  light of the source full light flow is called

Light the source characterization for in photometry **light power** called size is used .

Light of flow this flow spreading spatial corner to the size of ratio with measurable to size of the source **light** is called **power** .

Quantitative in terms of elementary hard corner inside spreadable light of flow this corner to the ratio equal to

$$I_v = \frac{d\Phi_v}{d\Omega}.$$

His measure unit - International measure units in system (SI) " candela " ( Russian character : kd entered as international : cd) .

Light power concept only light from the source his linear from the dimensions significant level increased to go distances for application can

Various of sources light strength :

Manba	Quvvat, Vt	Taxminiy yorug'lik kuchi, cd
Sham		1
Zamonaviy (2010) an'anaviy qiziydigan lampa	100	100
Oddiy LED	0.015...0.1	0,005...3
O'ta yorqin LED	1	1...30
Kollimatorli o'ta yorqin LED	1	1500
Zamonaviy (2010-yil) lyuminesstent lampa	22	120
Quyosh [6]	$3,83 \times 10^{26}$	$2,84 \times 10^{27}$

Someone surface lighting quantitative respectively evaluation for illumination concept is used .

Enlightenment is it surface on top of it coming down light flow of the surface to the face is the ratio . Practical that 's it in the accounts surface as 0.8 meters from the floor in height is located horizontal plain acceptance will be done and this conditional the work is called the surface .

Surface  $dS^2$  was of the element that it is illuminated equal to :

$$E = \frac{d\Phi}{dS^2}$$

Until then we only point light sources about we talked However a lot cases light sources something size have will be , that is spread out will be Such of sources shape and dimensions eye with seeing difference will be done .

Spread out light sources for light power enough characteristic be ca n't That's why for addition characteristics - brightness and clarity concepts is entered .

Light of the source surface from unity all directions according to shining light numerically to the flow equal to was size brightness is called

Light sources big sized when eye source of the surface separately parts known in the direction radiation strength divides

Source of the surface surface from unity known in the direction normal to the surface

coming out light numerically to strength equal to was size clarity is called

Illumination laws . Above as said , surface lit walk to the power right proportional . But illumination only does not depend on the power of the light , but also depends on the distance between the source and the illuminated surface .

Photometry two common method available : 1) visual photometry , in this being compared two field clarity mechanic or optical tools using in equalization a person his eyes clarity differences perception reach ability used ; 2) physical photometry , in this two light sources in comparison another kind of each different light from receivers is used . For example , vacuum photocells and semiconductor photomultipliers photodiodes and others Two The results of the method are universal have to be for observation condition ( or of tools performance ) so to be should be in this photometer each different wave lengths MKO's « standard watcher sure suitable without feel need Measuring during of the lamp light release It is also important that it does not change . Such both current and voltage under conditions stabilization for much complicated electricity hardware Demand will be done . Most sure photometric in measurements from the lamp passing current up to  $(2 \text{ ' } 3) \cdot 10^{-3}\%$  in accuracy to stabilize right will come .

Visual photometry . Visual of photometry history great scientist It begins with P. Bouger (1698-1758) . He in 1729 of light two flow to compare method discover did and of

photometry almost everyone main principles formed. From this after I. Lambert (1728-1777) photometry theory to the system put From this next of photometry development basically that 's it methods improvement the way with went Current at the time visual photometry limited without, for example, too weak light flows in measurement physicist of photometry the results one different in a sense explanation difficult when is used. The fact is that the brightness is  $0.011 \text{ kd} / \text{m}^2$  values between your eyes sensitivity to light (daytime or photoopic) in accordance from adaptation to darkness (gloomy or scotopic) according to adaptation smooth (smooth, one different) will change. Therefore, visual of photometry to be possible was results with agreement provide for of a physical (electrical) photometer spectral sensitivity how that it will be in advance to say possible it's not. Candelani in determining attended high temperature hole of the body energetic to the distribution suitable coming light source of clarity such range for right methodology visual is to compare. (of light such source as vine of strength some one in values chulgomli electricity light service to do can). Light of flow very small in values of 1959 international agreement according to acceptance done from the secondary (dim) standard is used. It's kind of one different to the meaning have did not happen photoelectric measurements transfer opportunity will give.

Physics photometry. Photo effect in 1889 opened Y. Elster and G. Geitel physicist of photometry to the beginning basis they put In 1908 Sh. Feri each different long to the waves sensitivity a person his eyes sensitivity near was electricity the photometer created However only in the 1930s vacuum photocell from improved and Selenium photodiode discover from being done only later physical (electrical) photometry, especially industrial in laboratories wide applied method being left

Physics in photometry used electricity photo receivers MKO (Mejdunarodnaya commission po osvesheniyu - Illumination according to international commission) standards sure suitable did not happen without each different wave in length to the light is affected. For this reason they are for painted

gelatin (glue) or colorful from glass prepared plate - light filter Demand will be done. This is a light filter each different in length the waves so spends that in this with light filter photo receiver chance level «standard observer» to sure suitable coming need If the color with difference to be done light currents such the device applied comparable if so, then to be compared results only conditional respectively right to be considered always attention get need will be

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